Extended Annual Review Report

Classification: Public
Project Number: 51209-002
Loan Numbers: 3653, 3654, 3655, and 3656
June 2023

Special Purpose Vehicles owned by Vena Energy
Eastern Indonesia Renewable Energy Project (Phase 2)
(Indonesia)

This is a redacted version of the document, which excludes information that is subject to exceptions to disclosure set forth in ADB's Access to Information Policy.

Asian Development Bank

CURRENCY EQUIVALENTS

Currency unit – rupiah (Rp)

		At Appraisal (19 February 2018)	At Operations Evaluation (31 December 2022)
Rp1.00	=	$0.000074	$0.000064
$1.00	=	Rp13,538	Rp15,568

ABBREVIATIONS

ADB	–	Asian Development Bank
AMDAL	–	Analisis Mengenai Dampak Lingkungan
ANDAL	–	Analisis Dampak Lingkungan Hidup
CFPS II	–	Canadian Climate Fund for the Private Sector in Asia II
CO_2	–	carbon dioxide
COD	–	commercial operations date
COVID-19	–	coronavirus disease
EHS	–	environment, health, and safety
EIRR	–	economic internal rate of return
EPC	–	engineering, procurement, and construction
ESHS	–	environmental, social, health, and safety
FIRR	–	financial internal rate of return
GDP	–	gross domestic product
ITA	–	PT Infrastruktur Terbarukan Adhiguna
ITB	–	PT Infrastruktur Terbarukan Buana
ITC	–	PT Infrastruktur Terbarukan Cemerlang
ITL	–	PT Infrastruktur Terbarukan Lestari
ITM	–	PT Infrastruktur Terbarukan Mandiri
JICA	–	Japan International Cooperation Agency
LEAP	–	Leading Asia's Private Sector Infrastructure Fund
O&M	–	operations and maintenance
PLN	–	PT Perusahaan Listrik Negara
PPA	–	power purchase agreement
PT	–	Perseroan Terbatas
RRP	–	report and recommendation of the President
S&P	–	Standard & Poor's
SPV	–	special purpose vehicle
WACC	–	weighted average cost of capital

WEIGHTS AND MEASURES

GW	–	gigawatt
GWh	–	gigawatt-hour
km	–	kilometer
kV	–	kilovolt
kWh	–	kilowatt-hour
MW	–	megawatt
MWh	–	megawatt-hour

NOTE

In this report, "$" refers to United States dollars.

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CONTENTS

BASIC DATA
Eastern Indonesia Renewable Energy Project (Phase 2)
(LN3653, LN3654, LN3655, and LN3656-INO)

Key Project Data	As per ADB Loan Documents ($ million)	Actual ($ million)
Total Debt	**40.17**	**40.17**

Key Dates	Expected	Actual
Concept Clearance Approval		5 September 2017
Credit Committee Meeting		12 March 2018
Board Approval		11 April 2018
Loan Agreement		19 April 2018
First Disbursement		24 May 2018

Project Administration and Monitoring	Number of Missions	Number of Person-Days
Due Diligence and Appraisal	2	18
Project Administration	2	5
Extended Annual Review Report Mission	1	15

EXECUTIVE SUMMARY

On 11 April 2018, the Asian Development Bank (ADB) approved a 20-year loan of $12.49 million from ADB's ordinary capital resources for the development and construction of four solar power plants in Lombok and North Sulawesi, with a combined capacity of 42 megawatts (MW_p). ADB was the sole lead arranger, not only providing the ordinary capital resources loan but also administering $5.78 million from Leading Asia's Private Sector Infrastructure Fund (LEAP) and $21.9 million from Canadian Climate Fund for the Private Sector in Asia II (CFPS II). Under a 20-year power purchase agreement (PPA) with Perseroan Terbatas (PT) Perusahaan Listrik Negara (PLN), the project is among the first utility-scale solar independent power producers in Indonesia.

ADB's objective in financing the project was to demonstrate the viability of utility-scale solar projects in Indonesia. At the project development stage, few utility-scale solar projects had been financed in Indonesia, because their development was constrained by issues such as (i) limited solar resource data; (ii) high first-mover cost and risk involved in implementing a utility-scale solar project; and (iii) the inadequate availability of long-term debt finance, unclear regulatory framework and support, and issues with land entitlement policy. The successful implementation of the project was meant to overcome these barriers and lead to significant replication potential. The successful implementation also further validated a proof of concept and demonstrated a positive effect for the sponsor, Vena Energy, a regional private sector renewable energy developer that was entering Indonesia for the first time.

The project's development results are rated *satisfactory.* The project successfully demonstrated that utility-scale solar can be financially sustainable in Indonesia given the right site, technology selection, contractual structure, and strong counterparties. The project's implementation fit well with the priorities of the Government of Indonesia and ADB's mandate to support a transition toward clean energy sources. The project's success in gender initiatives was featured in a number of videos published online by ADB, with themes of renewable energy investments helping rural women, creating jobs for Lombok's women, and tackling climate change and gender equality with Canadian cofinancing. These materials were also showcased in the Embassy of Canada's social media campaign on climate in November 2022.

The review rates the project's contributions to private sector development and ADB's strategic objectives *satisfactory*. The project met most of its quantitative design and monitoring framework targets, including targets for annual electricity generation, greenhouse gas reduction, job creation, local procurement, and women's economic empowerment. Importantly, the participation of concessional financing helped the sponsor bridge the financing gap in the relatively low-tariff environment in Indonesia and bring the project to the market.

The project's environmental, social, health, and safety (ESHS) performance is rated *satisfactory*. The project met ADB's environmental and social requirements, including labor standards and applicable national laws and regulations. The project carried out and consistently reported on ESHS mitigating measures. The project has an existing environmental and social management system and grievance redress mechanism that is expected to continue to be operationalized throughout its implementation. There are recommended measures to enhance ESHS performance.

The project represents a good example of corporate citizenship since it benefits local communities through initiatives on education and entrepreneurship programs, particularly involving women's groups. The successful implementation of the entrepreneurship projects (including businesses in

banana chips in Likupang and Pringgabaya, casava chips in Selong, and hydroponic farming in Sengkol) is evident in increased livelihood incomes and reinvestments to expand operations, providing a template for other local communities to replicate similar businesses. As a testament to its contribution, Vena Energy was awarded the 2021 HR Asia Best Companies to Work For in Asia for the Indonesia region and the 2022 Indonesia Green and Sustainable Award.

ADB additionality is rated *excellent.* ADB provided a substantial financing package with a longer repayment profile and mobilized concessional financing for this project. ADB's presence and stamp of approval also enabled direct negotiation with the off-taker, which is particularly important for a sponsor entering a new market. These factors enabled the successful financing and successful completion of the project, which in turn demonstrated a positive effect for the country's nascent renewable energy sector and played a pivotal role in building a critical mass of first-generation renewable projects in Indonesia. Significantly, the considerably enhanced safeguards standards to meet ADB's requirements also helped the project obtain Gold Standard Certification in 2020.

ADB investment profitability is rated *satisfactory*. The interest margin charged for the ADB loan was approved by the Investment Committee and deemed appropriate for the risks being undertaken. The project has been making timely principal and interest payments, and based on the updated projections, the project is expected to meet its debt obligations on time until final maturity.

ADB's overall work quality is rated *satisfactory*. The Private Sector Operations Department followed the progress of this project from an early stage of development and arranged the financing package in a timely manner, while ensuring adequate diligence. As the sole lender, ADB, through its deal team, works closely with and has timely supported the project's waiver, amendment, consent, and transfer requests.

