



Report and Recommendation of the President to the Board of Directors

Project Number: 53106-001
October 2019

Proposed Loan and Administration of Loan TTC Energy Development Investment Joint Stock Company Gulf Solar Power Project (Viet Nam)

This is an abbreviated version of the document approved by ADB's Board of Directors, which excludes information that is subject to exceptions to disclosure set forth in ADB's Access to Information Policy.

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 23 September 2019)

Currency unit	–	dong (D)
D1.00	=	\$0.000043
\$1.00	=	D23,208.50

ABBREVIATIONS

ADB	–	Asian Development Bank
EPP	–	environmental protection plan
ESCA	–	environmental and social compliance audit
EVN	–	Vietnam Electricity
FIT	–	feed-in tariff
GED	–	Gulf Energy Development Public Company Limited
GHG	–	greenhouse gas
LEAP	–	Leading Asia's Private Sector Infrastructure Fund
PDP VII	–	National Power Development Plan, 2011–2020
PPA	–	power purchase agreement
TTC	–	Thanh Thanh Cong Group
US	–	United States

WEIGHTS AND MEASURES

GW	–	gigawatt
kWh	–	kilowatt-hour
MW	–	megawatt

NOTE

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

Vice-President	Diwakar Gupta, Private Sector Operations and Public–Private Partnerships
Director General	Michael Barrow, Private Sector Operations Department (PSOD)
Director	Jackie B. Surtani, Infrastructure Finance Division 2, PSOD
Team leader	Won Myong Hong, Investment Specialist, PSOD
Project advisor	Daniel Wiedmer, Principal Investment Specialist, PSOD
Team members	Genevieve Abel, Principal Transaction Support Specialist (Integrity), PSOD
	Claire Alembik, Investment Specialist, PSOD
	Annalice Aliluya, Investment Officer, PSOD
	Elizabeth Fiona Alpe, Senior Transaction Support Specialist (Integrity), PSOD
	Pierre Bailet, Principal Counsel, Office of the General Counsel (OGC)
	Trent Baldacchino, Transaction Support Specialist (Integrity), PSOD
	Zheng Hao Chan, Young Professional, PSOD
	Ulritz Uzein Corcuera, Associate Economics Officer, PSOD
	Ninh Le Do, Senior Investment Officer, PSOD
	Laurence Genee, Senior Safeguards Specialist, PSOD
	Manfred Kiefer, Senior Economist, PSOD
	Hyunjung Lee, Energy Economist, Southeast Asia Department
	Nicholas Moller, Principal Counsel, OGC
	Mohsin Monnoo, Senior Investment Specialist (Syndication), PSOD
	Yasunao Nakano, Principal Investment Specialist, PSOD
	Amanda Satterly, Senior Social Development Specialist (Gender & Development), PSOD
	Abhishek Singh, Principal Safeguards Specialist, PSOD

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PROJECT AT A GLANCE

1. Basic Data		Project Number: 53106-001	
Project Name	Gulf Solar Power Project	Department /Division	PSOD/PSIF2
Country	Viet Nam, Socialist Republic of		
Borrower	TTC Energy Development Investment Joint Stock Company		
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Energy	Renewable energy generation - solar		11.30
		Total	11.30
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	CO ₂ reduction (tons per annum)	29,760
Environmentally sustainable growth (ESG)	Global and regional transboundary environmental concerns	Climate Change impact on the Project	Low
		ADB Financing	
		Mitigation (\$ million)	11.30
		Cofinancing	
		Mitigation (\$ million)	7.60
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Private sector development (PSD)	Promotion of private sector investment	No gender elements (NGE)	✓
5. Poverty and SDG Targeting		Location Impact	
Geographic Targeting	No	Rural	High
Household Targeting	No		
General Intervention on Poverty	Yes		
SDG Targeting	Yes		
SDG Goals	SDG7, SDG8, SDG13		
6. Nonsovereign Operation Risk Rating			
Obligor Name		Final Project Rating	Facility Risk Rating
TTC Energy Development Investment Joint Stock Company		CONFIDENTIAL INFORMATION DELETED	CONFIDENTIAL INFORMATION DELETED
7. Safeguard Categorization	Environment: B	Involuntary Resettlement: C	Indigenous Peoples: C
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		11.30	
Nonsovereign LIBOR Based Loan (Regular Loan): Ordinary capital resources		11.30	
Cofinancing		26.50	
Commercial Banks (Full ADB Administration)		18.90	
Leading Asia's Private Infrastructure Fund (LEAP) (Full ADB Administration)		7.60	
Others^a		13.70	
Total		51.50	
Currency of ADB Financing: USD			

