

Energy Transition: Powering Toward a Golden Indonesia

Annual Report 2024 | GIZ Indonesia and ASEAN



Powering Toward a Golden Indonesia



Indonesia's energy system is undergoing a massive change to meet growing demand for power, moving from fossil fuel to renewable energy while keeping the power supply affordable.

The nation's commitment to the energy transition is part of its Golden Indonesia 2045 programme to become an advanced country. President Prabowo Subianto has laid out an ambitious vision for this transition: net-zero emissions (NZE) by 2060, 75GW of new renewable energy capacity, and the phasing out of coal by 2040.


The GIZ Energy Programme Indonesia and ASEAN supports the Indonesian government's transition from fossil fuels to renewable energy to reduce the effects of climate change. The aim is to build a sustainable, inclusive, and greener energy system. In 2024 we focused on five themes with our public and private partners: Power System Transformation, Island Energy Solutions, Industry Decarbonisation, Just Energy Transition, and Sustainable Energy Financing.

Success Stories

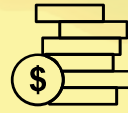
The success of Indonesia's energy transition is crucial for national, regional and global climate and energy goals. In 2024, GIZ continued its work with its Indonesian partners on the following:

- Advised on Sulawesi's power grids' share of renewable energy, based on increased nickel smelter load
- Raised clean energy ambitions in the 2025-2045 Long-Term National Development Plan
- Drafted inputs for regulations to include energy management and conservation, and the potential revision of the Electricity Law
- As a Just Energy Transition Partnership (JETP) implementing partner, we developed transition frameworks and diversification opportunities in coal regions in Kalimantan and Sulawesi
- We launched the second solar ice maker and first electric boat pilot in Eastern Indonesia to show renewable energy solutions, and supported biomass-biogas direct use mapping in agroindustry, and biomethane use in the pulp and paper industry
- Trained 276 people in sustainable energy finance, carbon management and power system related topics.

Energy Programme Statistics

 **5** strategic themes covering the energy transition

 **85** staff members across 10 projects

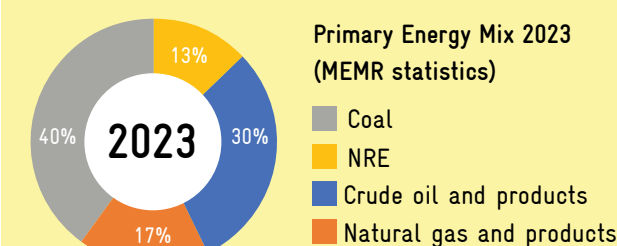
 • €64.40 million commissioning volume (running in 2024)
• €30.25 million from the German Federal Ministry for Economic Cooperation and Development (BMZ)
• €33.03 million from the International Climate Initiative/the German Federal Ministry for Economic Affairs and Climate Action (IKI/BMWK)
• €1.32 million from the Green Climate Fund (GCF)

 **€12** million additional committed projects

€41.42 million Just Energy Transition Partnership (JETP) funds committed by Germany and implemented by GIZ

Indonesia's Energy Targets

70% renewable energy (RE) in primary energy by 2045 (RPJP)
21% in 2030, 30% in 2035, 41% in 2040, 65% in 2050, and 73% in 2060 of RE in power
23% RE in 2030, and 72% 2060 in primary energy (KEN)
2044 when RE overtakes fossil in power sector (RUKN)
2060 or earlier net-zero emissions
1% of energy intensity reduction per annum up to 2025 (Government Regulation No 79/2014: National Energy Policy, Article 9)
75 GW RE capacity expansion targets over next 15 years
71 GW additional capacity until 2033 = 72% NRE (on-grid) – (draft RUPTL)
7.8% coal share decline by 2060 (KEN)



JETP Targets

250 million tons CO2 emissions in 2030, 44% RE by 2030 (on-grid), net-zero in the power sector by 2050

 **3** Indonesian ministerial partners and **4** collaboration ministries

 **€8.36** million business volume 2024

Key Performance Indicators 2024

452 employees (both public and private) completed training related to energy transition skills
13 sustainable energy regulations supported
11 sustainable energy regulations enacted
12 company pledges and cooperations for NZE and/or sustainable energy agreed

€2,198,143.79

leveraged by GIZ and its partners for Indonesia's energy transition

Power System Transformation: Powering Indonesia's Future



Indonesia's 600+ island power grids face challenges with outdated transmission and distribution planning focused on fossil fuels. To address this, GIZ supports the government to adapt power systems to integrate high shares of variable renewables, such as solar and wind. Effective power system transformation is essential for accelerating Indonesia's renewable energy transition.