The project offers several lessons for ADB projects aimed at scaling up renewable energy adoption in Asian countries. The project demonstrated that successful project implementation heavily relies on sponsors' strength, experience, and ability to understand the regulatory environment. It is imperative to incorporate forward-looking, looming regulatory changes in financing documents at the structuring phase. Finally, it is also highly advisable that the project works closely with the off-taker in advance to explicitly define key terms under PPAs.

I. THE PROJECT

A. Project Background

1. In 2015, the Government of Indonesia introduced a series of fast-track programs to accelerate the development of 35 gigawatts (GW) of additional power capacity by 2019. This was needed to fulfill an estimated 8.5%–8.7% electricity demand growth per year during 2015–2019.[1] In early 2017, the government subsequently adjusted the target completion dates and capacities under this program to 29 GW by the end of 2019 and 35 GW by the end of 2021.[2] The government also encouraged the greening of the generation mix with a goal of increasing the share of renewable energy from 12% in 2013 to 23% in 2025.[3] This also contributed to curbing greenhouse gas emissions, with a target of 29% from 2010 to 2030.[4]

2. The Ministry of Energy and Mineral Resources planned to increase solar capacity by 6.4 GW from 2013 by 2025. Indonesia was estimated to have 532.6 GW of solar power potential as of 2016, of which only 12.9 megawatts (MW) of solar power (less than 0.003% of the country's total potential) had been developed.[5]

3. Simultaneously, in January 2017, the government issued a new regulation to set renewable energy tariffs compared to the price of the local and national grid price in order to bring down the cost of electricity generation. As a result, power purchase agreements (PPAs) for wind and solar projects signed after 2017 would be subject to a tariff cap. Against this backdrop, Vena Energy asked the Asian Development Bank (ADB) to catalyze funding for one of the first utility-scale commercial solar projects in Indonesia. Vena Energy is a Singapore-based independent power producer ("IPP") and leading renewable energy company in the Asia Pacific region, with 6GW of Operational, Construction and Contracted ("OCC") portfolio across the region and a further 37GW of development pipeline. Vena Energy was founded in 2012 and became a portfolio company of Global Infrastructure Partners ("GIP") in 2018. GIP is a leading global infrastructure fund headquartered in New York. The acquisition of Vena Energy by GIP was already contemplated at the report and recommendation of the President (RRP) stage. ADB considered Vena Energy to have strong internal resources further supported by external experts, ample experience in the renewable sector, and good understanding of the regulatory environment governing such projects in Indonesia.

B. Key Project Features

4. **Project overview.** The overall two-phased project involves the construction, operation, and maintenance of (i) a 72 MW wind power plant in South Sulawesi, which ADB financed as phase 1; and (ii) 42 MW_p solar projects in North Sulawesi and West Nusa Tenggara, which ADB financed as phase 2. Phase 2 comprised (i) three 7 MW_p solar photovoltaic facilities in Lombok, West Nusa Tenggara, under Perseroan Terbatas (PT) Infrastruktur Terbarukan Adhiguna (ITA),

[1] Enerdata. 2015. Indonesia Releases its 35 GW Power Capacity Addition Plan.
[2] Government of Indonesia, Ministry of Energy and Mineral Resources. 2017. *Pengesahan Rencana Usaha Penyediaan Tenaga Listrik: PT Perusahaan Listrik Negara (Persero) Tahun 2017 s.d. 2026.* Decree No. 1415 K/20/MEM/2017. Jakarta (Rencana Usaha Penyediaan Tenaga Listrik, 2017–2026).
[3] P. Thakaran. 2015. Summary of Indonesia's Energy Sector Assessment. *ADB Papers on Indonesia*. No. 9. Manila.
[4] Government of Indonesia. 2015. *Intended Nationally Determined Contribution.* Jakarta.
[5] Government of Indonesia, Ministry of Energy and Mineral Resources. 2016. *Mainstreaming Renewable Energy and Energy Conservation.* Paper presented at the SIEP Policy Coordination Team Kick-Off Workshop. Jakarta. 3 August. Quoted in ADB. 2017. *Report and Recommendation of the President to the Board of Directors: Proposed Results-Based Loan to Perusahaan Listrik Negara for the Sustainable Energy Access in Eastern Indonesia—Electricity Grid Development Program (Guaranteed by the Republic of Indonesia).* Manila.

PT Infrastruktur Terbarukan Buana (ITB), and PT Infrastruktur Terbarukan Cemerlang (ITC); and (ii) one 21 MW_p solar photovoltaic facility in Likupang, North Sulawesi under PT Infrastruktur Terbarukan Lestari (ITL). Together, the Lombok subprojects and the Likupang subproject are referred to as the special purpose vehicle (SPV) companies. The project also constructed 20 kilovolt (kV) interconnection transmission lines for all SPV companies, which were transferred to the national power utility PT Perusahaan Listrik Negara (PLN) upon construction completion.

5. **Sponsors.** Vena Energy is a Singapore-based independent power producer (“IPP”) and leading renewable energy company in the Asia Pacific region, with 6 GW of Operational, Construction and Contracted ("OCC") portfolio across the region and a further 37 GW of development pipeline. Vena Energy was founded in 2012 and became a portfolio company of Global Infrastructure Partners ("GIP") in 2018. GIP is a leading global infrastructure fund headquartered in New York. The acquisition of Vena Energy by GIP was already contemplated at the report and recommendation of the President (RRP) stage.

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C. Progress Highlights

6. ADB’s Board of Directors approved the project on 11 April 2018, and the facility agreement was signed on 19 April 2018. In January 2018, Vena Energy was acquired by GIP and became its portfolio company. The prior management team of Vena Energy has remained intact to date. The acquisition was already contemplated at the RRP phase, subject to regulatory approval that was previously envisaged in the first quarter of 2018.

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7. The first loan drawdown was made on 24 May 2018 and the last on 27 December 2018.

8. PLN revenue payments began in September 2019 for the Lombok subprojects and February 2020 for the Likupang subproject.

9. Project completion was achieved on 20 May 2021.The project’s operation and financial performance in 2019–2021 is broadly in line with forecasts stipulated in the RRP.

10. No project specific coronavirus disease (COVID-19) impact has been reported.

II. EVALUATION

A. Project Rationale and Objectives

11. Indonesia, with 532.6 GW of potential solar power resources, was able to develop only 12.9 MW of solar power generation (less than 0.003% of the country’s total potential) as of 2016. Solar power generation requires high up-front capital costs but minimal operating costs and no fuel expense. High risks associated with the uncertainties of climate, land acquisition, acquisition of rights of way, renewable energy tariffs, and receivable collection from the off-taker have discouraged private investors. ADB gained comfort in this one of the first utility-scale commercial solar projects based on the strength and the experience of the sponsor. The project also further broadened the exposure of ADB’s Private Sector Operations Department to the Indonesian energy sector, which has historically concentrated in geothermal generation and gas-related infrastructure projects.

12. The project rationale was consistent with the government's initiatives and ADB's strategies.

(i) **Increased power capacity and mitigate climate change.** The project contributed to (i) the objectives of Indonesia's National Energy Policy (2014)[6], (ii) the 2015 commitment to the Paris Agreement under the United Nations Framework Convention on Climate Change to reduce emission reduction unconditionally to 29% and conditionally to 41% by 2030, and (iii) the Rencana Usaha Penyediaan Tenaga Listrik, 2017–2026 PLN project pipeline for North Sulawesi and Lombok.[7] On an annual basis, the project provides an estimated 61 GWh of solar power and a net reduction in carbon dioxide (CO_2) emissions equivalent to 41,400 tons.

