

PV energy storage cost breakdown in Indonesia 2025





Overview

In order to explore the incentives faced by investors in Solar PV in Indonesia, we have constructed a simple tool which calculates the cash flow of a typical project, and then computes internal rate of return (IRR), payback period (PBP), levelised cost of electricity (LCOE) and return on investment.

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The technology's quick development time and declining costs could enable Indonesia to meet its 23% renewable energy target by 2025 target, while keeping electricity affordable and reliable. Indonesia has sufficient solar resources to achieve this. This report outlines how solar can contribute to.

Jakarta, October 15, 2024 – The Institute for Essential Services Reform (IESR), a leading energy and environment think tank, has released two new studies on solar energy development and an assessment of energy storage systems in Indonesia. The Indonesia Solar Energy Outlook (ISEO) 2025 report.

In Indonesia, electricity generation within the Solar Energy market is projected to reach 179.37m kWh in 2025. The sector is anticipated to experience an annual growth rate of 1.83% during the period from 2025 to 2029 (CAGR 2025-2029). Indonesia is increasingly prioritizing solar energy investments.

The new initiative features plans for 80 GW of 1 MW solar minigrids with accompanying battery energy storage, to be deployed across 80,000 villages, alongside 20 GW of centralized solar power plants. The role of solar PV in Indonesia will extend beyond replacing coal-based electricity generation;

Industry Insider: What's Hot at Solartech Indonesia 2025?

The upcoming Battery & Energy Storage Indonesia expo [6] expects 1,000+ exhibitors showcasing: Navigating Indonesia's energy sector requires more finesse than a becak driver in Jakarta traffic: East Nusa Tenggara's microgrid



systems now.

Indonesia Solar Energy Outlook 2025 highlights the crucial role of solar power in improving Indonesia's energy security. The report analyzes how solar PV can help reduce dependence on fossil energy, improve the reliability of electricity supply, and address the challenges of climate change. ISEO. How much does solar PV cost in Indonesia?

The tool calculates an IRR of 16.44%, and a pay-back period of 6 years. IEA estimated that in 2019, Solar PV installations in Indonesia had an LCOE of 80 US\$/MWh. This compares with an IRENA estimate of the worldwide average of 60 US\$/MWh in 2019, falling to 48 US\$/MWh in 2021.

How much solar energy investment in Indonesia has doubled in 2021?

Alvin Putra Siswinugraha, Lead Author of ISEO 2025 and IESR's Electricity and Renewable Energy Analyst, revealed that solar energy investment in Indonesia has doubled, from USD 68 million in 2021 to USD 134 million in 2023.

Is the future of Indonesia's photovoltaic industry reversing?

He further stated that this trend is reversing, and the future of Indonesia's photovoltaic industry looks promising. According to IESR, Indonesia's state electricity company, PLN, plans to increase renewable energy generation by adding 7.9 GW of solar capacity by 2033.

How much does a PV-plus-energy storage system cost in Indonesia?

BNEF estimates the current LCOE of a PV-plus-energy storage (PVS) system in Indonesia is \$113-251/MWh (real 2020) and already cost-competitive against diesel, which can be as pricey as \$200/MWh in remote areas due to high fuel costs. PVS systems are likely to become cost-competitive against new coal and gas plant within the decade.

Will Indonesia add more solar power by 2033?

According to IESR, Indonesia's state electricity company, PLN, plans to increase renewable energy generation by adding 7.9 GW of solar capacity by 2033. Additionally, policy changes from the Ministry of Energy and Mineral Resources are expected to add over 5 GW of rooftop solar capacity within five years.



What is Indonesia's Solar Energy Outlook 2025?

The Indonesia Solar Energy Outlook (ISEO) 2025 report highlights that solar energy growth in Indonesia has been slow compared to the targets outlined in PLN's National Energy General Plan and Electricity Supply Business Plan, with a total installed capacity of 718 MW as of August 2024.