2024 Highlights

- **GIZ and PLN partner for power system transformation and renewable energy:** In 2024, GIZ and state-owned power utility PLN renewed their five-year MoU to advance Indonesia's renewable energy transition. The partnership focuses on accelerating renewable integration, boosting grid resilience, and meeting renewable energy targets.
- **E-learning modules on renewable energy:** GIZ supported the development of four e-learning modules on Smart Grids, Battery Storage, Power System Planning, and Emission Trading, now available through the Ministry of Energy and Mineral Resources' (ESDM) internal learning platform hosted at its Centre for Human Resource Development for Electricity, New and Renewable Energy and Energy Conservation, (PPSDM KEBTKE). More than 198 participants attended the training courses.
- **Input to Electricity Law revision:** A study was conducted of electricity market design, comparing Indonesia with other countries, to serve as input for a potential revision of the Electricity Act 30/2009. Moving toward a market-oriented, competitive and transparent electricity sector is crucial for the realisation of the energy transition in Indonesia.
- **Feasibility Study on Interconnecting Sulawesi's Northern and Southern Power System:** GIZ supports PLN's System Planning Department to enhance Sulawesi's power grid through the interconnection of the Northern (Sulbagut) and Southern (Sulbagsel) power systems, to strengthen Sulawesi's electricity network for future energy needs.

What They Say



Suroso Isnandar,
Director of Risk
Management, PT PLN
(Persero)

"The partnership between Indonesia and Germany, through GIZ, has been instrumental in advancing our power system transformation. With GIZ's support in training, capacity building, and technical guidance, PLN has developed the expertise to integrate variable renewable energy, manage system stability, and accelerate the energy transition. This collaboration has strengthened Indonesia's progress toward a sustainable and decarbonised power system, and we look forward to continued cooperation to achieve our renewable energy goals, while ensuring reliable and affordable electricity for all."

What They Say



Nico Juni Ferson, Centre
for Human Resource
Development for Electricity,
New and Renewable Energy
and Energy Conservation (PPSDM
KEBTKE), at the Ministry of Energy and
Mineral Resources

"The smart grid and BESS, [and] also other training provided valuable insights on standards and methods to ensure sustainable, long-lasting microgrids in priority locations. With support from GIZ, four e-learning modules have been developed and integrated into the PPSDM system, using an engaging learning management system platform that enables participants from Indonesia and beyond to learn and assess their understanding effectively. This initiative will help expand knowledge on microgrids and renewable energy, advancing Indonesia's energy transition."



Island Energy Solutions: Clean Power for Remote Communities



GIZ supports local and remote communities to gain access to clean energy based on renewable energy solutions, through collaboration and triangular exchanges on decentralised energy supply.

Renewable energy plays an important role in transforming communities by bringing economic growth and green jobs to rural areas, and helping with global challenges such as climate change and environmental pollution.