(ii) **ADB's strategies.** The project was consistent with ADB's Midterm Review of Strategy 2020, underlining its assistance in clean energy, and country partnership strategy for Indonesia, 2016–2019 in supporting the expansion of infrastructure and environment-friendly technologies for clean energy generation.[8]

(iii) **ADB's sector strategy and operations.** The project was strongly aligned with ADB's Energy Policy 2009 focusing on renewable energy projects, complemented ADB's assistance program to the Ministry of Energy and Mineral Resources and PLN for policy-based lending and direct investments, and supported ADB's loan facility to strengthen and expand the power distribution network in Eastern Indonesia.[9]

B. Development Results

1. Contributions to Private Sector Development and ADB's Strategic Development Objectives

13. The results and ratings for project contributions to private sector development and ADB's strategic development objectives are in Appendix 2.

14. The project's overall contribution to private sector development and ADB's strategic development objectives is rated *satisfactory*. Most of the outcome and outputs stipulated in the design and monitoring framework have been met. More specifically, the 2021 annual output and emissions avoidance are broadly in line with the RRP's targets of 61 GWh and 41,400 tons of CO_2 by the end of 2022.[10] The project provided jobs during construction (exceeding the target of

[6] Enerdata. 2015. *Indonesia Releases its 35 GW Power Capacity Addition Plan.* Grenoble. https://www.enerdata.net/publications/daily-energy-news/indonesia-releases-its-35-gw-power-capacity-addition-plan.html

[7] See footnote [2]; and United Nations Framework Convention on Climate Change. 2015. Intended Nationally Determined Contribution: Republic of Indonesia.
ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific.* Manila; and ADB. 2016. *Country Partnership Strategy: Indonesia, 2016–2019: Towards a Higher, More Inclusive and Sustainable Growth Path.* Manila.

[9] ADB. 2009. *Energy Policy.* Manila; ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Programmatic Approach and Policy-Based Loans for Subprogram 1 to the Republic of Indonesia for the Sustainable and Inclusive Energy Program.* Manila; and ADB. 2017. *Report and Recommendation of the President to the Board of Directors: Proposed Results-Based Loan to Perusahaan Listrik Negara for the Sustainable Energy Access in Eastern Indonesia—Electricity Grid Development Program (Guaranteed by the Republic of Indonesia)*. Manila.

[10] Preliminary 2022 annual operational reports indicated higher than the design and monitoring framework target of 61 GWh. CO_2 emissions avoidance is partially reported better than the design and monitoring framework target of 41,400 tons of CO_2.

800) and during the 2021 operational year (exceeding the target of 60). Further, as of the end of 2021, the project reported annual domestic purchases of goods and services during the operational stage, which are substantially above the RRP target of $1.5 million.

15. The project was cofinanced by the concessional tranche CFPS II, administered by ADB. CFPS II participated in the financing because the project supports the government's objective of accelerating and expanding private sector investment in clean energy infrastructure. The CFPS II concessional loan was instrumental in helping the sponsor bridge the financing gap in the relatively low-tariff environment in Indonesia and bring the project to the market. The project's success in gender initiatives was featured in a number of videos produced and published online by ADB, with themes of renewal energy investments helping rural women, creating jobs for Lombok's women, and tackling climate change and gender equality through Canadian cofinancing. These materials were also showcased in the Embassy of Canada's social media campaign on climate in November 2022.

16. The project is categorized *some gender elements (SGE)*, with five gender performance indicators integrated in the design and monitoring framework, aimed at promoting gender equality, specifically under the pillar on women's economic empowerment, by creating employment opportunities for women, including through solar technical training, technical support to women entrepreneur groups, and a women's empowerment program. The project fully achieved four gender targets and partially met the remaining one, demonstrating best efforts to achieve them with the implementation of complementary activities.

(i) The project achieved the target of jobs during operations.
(ii) The project met the target of at least 30 jobs for women out of the 800 jobs during construction.
(iii) The project delivered the intended annual capacity-building training on renewable energy and entrepreneurial skills targeting women entrepreneurs. The training programs included a certification course for solar farm operators and technicians; a course on entrepreneurship, small business accounting, food handling, and marketing for the Jeger Buana Lombok Women Entrepreneur Group; and food hygiene, online marketing, and package certification trainings for the Wineru Women Entrepreneur Group.
(iv) The project achieved the target of giving technical support to at least five training participants in starting small businesses. Mostly, the company helped two women entrepreneur groups renovate their food production facility, provided these two groups with water filters and production tools (such as dryer machines and cutting machines), and helped them develop their market penetration.
(v) The project reported a partially achieved target of number of women trained as solar farm operators and technicians employed by the service sector. On this indicator, the company had limited accountability for the recruitment of women by the services sector beyond its own operations: job vacancies in renewable energy remain limited, and barriers persist for women entering the sector. Vena Energy still invested much effort to encourage women to participate in the skills training and to enter the sector. The company put in place initiatives. First, it developed an on-the-job training program, where women received 2-day training on renewable energy and were given an opportunity for a 3-month on-the-job internship. Second, Vena Energy engaged an advisory agency in 2022 to improve training and certification, and minimize the gap between the academic curriculum and industry needs.

2. Environmental, Social, Health, and Safety Performance

17. The project's environmental, social, health, and safety (ESHS) performance is rated *satisfactory*. In compliance with ADB's Safeguard Policy Statement (2009), the project was classified category B for environment, category C for involuntary resettlement, and category C for indigenous peoples. The safeguard categorizations were not amended during processing and remained the same up to project completion. Vena Energy submitted environmental and social impact assessments to complement applicable national laws and regulations and meet ADB Safeguard Policy Statement requirements for category B projects. All four solar farm sites were constructed in modified habitats outside environmentally sensitive areas and in areas where no indigenous peoples communities were present. The land acquisition did not result in physical and economic displacement of landowners and land users. Land was purchased through willing seller-willing buyer transactions with the landowners and consented to by their families. Vena Energy has a corporate environment, health, and safety (EHS) manager and on-site ESHS coordinators to implement environmental and social management plans (ESMPs).

18. Gullying, scouring, and stream flow diversion because of heavy rainfall were noted in several sites. The lender's technical advisor will investigate these issues and design and implement long-term engineering solutions to be reported in the next annual environmental and social monitoring report.[11] Classification of damaged, broken, and end-of-life photovoltaic modules as hazardous waste by the Government of Indonesia will be further clarified.

19. The project has a grievance redress mechanism in place and there are no unresolved ESHS-related grievances from external stakeholders. Vena Energy will continue to implement staff capacity training, engage stakeholders, and update and implement ESMPs throughout the project's 20-year operations stage.