^a Derived by deducting ADB financing and Cofinancing from Total Project Cost.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan of up to \$30,200,000, comprising (i) an A loan of up to \$11,300,000 and (ii) a B loan of up to \$18,900,000 to TTC Energy Development Investment Joint Stock Company (the borrower) for the Gulf Solar Power Project in Viet Nam. The report also describes the proposed administration of a loan of up to \$7,600,000 to be provided by the Leading Asia's Private Sector Infrastructure Fund (LEAP)¹. If the Board approves the proposed loan, I, acting under the authority delegated to me by the Board, approve the administration of the LEAP loan.

2. The loan will support the borrower with long-term financing to operate a 50-megawatt (MW) photovoltaic solar power plant and its associated facilities in Tay Ninh Province, Viet Nam. The Asian Development Bank (ADB) financing will meet the borrower's requirements for longer-tenor, United States (US) dollar-denominated project financing, which local financial institutions are unable to provide. The financing will also catalyze commercial loans for one of the first large-scale solar power project finance transactions in the country. ADB's participation in the project will also ensure compliance with rigorous environmental and social safeguard standards.

II. THE PROJECT

A. Project Identification and Description

3. **Project identification.** High rates of economic growth and accelerated industrialization and urbanization are leading to growing demand for electricity in Viet Nam, which is on a path to becoming the second-largest power market in Southeast Asia (after Indonesia) in the next five to ten years. Access to electricity, which was below 10% of the population in 1986, is now nearly universal (98.7% in 2018). Electricity demand has grown rapidly in recent years, averaging 12.0% per year from 2005 to 2018, and is projected to grow at more than 8.0% per year through 2030. However, meeting fast-growing electricity demand and sustaining high rates of economic growth to improve livelihoods will be a significant challenge for Viet Nam.

4. Strong projected growth in electricity demand will require significant private sector investment in the energy sector. According to the National Power Development Plan, 2011–2020 (PDP VII), Viet Nam needs to invest about \$148 billion in power transmission and generation infrastructure from 2011 to 2030 to sustain high rates of economic growth.² At the same time, the Vietnamese energy sector is undergoing reforms to gradually deregulate and introduce market principles to encourage greater private sector participation. Because of the financial constraints of the state utility, Vietnam Electricity (EVN), the large exposure of domestic banks to state-owned enterprises, and limits to sovereign borrowing, private sector investment will be essential if Viet Nam is to avoid future power shortages.

5. As of 2016, hydropower, coal, and gas comprised nearly 90% of Viet Nam's then 42 gigawatts (GW) of installed power capacity. With limited potential to develop large-scale hydropower plants further, depleting domestic coal reserves, and growing public concern over environmental issues regarding coal-fired power plants, the development of renewable energy is receiving greater focus. Viet Nam's revised PDP VII seeks to increase the share of renewable energy, including small hydro, solar, wind, and biomass power plants, as a percentage of total forecast installed capacity to 21% (27 GW) by 2030 and to reduce the use of imported coal-fired

¹ Financing partner: Japan International Cooperation Agency (JICA).

² Government of Viet Nam. 2016. *National Power Development Plan, 2011–2020, with outlook to 2030*. Ha Noi.

electricity. To meet this target, installed solar power capacity is expected to increase to 12 GW and wind power to 6 GW by 2030. Rapidly scaling up renewable energy use will also help Viet Nam achieve its target to reduce greenhouse gas (GHG) emissions by 8%–25% by 2030.

6. In April 2017, the Prime Minister issued Decision No. 11/2017/QĐ-TTg to accelerate the development of private sector solar projects. This decision includes a provision for a 20-year feed-in tariff (FIT) of \$0.0935 per kilowatt-hour (kWh) for utility-scale solar power projects. Developers wishing to receive the FIT were required to reach commercial operations by 30 June 2019 and use the standard power purchase agreement (PPA) issued by the Ministry of Industry and Trade. As a result of this policy, many local and international companies entered the market to develop solar power projects in Viet Nam and benefit from the attractive FIT. By June 2019, 82 solar power plants, with a total capacity of nearly 4.5 GW, were commissioned and connected to the national grid. This is much more than the target of 850 MW solar power by 2020 set out in the PDP VII, and the share of solar power in the country's power mix has consequently increased from less than 0.5% to almost 10% in just a few months. While this is a great success story in terms of renewable energy development, the need for sustainable financing solutions remains of paramount importance.