2024 Highlights

- **Solar ice maker for small-scale fisheries:** Funded by the UNDP Global Ocean Innovation Challenge Award, a second solar ice maker was installed by the International Pole and Line Foundation (IPNLF), GIZ and its partners in West Seram, North Maluku Islands. The ice factory, previously developed with German support, helps sustainable fisheries by preserving catch quality and raising the incomes of small-scale fishers.
- **Sustainable tourism and PV-Boats:** Working with the village-owned enterprise BUMDES in Rote Island, GIZ introduced a PV electric boat pilot which helps tourists enjoy nature without being disturbed by diesel engine noise, promotes sustainable tourism and creates new income opportunities for remote communities.
- **Solar PV for agriculture productivity in small islands:** A small pilot to boost crop productivity using clean energy was implemented in the remote islands of Kaledupa and Sema. There were higher crop yields at both pilot locations, benefiting local communities, and increased demand without losing quality across many other islands.
- **Sharing micro hydro power experiences with Madagascar:** Germany has long partnered with Indonesia on developing renewable energy based mini-grids. Indonesia shared its micro hydro power experience with Madagascar through a GIZ implemented triangular cooperation approach, with two training sessions for 67 trainees in Madagascar by Indonesian experts for positive impacts on rural electrification. The training led to an agreement between the two countries to develop a micro-hydro power project in Madagascar.

What They Say

Martin Purves, Managing
Director, International
Pole and Line Foundation



"Transitioning to renewable energy in the fisheries sector, especially in small-scale fisheries, can be a major achievement in the battle to address climate change impacts. The solar ice maker not only strengthens local cold chain infrastructure but also represents a crucial investment in the future of sustainable small-scale fisheries. We are keen to work with our market partners, investors and the donor community to find scalable solutions that will help ensure long-term market access and improved economic resilience for small-scale fishers and their dependent coastal communities."

What They Say

Feno Eliso Randrianarison,
Director of Control
and Coordination, Hydro
Ingenierie Etudes et
Realisations (HIER), Madagascar



"We hope that this triangular cooperation between Madagascar, Indonesia, and Germany continues, especially in promoting the role of women in the context of developing electricity in remote areas in our country. Other than that, we can exchange experiences and knowledge among involved countries, to adopt Indonesia's experience for the development in our country as well as to increase the involvement of women in developing this sector."

Industry Decarbonisation: Driving Indonesia's Green Economy



GIZ supports Indonesia's drive for a green economy by promoting solutions to integrate renewable energy and energy efficiency for a decarbonised industry. Industry contributes 25% to Indonesia's overall greenhouse gas emissions. As the country targets becoming an industrialised nation by 2045, these emissions will only grow unless climate-friendly energy and low-carbon industry processes are put into place. Energy efficiency plays a crucial role to mitigate challenges from growing power demand. Overall, GIZ and its partners work together to reduce emissions to achieve a green economy.

2024 Highlights

- **Government decree on integrating clean energy in cold chains:** Led by the Ministry of Energy and Mineral Resources, the Ministry of Marine Affairs and Fisheries and GIZ jointly launched a National Task Force to curb fishery sector emissions. Proposed measures under the Task Force could save up to 9,000 tons of CO₂eq per billion rupiah GDP annually, totalling around 1,129 million tons over a decade, by introducing renewable energy and energy-efficient cooling in the fisheries sector.
- **Advancing biomethane use for industry decarbonisation:** GIZ actively supported biomethane development to decarbonise industrial heat demand in Indonesia through pre-feasibility studies, implementation of mandatory licensing for commercial biomethane projects, and formulation of business licensing guidelines for the private sector. GIZ also organised a visit for Indonesian key stakeholders to learn about the biomethane ecosystem in Germany, and an exchange with the German private sector for future collaboration.
- **Preparing first national clean hydrogen regulation in Indonesia:** Green hydrogen is part of the solution to decarbonise the industry sector. GIZ advised the Ministry of Energy on a clean hydrogen regulation, supporting the consultation with 14 ministries, governmental institutions and 37 companies.
- **Energy management regulation:** Regulation PP 33/2023 on energy conservation aims to enhance energy efficiency in the energy, transportation, industry, and building sector. GIZ led the working group on the derivative regulation on energy management practices for energy consumers.
- **Boosting achievement of RUEN's biomass utilisation target:** Through better biomass direct utilisation mapping in agro-industries (palm oil, sugar, and pulp and paper), GIZ supported Indonesia in significantly raising the achievement of the biomass direct utilisation target in the National Energy Master Plan (RUEN) from 8% to 94%.
- **Energy efficient airport infrastructure:** The GIZ Energy Programme facilitated the signing of an agreement between EBTKE DEK and PT Pelita Air Service to turn Pondok Cabe Airport into an eco-friendly airport. GIZ will be the dedicated third party to implement the work.