PV energy storage cost breakdown in Indonesia 2025



[U.S. Solar Photovoltaic System and Energy Storage Cost](#)

The National Renewable Energy Laboratory (NREL) facilitates SETO's decisions on R& D investments by publishing benchmark reports that disaggregate photovoltaic (PV) costs and--
...

[Utility-Scale PV , Electricity , 2024 , ATB , NREL](#)

Plant costs are represented with a single estimate per innovation scenario because CAPEX does not correlate well with solar resources. For the 2024 ATB--and based on the NREL PV cost ...



[2022 Grid Energy Storage Technology Cost and ...](#)

Recycling and decommissioning are included as additional costs for Li-ion, redox flow, and lead-acid technologies. The 2020 Cost and Performance Assessment analyzed energy storage systems from 2 to 10 hours. The 2022 Cost and ...



[Battery Energy Storage System \(BESS\) market di Indonesia](#)

Market readiness: Recommendations for developing BESS market Create a subsidy or incentive program for energy storage application



for grid-connected solar PV system Examples in ...

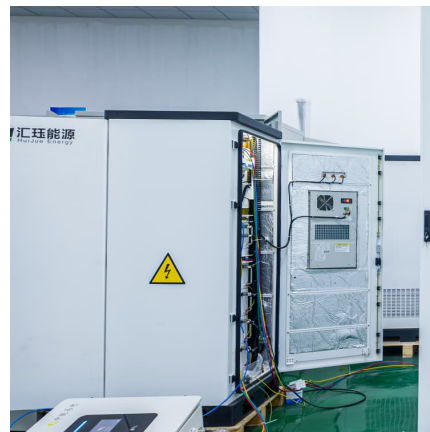


Scaling Up Solar in Indonesia

Released in May 2021, the paper concludes that renewable energy could provide 100% of Indonesia's primary energy by 2050 at lower overall cost than continued reliance on fossil fuels.

Utility-Scale Battery Storage , Electricity , 2023 , ATB

Projected Utility-Scale BESS Costs: Future cost projections for utility-scale BESS are based on a synthesis of cost projections for 4-hour duration systems as described by (Cole and Karmakar, 2023). The share of energy and power ...



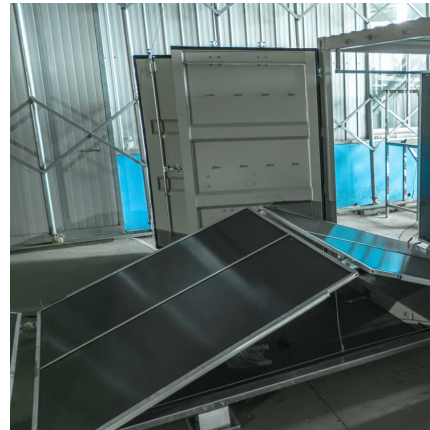
[Clean power tech costs to fall to record lows in 2025](#)

Clean power technology costs for wind, solar and battery technologies are expected to fall further by 2-11% in 2025, reports BloombergNEF.



As PV Market Evolved in the Last Year, Prices Went Up, Prices ...

The National Renewable Energy Laboratory (NREL) has released its annual cost breakdown of installed solar photovoltaic (PV) and battery storage systems. U.S. Solar Photovoltaic System ...



[Indonesia Solar Panel Manufacturing Report, Market](#)

Explore Indonesia solar panel manufacturing landscape through detailed market analysis, production statistics, and industry insights. Comprehensive data on capacity, costs, and growth.

Estimating the cost of producing grid-connected solar PV in ...