7. To qualify for the higher tariff, many developers decided to finance projects entirely with sponsor equity, short-term supplier credit, or corporate loans with short tenors in dong, delaying long-term project financing consideration to a later stage.³ As evidenced by their market entry, this project structure provided sufficiently high risk-adjusted expected returns for these developers when they could lock in a \$0.0935 per kWh tariff. However, it exposes developers to significant refinancing risks in a market that does not have well-established project finance structures for solar power projects, especially because the standard PPA is not considered bankable for international lenders on a nonrecourse project finance basis. While local financial institutions are more comfortable with the standard PPA, they lack experience with project finance, have limited financing capacity, and are unable to provide US dollar funding. Without access to long-term US dollar debt financing, international solar developers will be unable to recycle capital into project development and will struggle to build new projects once FITs are reduced in subsequent rounds of development. Without a viable project finance market for solar power in Viet Nam, the initial surge of interest may not be sustained, making it more likely that fossil fuels will meet the rapidly growing power demand.

8. ADB's involvement in this project will support one of the first international limited-recourse financings for a solar power project in Viet Nam and will help to reduce commercial cofinanciers' risk perception of renewable energy in Viet Nam at a critical time for the sector. ADB has taken the lead in structuring a project finance solution with tailor-made sponsor support to address key risks in Viet Nam's standard PPA for renewable energy and will ensure compliance with rigorous environmental and social safeguard standards. ADB will also mobilize commercial financing from regional and international lenders using a B loan structure. Additional support from concessional funding provided by LEAP will improve the bankability and financial viability of the project, helping to catalyze the transaction and unlock access to long-term debt from international and regional banks for utility-scale solar projects in Viet Nam.

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³ The sponsors of the proposed project proceeded with the construction using shareholder loans in order to reach commercial operations by 30 June 2019.

9. **Borrower and sponsors.** TTC Energy Development Investment Joint Stock Company was established in 2017 with the specific purpose to develop, own, and operate a 50 MW solar power project. **CONFIDENTIAL INFORMATION DELETED.**

10. GED, established in August 2011, is a leading private power generation company and has the largest portfolio of gas-fired power projects in Thailand. **CONFIDENTIAL INFORMATION DELETED.**

11. TTC is one of the largest privately owned conglomerates in Viet Nam, with businesses in real estate, renewable energy, agriculture, and tourism. **CONFIDENTIAL INFORMATION DELETED.**

B. Development Impact, Outcome, and Outputs

12. **Impact.** The project is aligned with the following impacts: (i) contribution of solar energy to Viet Nam's power supply increased and (ii) emission intensity per unit of gross domestic product reduced.

13. **Outcome.** The project's outcome is that the supply of clean power to Viet Nam's domestic grid is increased.

14. **Outputs.** The output of the project is that a 50 MW photovoltaic solar power plant and its associated facilities are operational.

C. Alignment with ADB Strategy and Operations

15. **Consistency with ADB strategy and country strategy.** The project is consistent with ADB's Strategy 2030, which outlines seven operational priorities to address the development challenges in Asia and the Pacific.⁴ The project supports two of those priorities: (i) tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability; and (ii) addressing remaining poverty and reducing inequality. It also supports Strategy 2030's objectives to expand the role of private sector operations and mobilize additional resources on top of ADB's own financing.

16. The energy sector has been a priority for ADB's Viet Nam country program. Since 1994, ADB has provided 16 sovereign loans for a total of \$2.6 billion, three nonsovereign loans for a total of \$250 million, and 43 technical assistance projects and grants for a total of \$37.6 million to the energy sector. ADB's country partnership strategy for Viet Nam, 2016–2020 aims to foster inclusive and environmentally sustainable growth. The project is aligned with two of the three pillars of the strategy: (i) increasing the inclusiveness of infrastructure and service delivery and (ii) improving environmental sustainability and climate change response. Under the strategy, ADB will increase the focus on renewable energy, including through public–private partnerships, to promote sustainable growth.⁵ The project is also aligned with Viet Nam's commitments to the

⁴ ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

⁵ ADB. 2016. *Country Partnership Strategy: Viet Nam, 2016–2020—Fostering More Inclusive and Environmentally Sustainable Growth*. Manila.