What They Say

Bagus Agung Rahadiansyah,
Senior Vice President
Corporate Finance, PT
Pertamina (Persero)



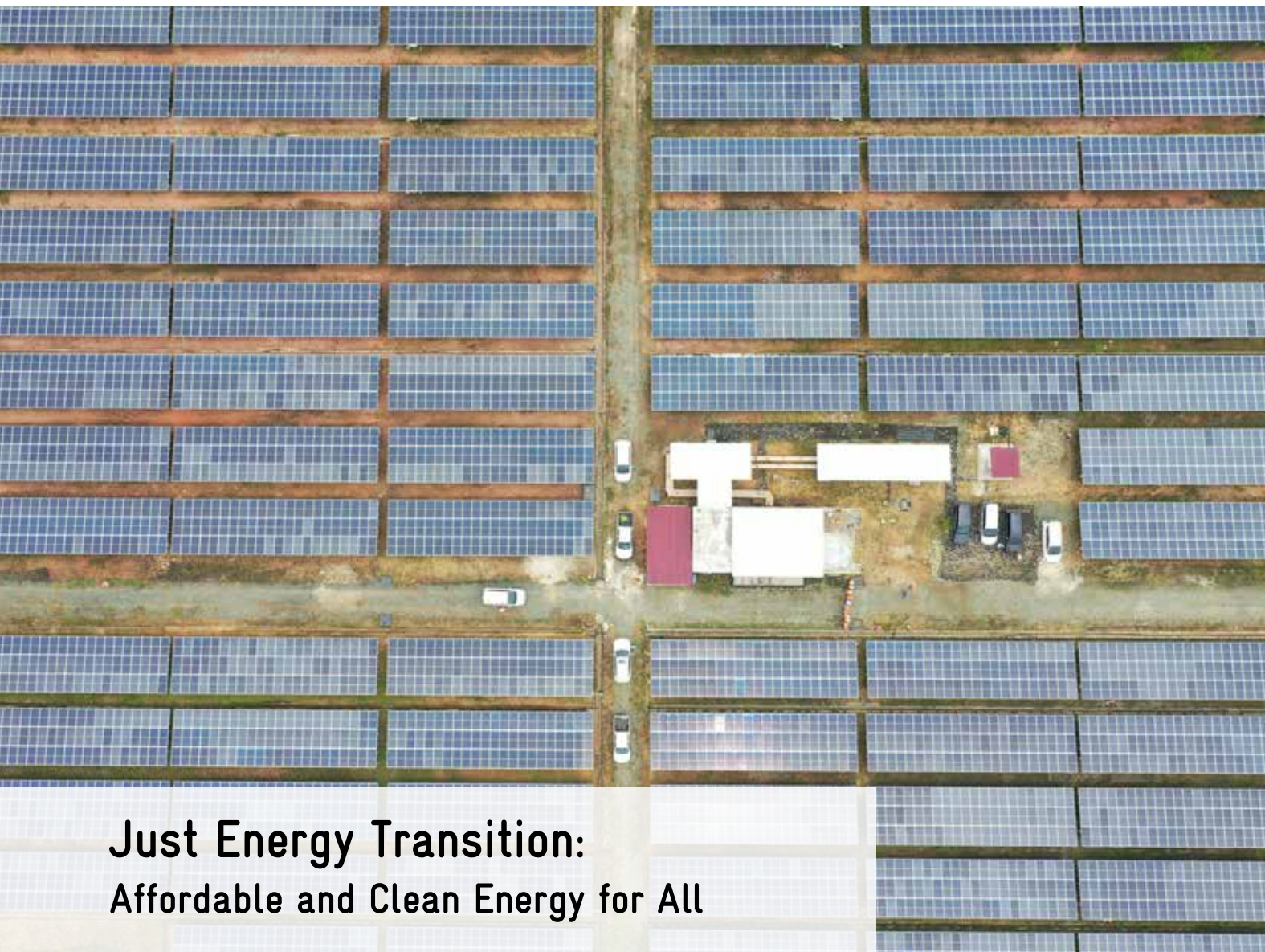
"With the technical support and experience from GIZ, and full commitment from PT PELITA AIR SERVICE, we are optimistic that Pondok Cabe Airport can become a role model for the implementation of green airport technology in Indonesia."