20. The construction and operation of the four solar farms helped generate local jobs, with the majority of the workforce sourced from local communities. The labor policies and practices of Vena Energy and the SPV companies comply with the national labor code and are in accordance with internationally recognized core labor standards. Systems to monitor the labor compliance of contractors are in place. A worker's grievance mechanism has been institutionalized in all subprojects. There were no grievances received from the employees of the SPV companies. Vena Energy and the SPV companies are informed of the contractors' workers' grievances and track the status of resolution. Actions taken by the contractor to close out the outstanding grievances of workers in the Likupang subproject will be reported in the annual environmental and social monitoring report for 2022 and subsequent reports. The project represents a good example of corporate citizenship since it benefits local communities through initiatives on education and entrepreneurship programs, particularly involving women's groups. The successful implementation of entrepreneurship projects (including businesses in banana chips in Likupang and Pringgabaya, casava chips in Selong, and hydroponic farming in Sengkol) is evident in increased livelihood incomes and reinvestments to expand operations, providing a template for other local communities to replicate similar businesses. As a testament to its contribution, Vena Energy was awarded the 2021 HR Asia Best Companies to Work for in Asia for the Indonesia region and the 2022 Indonesia Green and Sustainable Award.

21. Based on the results of the desktop review and site visit, the ESHS performance was rated *satisfactory*. There are no significant outstanding ESHS safeguard compliance issues or claims.

[11] Solutions include the use of geomembrane and concrete-lined secondary stormwater drainage and bio-engineering solutions,

The company is advised to continue submitting annual environmental and social monitoring reports to ADB. Detailed discussion of the project's environmental impact is in Appendix 2 and of the project's social impact is in Appendix 3.

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C. ADB Additionality

22. ADB additionality is rated *excellent*. ADB's involvement mobilized a substantial financing package for a project being developed by a regional private sector renewable energy developer, which was entering a new country to finance one of the first utility-scale solar projects in Indonesia. The successful financing and successful completion of the project validated a proof of concept and demonstrated a positive effect for the country's nascent renewable energy sector that had been struggling for decades largely because of the absence of a transparent regulatory framework and support. ADB's stamp of approval also enabled direct PPA negotiations with PLN in 2016.

23. The longer repayment profile of the ADB loan and ADB-administered LEAP and CFPS II loans, sculpted amortization, and the concessional nature of the CFPS II loans were necessary for the project to mitigate the risk of intermittent renewable energy associated with high upfront capital costs.[12] This in turn also allowed the sponsor to secure long-term financing against a long-term PPA and have a level of certainty on cash flows, particularly critical in the relatively low-tariff environment in Indonesia. Without the longer tenor and affordable CFPS II financing, the project would have accessed limited term loans and high interest rates, increasing the project's financial close risk as well as execution and completion risks.

D. ADB Investment Profitability

24. ADB investment profitability is rated *satisfactory*. The project has been making principal and interest payments on schedule.

E. ADB Work Quality

25. **Screening, appraisal, and structuring.** Screening, appraisal, and structuring is rated *satisfactory*. The project is a follow-on transaction from phase 1, in which ADB provided financing for a 72 MW wind power plant supported by the same sponsor. In September 2017, the project was cleared for due diligence with key issues centered long-term alignment and risk-sharing between sponsors and lenders because of the limited track record of operational solar projects in Indonesia. ADB's Board approved the project in April 2018. Approval conditions to achieve a more balanced sharing of risks and rewards between the sponsor and the lenders included a stricter dividend distribution test and a higher default debt service coverage ratio threshold. The executed facility agreements and accounts agreement reflected these conditions.

26. **Monitoring and supervision.** ADB's performance in monitoring and supervision is rated *satisfactory*. The deal team closely monitored subprojects' operating and financial performance through regular communications and follow-ups on the timely submission of reports, financial statements, and annual operating plans and budgets. The company complied with all reporting requirements in a timely manner. ADB was prompt in providing early feedback and approvals on requests for waivers, consent, and/or amendment of existing agreements, subject to thorough

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review. Since the financial close, the deal team supported the projects' waiver, amendment, consent, and transfer requests and numerous other equity-related requests.

27. ADB's overall work quality is rated *satisfactory*.

F. Overall Evaluation

28. Overall, the project is considered *successful*. Table 1 details the overall assessment.

Table 1: Evaluation Summary

Indicator	Unsatisfactory	Less than Satisfactory	Satisfactory	Excellent
Development Results			✓	
(i) Contributions to private sector development and ADB strategic development objectives			✓	
(ii) Environmental, social, health, and safety performance			✓	
ADB Additionality				✓
ADB Investment Profitability			✓	
ADB Work Quality			✓	
(i) Screening, appraisal, and structuring			✓	
(ii) Monitoring and supervision			✓	
	Unsuccessful	**Less than Successful**	**Successful**	**Highly Successful**
Overall Rating			✓	

ADB = Asian Development Bank.

III. ISSUES, LESSONS, AND RECOMMENDED FOLLOW-UP ACTIONS

A. Issues and Lessons

29. **Matters related to Perusahaan Listrik Negara**. Similar to a lesson drawn from phase 1, a lesson from phase 2 is that it is crucial to follow PPA terms meticulously, not least because any PPA amendments would require signatures from all PLN directors, which is further subject to rigid internal PLN audit processes. For example, it is recommended to achieve COD exactly by the PPA COD date, not sooner nor later. Further, it is highly advisable to explicitly define PPA calculations, mirroring PLN's approach on PPA terms, e.g., having a billing template in Microsoft Excel in addition to already defined and pre-agreed written mechanics. Given certain differences in interpretations of PPA terms, it took much longer than envisaged for the subprojects and PLN to agree on the first invoice.

30. **Engineering, procurement, and construction**. NARI contributed its extensive experience as an EPC and O&M provider for the project and occasionally participated in the project's corporate social responsibility activities to support the local community. This enabled successful completion of the project while ensuring good safety standards (no reported accidents since the COD) and compliance with local employment regulations.

31. Meanwhile, project's involvement is viewed to have improved (i) local EPC capacity-building, including civil engineering and logistics during the construction phase, and (ii) local O&M services during the operational stage. The O&M services were also supported by Vena Energy's Center of Excellence Academy, a venue for knowledge-sharing on lessons learned and trainings on renewal energy development. The project also (i) actively sponsored solar power generation

training for university and vocational schools' students on-the-job training, and (ii) invited students and lecturers to visit the site to promote renewable energy. Another key lesson learned for future projects is to involve technicians and operation staff, who know how to operate and manage during operations phase, well in advance during the construction phase to alleviate any technical issues early on.

32. **Gender indicators in the design and monitoring framework**. During project implementation, the formulation of the gender indicators led to misinterpretation of the reporting data. In response, ADB enhanced its client support to improve the quality of reporting against the targets. Also, some of the project's gender indicators, especially on the employment of trained women, were designed beyond the company's scope of influence. Even so, the company was able to demonstrate proactive promotion of gender equality, developed training on renewable energy, and provided on-the-job opportunities to increase women's practical knowledge on O&M of solar farms.

B. Recommendations and Follow-Up Actions

33. The project demonstrated that successful project implementation heavily relies on sponsors' strength, experience, and ability to understand the regulatory environment. ADB should closely monitor how the evolving regulatory environment will impact the project's operations.

SECTOR REVIEW

A. Macroeconomy

1. For the first time since the economic crisis in 1997–1998, Indonesia's economic growth experienced a contraction of 2.07% in 2020 compared to the previous year. Almost all sectors were affected, with transportation and warehousing business sectors experiencing the worst contraction. The implementation of various policies and stimulus from the government for handling the coronavirus disease (COVID-19) pandemic had a positive impact on the Indonesian economy. Indonesia's economic growth in 2021 reached 3.69%, much better than the 2.07% contraction in 2020. The main catalysts for improving Indonesia's gross domestic product (GDP) in 2021 were the significant increase in exports of goods, which grew by 26.42%, and the investment realization as indicated by the increase in gross domestic fixed capital formation by 3.80%. The growth of these two economic indicators was higher than the 2.28% increase in consumption. Despite the economic growth, the impact of the pandemic posted relatively low inflation in 2021, at 1.87% compared to 1.68% in 2020, in line with the weak demand. The rupiah exchange rate was maintained, supported by the resilience of Indonesia's external sector and Bank Indonesia's stabilization measures, amid increasing uncertainty in global financial markets.