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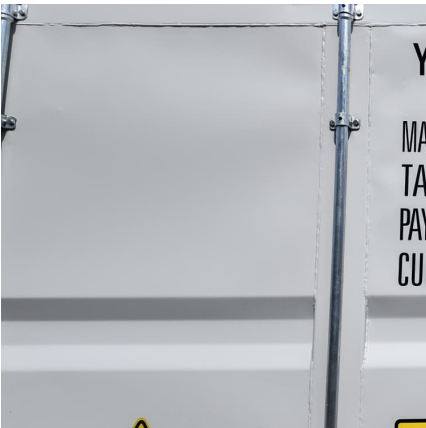
Indonesia ratifies plans for 42.6GW of renewable energy capacity

The Indonesian government has ratified the PLN Electricity Supply Business Plan (RUPTL) 2025-2034, targeting 42.6GW of new renewable energy generation capacity and ...



PV Energy Storage Cost Trends: What You Need to Know in 2025

Let's face it - solar panels without storage are like coffee without a caffeine kick. The real magic happens when photovoltaic (PV) systems team up with energy storage. In ...



[Indonesia - pv magazine International](#)

A recent study explores, through various scenarios, the cost-competitiveness of solar PV-based electrification in supporting Indonesia's renewable energy transition.

Solar energy to drive Indonesia's transition away from coal, biofuels

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[Solar Levelized Cost of Energy Projection in Indonesia](#)

This study seeks to identify a cost-effective pathway to increase the capacity of utility-scale solar PV in Indonesia through supportive policies that ensure equitable cost distribution between

[Solar-Plus-Storage Analysis , Solar Market Research ...](#)

Solar-Plus-Storage Analysis For solar-plus-storage--the pairing of solar photovoltaic (PV) and energy storage technologies--NREL researchers study and quantify the unique economic and grid benefits reaped by distributed ...



[Figure 1. Recent & projected costs of key grid](#)

V, the storage capital cost would be lower: \$187/kWh in 2020, \$122/kWh in 2025, and \$92/kWh in 2030. The tariff adder for a co-located battery system storing 25% of PV ...

[Solar Technology Cost Analysis , Solar Market ...](#)

Solar Technology Cost Analysis NREL's solar technology cost analysis examines the technology costs and supply chain issues for solar photovoltaic (PV) technologies. This work informs research and development ...



Solar Energy

This growth is driven by a combination of factors, including falling costs of renewable energy technologies, increasing demand for clean energy sources, supportive policies and regulations,



Government releases bottom-up solar pricing tool - pv ...

The U.S. Department of Energy's latest solar cost model shows that residential solar prices are up, commercial solar is getting cheaper and utility-scale pricing remains flat. The addition of batteries increases costs by \$1.75/W ...



[Indonesia's installed solar capacity surpasses 700 MW](#)

This scheme is projected to increase the installed energy storage capacity in Indonesia by up to 1,000 times, with a total capacity expected to reach 33.7 GWh by 2030."





Utility-Scale Battery Storage , Electricity , 2023 , ATB , NREL

Projected Utility-Scale BESS Costs: Future cost projections for utility-scale BESS are based on a synthesis of cost projections for 4-hour duration systems as described by (Cole and Karmakar, ...



Photovoltaic Energy Storage in Indonesia: Powering the ...

Yet Indonesia still relies on coal for 60% of its electricity. Talk about leaving money (and sunlight) on the table! The archipelago's photovoltaic energy storage sector isn't ...

Scaling Up Solar in Indonesia

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[Indonesia ratifies plans for 42.6GW of renewable ...](#)

The Indonesian government has ratified the PLN Electricity Supply Business Plan (RUPTL) 2025-2034, targeting 42.6GW of new renewable energy generation capacity and 10.3GW of energy storage.



U.S. government releases bottom-up solar pricing tool ...

The U.S. Department of Energy's latest solar cost model shows that residential solar prices are up, commercial solar is getting cheaper and utility-scale pricing remains flat. The addition of



Fall 2024 Solar Industry Update

The United States installed approximately 14.1 GWh (4.3 GWac) of energy storage onto the electric grid in Q1/Q2 2024--its largest first half on record. Though thin-film PV represented ...

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