What They Say

Eko Fitrianto, Process
Engineer, PT Tripatra
Engineers and Constructions



"We extend our sincere gratitude to GIZ for their invaluable support in advancing Tripatra's biomethane project. Their expertise has provided critical insights into regulatory frameworks, technical solutions, and the potential of biomethane as a sustainable energy source."



Just Energy Transition: Affordable and Clean Energy for All



GIZ supports national and local partners in moving from fossil fuels toward affordable and clean energy for all, leaving no one behind.

Indonesia targets net-zero emissions in its energy system by 2060 or earlier. This needs both a shift to renewable energy-based infrastructure, and support from the population to achieve it. A just transition approach fosters this support by creating economic diversification in fossil-dependent regions through green and renewables projects, re/up-skilling affected workers, and reducing environmental and social risks associated with energy transition activities.

2024 Highlights

- **Driving green job development for a just energy transition:** GIZ supports local stakeholders by identifying potential employment opportunities to reduce job losses, including in coal transition areas. GIZ drafted national competency standards and implemented energy transition related training for 1,374 people. GIZ also helped establish Renewable Energy Training Centres run by industry associations, and advised the Ministry of National Development Planning (Bappenas) on the integration of the Green Jobs Roadmap into the 2025–2029 National Medium-Term Development Plan (RPJMN).
- **Institutionalising a just transition for coal regions:** GIZ, together with the consortium members and in partnership with provincial governments of major coal mining regions East Kalimantan and South Sumatra, prepared stakeholders for a coal phase down, with affected groups learning about coal transition risks and opportunities. Key just energy transition elements were also integrated into the provincial long-term development plans (RPJPD) for both regions.
- **Regional Consultation Forum for Accelerating Economic Transformation:** GIZ has been supporting coal mining regions for a greener future through a Regional Consultation Forum held in East Kalimantan and formalised in South Sumatra by the respective provincial governments, to accelerate the province's economic transformation toward a green economy.
- **Empowering unions – amplifying workers voices in the coal transition:** In targeted training sessions, labour unions – who play an important role in a fair coal transition – in East Kalimantan and South Sumatra identified 10 key issues on the impacts and opportunities of the coal transition, to be shared in regional consultation forums and integrated into collective bargaining negotiations.
- **Unlocking biomethane – driving economic diversification in coal regions:** Coal mining regions in Sumatra and Kalimantan possess significant biomethane potential, using waste materials from palm oil plantations and processing as potential regional economic diversification. A series of focus group discussions were held promoting biomethane business models for 21 potential projects in the target regions. These projects could create 378 green jobs, and EUR 6.76 million annually for the local economy.

What They Say

Dedi Rustandi, Coordinator,
Directorate of Energy,
Mineral, and Mining
Resources, Ministry of
National Development Planning



"The IKI JET [Innovation Regions for a Just Energy Transition] project serves as a tool for Bappenas to explore regional innovations and develop targeted policy recommendations at the local level. It acts as a policy incubator that can be adapted and implemented at the national level. Once all regional institutions are strengthened, piloting phases can be conducted as follow-up actions to support economic transition and diversification."

What They Say

Mohd Amran Mohd Yusuf,
Chief Operation Officer
(COO), PT reNIKOLA Primer
Energi



"The FGD [focus group discussion] on biomethane organised by GIZ has been instrumental in advancing our efforts to utilise biomethane. It served as a valuable platform for business matching, connecting palm oil mills with potential POME [palm oil mill effluent] suppliers, project developers, and off-takers. This collaboration is key to unlocking biomethane's potential and addressing challenges in funding, market access, and operations."



Sustainable Energy Financing: Attracting Private Investors and Financiers



GIZ supports sustainable energy investments by helping fiscal policy and financial instruments to catalyse private investments for renewable energy and energy efficiency.