Table A1.1: Indonesia Country Economic Indicators

	2017	2018	2019	2020	2021
A. Income and Growth					
1. GDP per capita ($, current)	3,878	3,933	4,175	3,905	4,356
2. GDP growth (%, in constant prices)	5.1	5.2	5.0	(2.1)	3.7
a. Agriculture	3.9	3.9	3.6	1.8	1.9
b. Industry	4.1	4.3	3.8	(2.9)	3.4
c. Services	5.7	5.8	6.4	(1.4)	3.5
B. Saving and Investment (current and market prices, % of GDP)					
1. Gross domestic investment	33.7	34.6	33.8	32.4	31.5
2. Gross national saving	32.1	31.6	31.1	32.0	31.8
C. Money and Inflation (annual % change)					
1. Consumer price index (average)	3.8	3.3	2.8	2.0	1.6
2. Total liquidity (M2)	8.3	6.3	6.5	12.5	13.9
D. Government Finance (% of GDP)					
1. Revenue and grants	12.3	13.1	12.4	10.7	11.8
2. Expenditure and onlending	14.8	14.9	14.6	16.8	16.4
3. Overall fiscal surplus (deficit)	(2.5)	(1.8)	(2.2)	(6.1)	(4.6)
E. Balance of Payments					
1. Merchandise trade balance (% of GDP)	1.9	0.0	0.3	2.7	3.7
2. Current account balance (% of GDP)	(1.6)	(2.9)	(2.7)	(0.4)	0.3
3. Merchandise exports ($) (% change)	16.9	7.0	(6.8)	(3.0)	42.5
4. Merchandise imports ($) (% change)	16.2	20.6	(8.8)	(18.1)	39.9
F. External Payments Indicators					
1. Gross official reserves ($ billion)	130.2	120.7	129.2	135.9	144.9
(in months of imports of goods and official debt repayment)	8.3	6.4	7.3	9.8	7.8
2. External debt service (% of exports of goods and services)	25.6	25.1	27.1	27.8	26.1
3. Total external debt (% of GDP)	34.7	36.0	36.1	39.4	35.0
G. Memorandum Items					
1. GDP (current prices, Rp trillion)	13,590	14,839	15,832	15,434	16,971
2. Exchange rate (Rp/$, average)	13,381	14,238	14,148	14,582	14,310
3. Population (million)	261.9	265.0	268.1	271.1	272.3

( ) = negative, GDP = gross domestic product, Rp = rupiah

Sources: Bank of Indonesia, Ministry of Finance, Central Bureau of Statistics, International Monetary Fund, Asian Development Outlook, World Bank, and Asian Development Bank staff estimates. The data presented have also taken into account changes revisions by the government agencies.

2. The positive developments occurring throughout 2021 prompted various international rating agencies to maintain the sovereign credit rating of the Republic of Indonesia at the investment grade level. On 22 April 2021, Standard & Poor's (S&P) maintained Indonesia's rating at BBB with negative outlook arisen from the fiscal risks and external risks related to the COVID-19 pandemic. On 22 November 2021, Fitch Ratings affirmed BBB rating with stable outlook for Indonesia credit rating amidst debt growth in the medium term but remained in the low category. Moody's affirmation of Indonesia's credit rating of Baa2 with stable outlook on 10 February 2022 was supported by a proven resilient economy as well as Moody's expectations that the effectiveness of macroeconomic and monetary policies would continue to be maintained to deal with the risk of rising global interest rate trends going forward.

3. Considering improvements in the global economy in 2021, improvements in handling the COVID-19 pandemic, and acceleration of the vaccination program until the end of 2021 in Indonesia, the Government of Indonesia estimated economic growth at 5.0%–5.5% for 2022.

B. Energy Sector

1. Sector Framework

4. **Policy, regulatory body, and electricity utility.** The Ministry of Energy and Mineral Resources is the main policy-making body for the power sector. It guides the development of the government's rolling 10-year national power development plans (Rencana Usaha Penyediaan Tenaga Listrik). Perusahaan Listrik Negara (PLN), the state-owned power company, generates the majority of electricity and has a monopoly in distributing electricity in the country. PLN is the government's extension in supplying electricity for public purposes and was rated BBB by S&P in July 2022 and Baa2 by Moody's in February 2022.

5. When Indonesia's economic growth contracted by 2.07% in 2020, the electricity industry recorded a smaller contraction of 0.98%. Further improvement of this industry was seen in 2021 with the growth of 5.61%, higher than Indonesia's GDP growth of 3.69%. PLN has an installed power plant capacity of 64.55 gigawatts (GW) as of the end of 2021, 1.92% higher than 2020 with electricity sales of 257.63 terawatt-hours, a 5.77% increase from in 2020.

Table A1.2: Perusahaan Listrik Negara's Customer Base
(megavolt-ampere)

Customer Segment	2018	2019	2020	2021
Residential	63,577	67,878	72,097	76,567
Industrial	29,136	30,434	31,146	33,152
Commercial	27,752	29,180	30,278	31,974
Others	9,816	10,585	11,158	11,872
Total	**130,281**	**138,077**	**144,678**	**153,565**

Note: Numbers may not sum precisely because of rounding.
Sources: Perusahaan Listrik Negara. 2021. *2020 Annual Report.* Jakarta. p.187–188; and Perusahaan Listrik Negara. 2022. *2021 Annual Report.* Jakarta. p. 210.

6. In 2021, PLN provided approximately 61% (down from 63% in 2020) of the country's electricity production while independent power producers provided approximately 37%. The share of independent power producers has increased over time with a 3-year compounded annual growth rate of 11% over 2018–2021.

Table A1.3: Electricity Production
(gigawatt-hour)

Electricity Production	2018	2019	2020	2021
PLN	178,194	186,457	172,622	177,485
IPP: Energy sold to PLN	78,387	85,398	97,159	106,497
Others: Energy sold to PLN	10,505	7,086	5,070	5,488
Total	**267,086**	**278,941**	**274,851**	**289,471**

IPP = independent power producer, PLN = Perusahaan Listrik Negara
Note: Numbers may not sum precisely because of rounding.
Source: Perusahaan Listrik Negara. 2022. *2021 Annual Report.* Jakarta. p. 209.

2. Government's Sector Strategy

7. The government introduced a national strategic program[1] targeting 35 gigawatts (GW) by 2021 to provide electricity across the country, meet electricity needs, and encourage domestic industrial growth with the overarching goal of spurring national economic growth. The 35 GW program was regulated through a presidential decree concerning acceleration of electricity infrastructure development in 2016 and included in Rencana Usaha Penyediaan Tenaga Listrik, 2015–2024. As of December 2021, the national electrification ratio increased to 99.45%, improving from 99.20% in December 2020.

8. The 35 GW program includes development of power plants, networks, transmissions, distributions, and substations. To achieve this goal, the government opened opportunities for private investment to participate in constructing power plants through a mechanism for independent power producers. In addition, the private sector can participate through engineering, procurement, and construction (EPC) projects offered by PLN; public–private partnerships, or build, lease, and transfer schemes.