United Nations Framework Convention on Climate Change, targeting a reduction in GHG emissions of 8%–25% by 2030.⁶

17. **Consistency with sector strategy and relevant ADB operations.** The project aligns with ADB’s Energy Policy, which supports wider access to energy through investments in energy efficiency and renewable energy projects.⁷ It will contribute to ADB’s target of \$6 billion in annual financing for climate mitigation and adaptation by 2020, and will increase Viet Nam’s use of renewable energy and reduce reliance on fossil fuels such as coal, thereby mitigating GHG emissions and reducing the need for fuel imports. Consistent with a “One ADB” approach, the project benefitted from close cross-departmental coordination with ADB’s Southeast Asia Department in assessing and analyzing Viet Nam’s energy sector.

18. **Lessons from previous operations.** ADB has extensive experience in renewable energy projects throughout Asia and has incorporated lessons learned from previous renewable energy projects into structuring this project. The project also builds on the strong and long-standing relationship between ADB and GED, the main sponsor of the project, and Thai banks participating in the financing. **CONFIDENTIAL INFORMATION DELETED.** The project also builds on results and lessons from the close cooperation between ADB sovereign operations and the Government of Viet Nam for energy sector reform.⁸

D. Project Cost and Financing Plan

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E. Implementation Arrangements

19. Table 3 summarizes the implementation arrangements.⁹

Table 3: Summary of Implementation Arrangements

Aspects	Arrangements
Regulatory framework	The project is being implemented under Prime Minister Decision No. 11/2017/QĐ-TTg, which (i) establishes the framework for the formation, assessment, and approval of solar power development master plans; (ii) creates a standardized PPA template for on-grid solar power projects; (iii) creates technical standards on solar power; and (iv) provides guidelines on the procedures for the connection and metering installment of renewable projects.
Management	The main project sponsor, Gulf Energy Development Public Company Limited, has extensive experience in the development, operation, and maintenance of power projects.
Implementation period	The construction has been completed and the project’s commercial operation date was 19 April 2019.
Construction arrangements	The EPC contract was procured via a competitive bid process. CONFIDENTIAL INFORMATION DELETED.
Revenue structure	The borrower will sell electricity generated by the project to Vietnam Electricity under a 20-year PPA at a fixed feed-in tariff of \$0.0935 per kilowatt-hour. The feed-in tariff is paid in dong, but indexed to the United States dollar. CONFIDENTIAL INFORMATION DELETED.
Operation and maintenance	O&M will be implemented by in-house resources of the sponsors. CONFIDENTIAL INFORMATION DELETED.

⁶ Government of Viet Nam. 2015. *Intended Nationally Determined Contribution*. Ha Noi.

⁷ ADB. 2009. *Energy Policy*. Manila.

⁸ ADB. 2015. *Technical Assistance to the Socialist Republic of Viet Nam for the Power Sector Reform Program*. Manila.

⁹ Details of Implementation Arrangements (accessible from the list of linked documents in Appendix 2).

Aspects	Arrangements
Performance monitoring	The project sponsor will report to ADB on key performance indicators, including output and outcome indicators. CONFIDENTIAL INFORMATION DELETED.

ADB = Asian Development Bank; EPC = engineering, procurement, and construction; O&M = operation and maintenance; PPA = power purchase agreement.

Source: Asian Development Bank.

F. Projected Financial and Economic Performance

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III. THE PROPOSED ADB ASSISTANCE

A. The Assistance

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B. Value Added by ADB Assistance

20. ADB adds value by mobilizing a financing package that makes the 50 MW solar project commercially viable. International lenders are not comfortable offering long-term US dollar-denominated debt on a nonrecourse basis in the Vietnamese market because of concerns regarding the PPA and the nascency of the solar power sector. Local banks lack experience with project finance and are unable to offer US dollar-denominated longer tenor debt for infrastructure projects. As one of the first international limited-recourse project finance transactions in Viet Nam, the project will demonstrate the potential for private sector investment in Viet Nam's nascent renewable energy sector, send a strong signal to the market and attract other investors for similar investments. ADB has led the structuring of the transaction and is crowding in commercial banks under the B loan structure. ADB will also offer a longer tenor than participating commercial banks, helping to improve debt service coverage ratios for lenders and thereby improve the financial viability of the project.