A successful energy transition in Indonesia requires the speeding up of investment realisation for clean energy projects. This needs more effective financial instruments to provide public and private financing through de-risking and structuring. A functioning carbon market can further support the investment case for clean energy projects.

2024 Highlights

- **Developing first coal phase out model:** GIZ was trusted by the Ministry of Finance and the inter-ministerial team working on the first coal phase out project (the Cirebon-1 600 MW), to hold discussions and assessments with experts to advise the ministry and PLN on the loan and financing agreement.
- **Sustainable Energy Investment Day:** The first Sustainable Energy Investment Day, part of the Indonesia Sustainable Energy Week (ISEW) 2024, brought together project owners and financiers to speed up the implementation of clean energy projects. It was organised in collaboration with the Investment Committee of the Directorate General of New Renewable Energy and Conservation under the Ministry of Energy and Mineral Resources, and Ministry of National Development Planning (Bappenas).
- **Indonesia Sustainability Forum 2024:** GIZ supported the Ministry of Energy and Mineral Resources (MEMR) and Bappenas in holding the Indonesia Sustainability Forum (ISF) 2024, a high level dialogue session that bridged cross-sectoral collaboration between Indonesia's Deputy for Infrastructure, Bappenas and the Director General Electricity, New and Renewable Energy and Energy Conservation at MEMR with private sector CEOs, the Indonesian Chamber of Commerce and Industry (KADIN), and academia to address priorities, issues, and challenges for the energy transition.
- **Energy Transition Country Platform for clean energy financing:** GIZ supported the Ministry of Finance in preparing the regulatory framework for public finance to be used for energy transition, and setting up the Energy Transition Country Platform and its Secretariat as the institutional framework. The aim is to speed up the energy transition through blended finance from public and private funds for the early phase out of coal fired power plants and accelerate renewable energy project development.
- **Energy subsidy reform to favour renewable energy investments:** GIZ supported the Ministry of Finance in arranging discussions with experts on fossil-fuel subsidies (RON 90), as subsidies negatively impact the environment and hinder the attractiveness of renewable energy investment.
- **Introduction of carbon pricing to improve renewable energy investment:** GIZ helped the Fiscal Policy Agency in drafting the Carbon Tax roadmap, and worked with the Directorate General of Taxation in creating a regulatory framework to launch the Carbon Tax.
- **Annual International Forum on Economic Development and Public Policy (AIFED):** GIZ assisted the Ministry of Finance in holding the AIFED in December 2024. The outcomes will form the basis for annual state budget development, which for the first time includes green budgeting/allocation.
- **Co-chair of Coalition of Finance Ministries for Climate Action:** GIZ worked with Indonesia's Minister of Finance Sri Mulyani Indrawati as co-chair of the coalition for 2021-2025, which brings together fiscal and economic policymakers from 90 countries in leading global climate response to secure a just transition for low-carbon resilient development.

What They Say

Febrio Kacaribu, PhD, Chair of Fiscal Policy Agency (BKF), Ministry of Finance



"GIZ is a trustworthy and supportive partner that is always very responsive in catering to our needs and does their best to leverage our partnership. BKF has a strong collaboration with GIZ in strengthening fiscal policy supporting the energy transition."

What They Say

Wahid Sutopo, President Director of Indonesia Infrastructure Guarantee Facility/PT PII



"Indonesia has significant potential for clean energy development, but investment realisation is impeded by a multitude of challenges. PT PII, in strategic partnership with GIZ, is actively pursuing collaborative efforts to address this critical problem."