9. The program faced challenges in investment funding, land acquisition, alignment of regional spatial planning, and licensing. At the end of 2020, the progress of the 35 GW program was: (i) 724 MW (2% of overall 35 GW target) in planning phase, (ii) 839 MW (2%) in procurement phase, (iii) 6,528 MW (18%) in contract/power purchase agreement (PPA) phase before construction, (iv) 17,715 MW (50%) in construction phase, and (v) 9,931 MW (28%) in operation phase. Meanwhile, the progress in supporting transmission included completed construction of 23,321 kilometers of lines (48% of target) and 83,017 megavolt-amperes of substations (68% of target).

10. The government encourages the use of new renewable energy sources to reduce fuel imports, targeting new renewable energy to reach at least 23% of energy mix in 2025 and at least 31% in 2050. From a financial perspective, the price of electricity generated by renewable energy power plants often is not economical. On the other hand, development of conventional hydropower plants faces potential environmental issues related to land acquisition, environmental conservation, loss of nature reserves, and conflicts with communities that previously had occupied forest land areas to be acquired.

11. The primary energy types that dominated the energy supply in 2020 were coal (about 38.5% of the national total), followed by oil (about 32.8%), gas (about 17.4%), and new renewable energy (about 11.3%), in contrast to 2011, when oil was the dominant energy type (about 46.8%),

[1] Perusahaan Listrik Negara. 2022. *2021 Annual Report.* Jakarta.

far outstripping new renewable energy (about 3.8%). New renewable energy's share of the national total increased from 3.8% in 2011 to 11.3% in 2020.

12. In 2020, new renewable energy for power plants was dominated by biomass (17%), geothermal (20%), and hydro (54%), while solar was only 1.1%. The capacity from bioenergy was 1.9 GW, geothermal 2.1 GW, solar 0.2 GW, water 6.1 GW, and wind 0.2 GW.

13. At the end of 2020, PLN reported no significant solar energy power plants in operation; one project was listed in development stage (Table A1.4).

Table A1.4: Solar Power Plants

Company	Location	Capacity (megawatts)	Project Period	Status
PT Abu Dhabi Future Energy Company	Cirata, West Java	145	2021–2041	Financing stage

PT = Perseroan Terbatas.
Source: Perusahaan Listrik Negara. 2022. Schedule to Consolidated Financial Statements. *2021 Annual Report.* Jakarta. p. 170.

C. Response to the COVID-19 Pandemic

14. One of the social safety net programs undertaken by the government in 2020 was to introduce several initiatives to stimulate economic growth, especially for the low-income segment, business, and industry customers. The initiatives included discounted tariff and exemption of minimum payment, with the difference paid by the government. The program began in the second quarter of 2020 and was extended several times, until the fourth quarter of 2021.

ENVIRONMENTAL IMPACT

A. Introduction

1. ADB approved the loan to special purpose vehicles (SPVs) controlled by Vena Energy in March 2018 for phase 2 of the Eastern Indonesia Renewable Energy Project. This transaction follows phase 1, and involves the construction, operation, and maintenance of a 21 megawatt (MW) solar power plant in Likupang, North Sulawesi and three 7 MW solar power plants in Lombok, West Nusa Tenggara[1] under 20-year build-own-operate power purchase agreements (PPAs) with the national power utility Perusahaan Listrik Negara (PLN) as a demonstration of the viability of private sector solar projects.

2. Phase 2 is classified as category B for environment and category C for involuntary resettlement and indigenous peoples. In compliance with ADB's Safeguard Policy Statement (2009) requirements for category B projects, the SPVs submitted to ADB environmental and social impact assessments on the Likupang and Lombok solar power plants for review prior to disclosure. The assessments were undertaken to complement Analisis Mengenai Dampak Lingkungan (AMDAL) and Analisis Dampak Lingkungan Hidup (ANDAL), as well as provide an assessment against International Finance Corporation performance standards and associated World Bank Group environmental, health, and safety (EHS) guidelines.[2] Vena Energy's institutional capacity and commitment to manage the project's social and environmental impacts were deemed adequate by ADB.

B. Review Findings

3. A third-party consultant, PT Environmental Resource Management (ERM) Indonesia, prepared an environmental and social impact assessment for the Likupang solar project, which includes the installation of a solar panel field and a 20 kilovolt (kV) underground transmission line to the Likupang 70/20 kV substation. Environmental Resource Management (ERM) also prepared an environmental and social impact assessment for the three Lombok solar projects, with each site having solar field panels and 20 kV overhead medium voltage cables to the nearest PLN 150/20 kV substation. All subprojects include the installation of main control, high voltage control, and inverter stations during construction; onsite control and instrumentation facilities for the operations stage; and access roads, fencing, drainage system and an emergency diesel generator.

[1] The three solar plant subprojects in Lombok are composed of Pringgabaya, Selong and Sengkol

[2] AMDAL is part of the Indonesian regulatory environmental approval process and equivalent to an environmental impact assessment. ANDAL refers to the Indonesian environmental impact statement.

Table A2: Eastern Indonesia Renewable Energy Project Phase 2 Subproject Summary[3]

Solar Farm Subproject	Special Purpose Vehicle	Capacity	Transmission Line Length (km)	Location	Solar Panel Field Area (ha)
Likupang	ITL	21MWp (15MWac)	0.2	Likupang Timur District, Minahasa Utara Regency	27
Pringgabaya	ITA	7MWp (5MWac)	3.5	Pringgabaya District, Lombok Timur Regency	7.91
Selong	ITB	7MWp (5MWac)	8.6	Labuhan Haji District, Lombok Timur Regency	7.91
Sengkol	ITC	7MWp (5MWac)	2.5	Pujut District, Lombok Tengah Regency	7.91

ha = hectare; ITA = PT Infrastruktur Terbarukan Adhiguna; ITB = PT Infrastruktur Terbarukan Buana; ITC = PT Infrastruktur Terbarukan Cemerlang; ITL = PT Infrastruktur Terbarukan Lestari; km = kilometer, MWp = megawatt peak, MWac = megawatt, alternating current; PT = Perseroan Terbatas.
Source: Vena Energy

4. The four subprojects were granted environmental permits in 2017 by Indonesian authorities and achieved the commercial operation date (COD) by 2 July 2019 for Lombok and 5 September 2019 for Likupang. Based on national regulations, power plants with capacity of 10 MW or greater are required to implement environmental management and monitoring efforts referred to as Rencana Pengelolaan Lingkungan [4] /Rencana Pemantauan Lingkungan; [5] the Likupang solar farm is required to submit a report on the implementation of its environmental and social commitments specified within these regulations every six months. The Lombok subprojects will submit such reports guided by Upaya Pengelolaan Lingkungan [6] /Upaya Pemantauan Lingkungan[7], which applies to power plants with capacity of less than 10 MW. SPVs complied with national requirements and consistently submitted annual environmental and social monitoring reports, following the environmental and social management framework and the environmental and social management plans (ESMPs) for the projects' construction and operation phases. The 2018, 2019, and 2020 annual environmental and social monitoring reports for all subprojects were disclosed on the ADB website.