Energy Transition in 2024 | At a Glance

Work Areas

Industry Decarbonisation

- 1 Indonesia (national level)

Power System Transformation

- 2 Sulawesi
- 3 East Nusa Tenggara
- 4 Bangka-Belitung
- 5 Surabaya
- 6 Batam

Island Energy Solutions

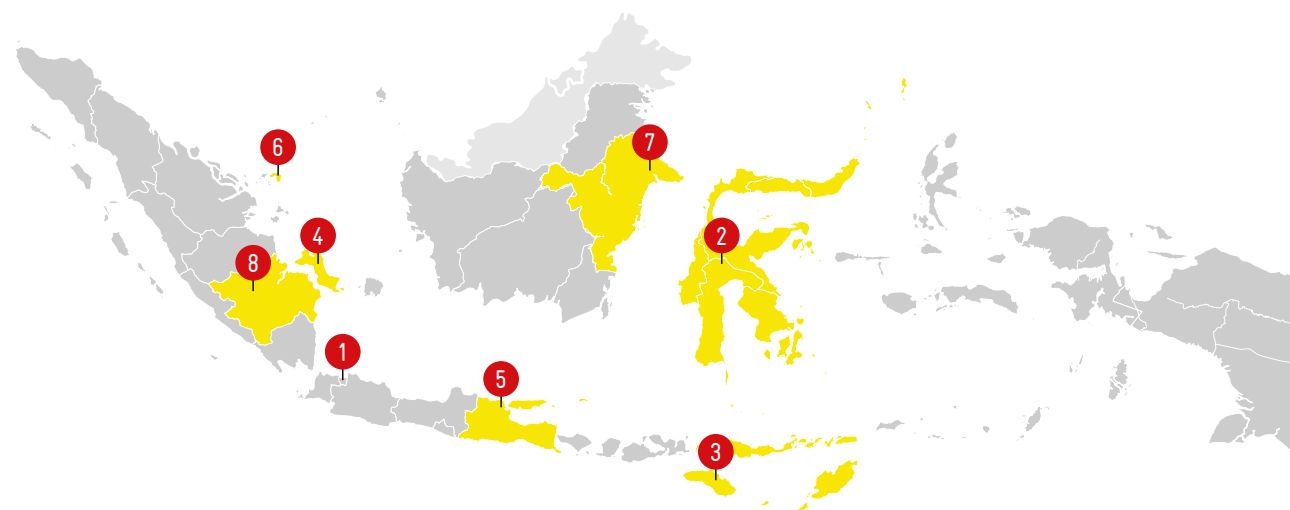
Indonesia, Africa, Asian and the Pacific

Just Energy Transition

- 7 East Kalimantan
- 8 South Sumatera

Sustainable Energy Financing

- 1 Indonesia (national level)



Our Commissioning Parties and Clients in 2024

Our work on a bilateral, regional and global level in the area of Energy Transition was implemented on behalf of the following commissioning parties jointly with our Indonesian government partners:



Achieving the SDGs: Energy Transition

We are committed to support our partners in achieving the Sustainable Development Goals. Our work contributes to the following SDGs:



Consortium Partners



Active Cooperation with Other donors



In Coordination with



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GIZ Indonesia and ASEAN Annual Reports 2024

Read more about our work in 2024 in the following reports:



Introduction to GIZ Indonesia and ASEAN Annual Report



ASEAN



Energy Transition



Resilient Nature



Urban Development



Digital Transformation



Green Jobs and Vocational Education and Training

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

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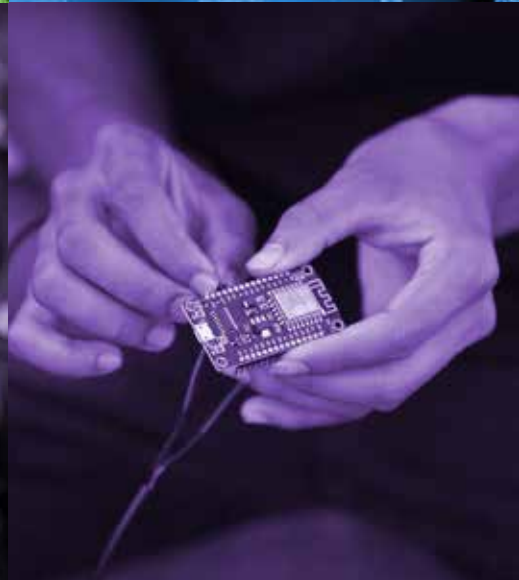
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