5. All subprojects are in rain-fed dry agricultural land historically planted with coconut, corn, cassava, and beans and categorized as modified habitats. None of the sites and their surrounding areas are in or near an environmentally sensitive area, and Vena Energy designed the transmission line routes to avoid such areas. Overall, environmental impacts were assessed as being temporary and of moderate to minor significance that could be adequately addressed by implementing ESMPs and appropriate follow up actions.[8] Other short-term impacts related to air quality, erosion, and sedimentation during construction were adequately addressed, although environmental monitoring result noted some noise in excess of International Finance Corporation noise thresholds because of local traffic, non-project-related stone crushing, and project-related activities. This extended annual review report confirmed that the ESMPs were fully implemented, and monitoring activities did not identify issues related to terrestrial biodiversity and avifauna. Also, there are no endemic or significant conserved flora species in all sites. Solar energy

[3] The Company provided the information presented in Table A6.: Eastern Indonesia Renewable Energy Project Phase 2 Subproject.
[4] Indonesian terminology that refers to Environmental Management Plan.
[5] Indonesian terminology that refers to Environmental Monitoring Plan.
[6] Indonesian terminology that refers to Environmental Management Effort document.
[7] Indonesia terminology that refers to Environmental Monitoring Effort document.
[8] Minor impacts include air quality and noise during the construction stage. Moderately significant potential impacts include water demand and increased runoff and sedimentation of water bodies during the construction and operation phase.

development is a non-polluting source of energy and not likely to lead to any adverse impacts on the baseline environment during operations.

6. Potential environmental issues during operations include solar panel glare, water consumption, wastewater, and solid and hazardous waste. The solar panels used for the subproject have anti-reflective coating to significantly reduce glaring effects. Water usage, including for the cleaning of solar panels as part of operation and maintenance (O&M) activities, continue to be within the limits set in water abstraction permits issued by Indonesian authorities. Solar panel washing is undertaken during the dry season, and runoff is directly absorbed by the surrounding soil. Small quantities of domestic wastewater are adequately contained in septic tanks, while segregated solid wastes generated on site are collected weekly by a local contractor.

7. While drainage systems and retention ponds were established in all sites, gullying, scouring of mounting structures, and stream flow diversion because of heavy rainfall were noted in the Selong, Likupang, and Pringgabaya sites during ADB's 2022 site visit. Sandbags and gabion reinforcements have been installed, but this initial intervention has been inadequate in addressing gullying and scouring issues. ADB has recommended that Vena engage its lender's technical advisor to investigate the current problem and design and implement long-term engineering solutions, including the use of geomembrane- and concrete-lined secondary stormwater drainage, and bioengineering solutions such as the planting of sweet potato or elephant grass. The lender's technical advisor's detailed engineering solutions will be reported in the next Annual Environmental and Social Performance Report (AESPR).

8. Hazardous wastes include used paint cans, busted bulbs, and oils. Damaged, broken, and end-of-life photovoltaic modules are also considered hazardous pending definitive national regulations and legislation towards this end. All subprojects have hazardous waste storage facilities and have secured temporary hazardous waste storage permits, which allow on-site storage of hazardous wastes of up to 1 year before handling and disposal by a certified contractor. The Likupang subproject was able to dispose of 5,000 broken photovoltaic panels at a landfill facility in Java Island in 2020 and initiated the safety and durability testing of repurposed photovoltaic panels for possible donation to and reuse by local communities as part of its corporate social responsibility program.[9] The three Lombok subprojects, on the other hand, has yet to find a certified hazardous waste management contractor operating in the area but appointed its own personnel to be certified as a competent operator for hazardous waste management.

9. Vena Energy has a corporate environment, health, and safety (EHS) manager and an EHS manual that outlines actions to manage health, safety, and environment risks associated with its operations. Vena has assigned an environmental, social, health, and safety (ESHS) coordinator to the Likupang solar farm and another coordinator for all three Lombok subprojects; they report directly to their site O&M manager and have a line of coordination with the environment and social governance manager in Jakarta. Operational contractors are also responsible for complying with requirements in the environmental and social management framework set by the SPVs. All employees receive induction and refresher trainings on Occupational Health and Safety, EHS, and other topics relevant to their roles, and no safety incidents have been reported.

[9] The glass of cracked or discolored photovoltaic panels are reconditioned using resin to ensure safety and decent irradiation reception. These modules can power small water pumps and decorative lamps based on on-site trials, and this potential reuse can extend their life cycle. No donations to the community will be made until Vena Energy completes its 2-year safety testing activities with satisfactory results.

10. All subprojects have a grievance redress mechanism in place and there are no unresolved EHS-related grievances, although requests for drainage and irrigation improvement by the sub-projects in adjoining communities are noted and under review by the Vena Energy.

C. Conclusion and Recommendation

11. The project's ESHS performance is rated *satisfactory*. Based on the review of safeguard reports and technical documents, it is concluded that SPVs adequately met both Indonesian EHS regulations and ADB's Safeguard Policy Statement (2009) requirements. They were able to implement and report on ESHS mitigating measures and related actions in a satisfactory manner.

12. Vena Energy will continue to implement staff capacity training, stakeholder engagement, and the updating and implementation of ESMPs throughout the 20-year operations stage of the phase 2 project. It is also important that SPVs remain in compliance with all hazardous waste management requirements for the disposal of photovoltaic modules and consider future actions for recycling and reuse.

SOCIAL IMPACT

A. Introduction

1. The Asian Development Bank (ADB) provided financing to four special purpose vehicles (SPVs), established and owned by Vena Energy, for Eastern Indonesia Renewable Energy Project phase 2, which comprises the construction, operation, and maintenance of one solar farm subproject in Likupang, North Sulawesi and three solar farm subprojects in Lombok, West Nusa Tenggara. The solar farm in Likupang achieved commercial operations date (COD) on 5 September 2019, and the solar farms in Lombok started full operations in July 2019. Vena Energy turned over the management and operations of the transmission line to Perusahaan Listrik Negara (PLN) upon reaching COD.

Table A3: Land Requirements and the Area acquired by Solar Farms

Solar Farm	Special Purpose Vehicle	Location	Land Required[a] (ha)	Land Acquired (ha)
Likupang	PT Infrastruktur Terbarukan Lestari	Wineru Village, Likupang Timur District, Minahasa Utara Regency	29.2	29.20
Pringgabaya	PT Infrastruktur Terbarukan Adhiguna	Pringgabaya Utara Village, Pringgabaya District, Lombok Timur Regency	8.0	11.19
Selong	PT Infrastruktur Terbarukan Buana	Geres Sub-District, Labuhan Haji District, Lombok Timur Regency	8.0	8.63
Sengkol	PT Infrastruktur Terbarukan Cemerlang	Sengkol Village, Pujut District, Lombok Tengah Regency	8.0	8.73

PT = Perseroan Terbatas.

[a] Composed of the solar farm, underground and/or overhead transmission line, internal roads, control room, inverter station, and main station.

Source: Vena Energy.

2. Based on the due diligence conducted during project processing, ADB categorized the project as C on involuntary resettlement and indigenous peoples impacts. The land acquisition compliance audit, conducted as part of the environmental and social impact assessment, confirmed that the land acquired for each subproject was through a willing seller-willing buyer transaction. The land for Likupang solar farm was purchased from a single landowner, and transferring ownership was completed in June 2017. For the Lombok solar farms, parcels of land were acquired from 51 landowners and completed in November 2017. Some landowners refused to sell only a fraction of their land, which led the SPV companies to acquire more land area than required. The SPV companies commissioned a land appraisal survey to determine the market value of land used to negotiate the purchase for every landowner. The validation of the lenders technical advisor confirmed that the final purchase price was higher or within the market value. The solar farm subprojects were sited on lands used solely for agriculture purposes, not identified as traditional lands with customary rights, and no indigenous peoples communities were present. The underground transmission line of Likupang, connecting to the adjacent PLN substation, was established within the acquired land. The overhead transmission lines for the Lombok subprojects were laid within private lands and existing right-of-way. Landowners consented to the location of the transmission line poles. Each transmission line tower pole has a diameter of 363 millimeters with 20 kilovolt (kV) capacity, for which payment of compensation was not required based on local regulations.[1]

[1] According to the Minister of Energy and Mineral Resource Decree No. 18, 2015, compensation is only applicable for transmission lines with more than 120 kV capacity.

3. The project reports the environmental and social performance of the subprojects to ADB through the annual environmental and social monitoring report. ADB conducted the virtual safeguards review mission in November 2020 to confirm project compliance with the ADB Safeguard Policy Statement (2009) and social requirements before the project completion date. Further validation of subproject compliance with applicable national laws and ADB's requirements was undertaken through the extended annual review mission on 14–18 September 2022.

B. Review Findings

4. **Compliance with social safeguards requirements**. The land purchase process was undertaken based on local and national land laws and regulations. The method of land acquisition and disclosing the commencement date of the construction activities, which helped landowners manage their cultivation activities, avoided economic displacement impacts. The seasonal agricultural workers hired by the previous landowner of Likupang were offered alternative jobs with the landowner's existing construction and agriculture businesses. The irregular shape of the solar farms indicates that the land purchases were based on the willingness of the landowners and their families to sell. The SPV companies avoided the purchase of land where the consent of all the family members was not obtained. During the extended annual review mission, the village heads confirmed they were consulted and observed the purchase transactions. Interviews with the local communities and users of the adjacent lands confirmed that the construction and operations of the solar farms did not cause access restrictions. Owners and users of adjacent lands can freely access their land, and no issues were raised during the interviews.

5. **Labor**. Vena Energy and the SPV companies comply with the national labor code and align with the internationally recognized core labor standards. The government-approved company regulations detail the SPV companies' labor policies on the terms of employment, working conditions, salary and benefits, non-employment of forced labor and workers under the minimum age as defined in the labor code, non-discrimination, respectful workplace, workers' association, and collective bargaining. The company regulations are consistent with the human resources policies of Vena Energy. Vena Energy selected the same contractors for the four SPV companies and has an established system to monitor contractors' compliance with the obligations set out in the contract agreement. Key performance indicators include compliance with applicable laws, including the labor code, which is checked during monthly performance indicator meetings.

6. The workers' grievance mechanism is accessible to all workers. Vena Energy and the SPV companies strengthened the implementation of the grievance mechanism, including for the workforce of contractors. Vena Energy conducts annual workers' grievance refresher training for all workers and targets full participation of security officers in the succeeding training. There were no grievances received from the employees of the SPV companies. However, there were concerns raised by Likupang contract workers, seeking support from the PT Syntek management to improve the execution of works, such as hiring additional workers for photovoltaic module cleaning and grass cutting to meet the daily targets and deploying motorcycle vehicle to support daily operations and inspection of the solar farm.[2] [CONFIDENTIAL INFORMATION DELETED] PT Infrastruktur Terbarukan Lestari is aware and has taken up the concerns with PT Syntek management to expedite the review process. Vena Energy is also doing a constant follow-up on resolving the concerns.

[2] PT Syntek is the service provider for security and for solar farm and building maintenance.

7. The majority of the workers throughout the construction and the operations of the solar farms are from the local communities. During operations, the subprojects maintained a lean workforce and consistently provided work opportunities to local workers.

8. **Stakeholder engagement and grievance mechanism.** Community liaison officers are deployed for each of the Likupang and Lombok cluster subprojects. The officers consistently implement stakeholder engagement activities that cement positive relationships with the surrounding communities. Aside from the community liaison officers, other officers of the SPV companies also engage regularly with the village heads and elders respected in the communities. The security officers are also trained and doing regular engagement activities, especially with farmers cultivating the lands adjacent to the solar plants. Records from the stakeholder engagement register of the subproject sites from 2021–2022 showed that most activities are related to government relations and responding to community requests. There were consultation activities held to discuss the company regulations and procedures, including the iteration of the community grievance mechanism.

9. Local communities can easily contact the subproject staff whenever there are concerns, through the community liaison officers, security officers, phone calls, electronic mail, or by filing a written grievance form. Each subproject site maintains a grievance log, and based on records, all previous grievances, including those received in 2021, were already closed out. The SPV companies aimed to resolve the concerns as early as possible in coordination with the village officials. For Likupang, there had been persistent complaints claiming rights on the solar farm land. However, it has always been confirmed through the village officials, land authorities, and the legal court of Indonesia that PT Infrastruktur Terbarukan Lestari purchased the land from the legitimate owner. Establishing a grievance mechanism at the onset of the land purchase process helped in the early management and resolution of landowners' concerns before or during the early stage of the construction phase. Active engagements with the landowners continued until the completion of the construction activities. During operations, the subprojects regularly consulted with the land users around the solar farms.

10. **Corporate social responsibility program.** The local communities recognized the benefit of establishing solar farms in their villages. Aside from having a stable supply of electricity, the local communities benefit from job opportunities, especially during construction, and the corporate social responsibility initiatives of Vena Energy and the SPV companies. The initiatives are focused on education and entrepreneurship programs. Vena Energy conducts information, education, and communication campaigns to schools on the importance of renewable energy. Aside from providing school supplies to students, Vena Energy builds awareness of students on renewable energy by distributing learning materials and accommodating educational visits of students and teachers to the solar farms. Renewable energy trainings and internship program with engineering students have been a regular program.

11. Projects on entrepreneurship greatly benefited the local communities, particularly the previous landowners and women’s groups. The Likupang subproject supported the expansion of the banana chips business of two women's groups from Wineru village. The support encompassed the capacity building of members in food handling, health and safety permit processing, and product marketing. The corporate social responsibility initiatives of Lombok subprojects also focused on strengthening local women’s groups’ small businesses engaged with the casava chips business (Selong) and banana chips (Pringgabaya). In Sengkol, Vena Energy and PT Infrastruktur Terbarukan Cemerlang engaged with local community-based agriculture groups for the hydroponic farming project. The successful implementation of the entrepreneurship program is evident with the increase in income of livelihood groups and reinvestments to expand

livelihood operations. Some members have started their own businesses, learning from the experience of handling the business with their respective groups. The positive outcomes also influenced other groups from the local communities to engage with similar businesses. Vena and the SPV companies are committed to supporting the livelihood groups in strengthening their capacity to expand their operations and market, including the introduction of e-commerce to the livelihood groups successfully rolled out in the Tolo Wind Power Project. This will expand the sales and marketing of livelihood products and produce across the district within the regencies. Considering that the businesses of the groups are micro-small and backyard operations, it is recommended that training on the avoidance of child and forced labor should be included in the continuous capacity building of livelihood groups.

C. Conclusion

12. The construction and operation of the solar farms did not result in involuntary land acquisition and use restrictions and affected no distinct and vulnerable indigenous peoples communities. The SPV companies established and maintained a positive relationship with the local communities through regular engagement activities, effective grievance mechanisms, and partnerships through corporate social responsibility initiatives. The local communities benefited from the employment and livelihood opportunities of the solar farms. The labor and working conditions practices of Vena Energy and the SPV companies, notably the effective management of workers' grievances, are imparted to the contractors. The social performance of the project is rated *satisfactory*.