21. ADB's support for this project will demonstrate that innovative financing solutions can address existing challenges in this nascent market. The successful financing of this project will lower the risk perception of the industry and help set a project finance precedent for utility-scale solar power in Viet Nam. ADB's involvement and due diligence will ensure that the project is developed and operated to international best practice standards and will perform to expectations over the project life. ADB's participation in the project will also ensure compliance with ADB's rigorous environmental and social safeguard standards.

C. Risks

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IV. POLICY COMPLIANCE

A. Safeguards and Social Dimensions

22. ADB has categorized the investment in compliance with ADB's Safeguard Policy Statement (2009) as follows: environment (category B), involuntary resettlement (category C), and indigenous peoples (category C).¹⁰

23. ADB has undertaken due diligence and reviewed the potential environmental and social impacts of the project and the measures to avoid, minimize, mitigate, and compensate for the adverse impacts in the safeguard reports and plans. The due diligence assessed the borrower's (i) compliance with local regulations and current environmental, health and safety, and social policies and procedures; and (ii) past and current performances against the objectives, principles, and requirements of ADB's Safeguard Policy Statement (2009). The environmental and social measures and the institutional capacity and commitment of TTC Energy Development Investment Joint Stock Company to manage the project's social and environmental impacts are deemed adequate.

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B. Anticorruption Policy

24. TTC Energy Development Investment Joint Stock Company and the project sponsors were advised of ADB's policy of implementing best international practice relating to combating corruption, money laundering, and the financing of terrorism. ADB will ensure that the investment documentation includes appropriate provisions prohibiting corruption, money laundering, and the financing of terrorism; and remedies for ADB in the event of noncompliance.

C. Investment Limitations

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D. Assurances

25. Consistent with the Agreement Establishing the Asian Development Bank (the Charter),¹¹ ADB will proceed with the proposed assistance upon establishing that the Government of Viet Nam has no objection to the proposed assistance to TTC Energy Development Investment Joint Stock Company. ADB will enter into suitable finance documentation, in form and substance satisfactory to ADB, following approval of the proposed assistance by the ADB Board of Directors.

V. RECOMMENDATION

26. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of up to \$30,200,000, comprising (i) an A loan of up to \$11,300,000 from ADB's ordinary capital resources, and (ii) a B loan of up to \$18,900,000, to TTC Energy Development Investment Joint Stock

¹⁰ ADB. [Safeguard Categories](#).

¹¹ ADB. 1966. *Agreement Establishing the Asian Development Bank*. Manila.

Company for the Gulf Solar Power Project in Viet Nam, with such terms and conditions as are substantially in accordance with those set forth in this report, and as may be reported to the Board.

Takehiko Nakao
President

4 October 2019

DESIGN AND MONITORING FRAMEWORK

Impacts the Project is Aligned with			
Contribution of solar energy to Viet Nam power supply increased (National Power Development Plan for the 2011–2020) ^a			
Emission intensity per unit of gross domestic product reduced (Intended Nationally Determined Contribution of Viet Nam) ^b			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Supply of clean power to Viet Nam's domestic grid increased	CONFIDENTIAL INFORMATION DELETED.	a.–d. Annual development effectiveness monitoring reports by the borrower	Adverse changes in regulatory environment Climate and weather risk
Output Solar photovoltaic plant and its associated facilities are operational	CONFIDENTIAL INFORMATION DELETED.	Annual development effectiveness monitoring reports by the borrower	Weak power demand because of adverse macroeconomic shock
Key Activities with Milestones			
1. Solar photovoltaic plant and its associated facilities are installed and operational CONFIDENTIAL INFORMATION DELETED.			
Inputs			
Loans: Asian Development Bank (A loan): \$11.3 million Leading Asia's Private Sector Infrastructure Fund: Nonparallel Debt Financing ^c : \$7.6 million Commercial banks (B loan) ^d : \$18.9 million CONFIDENTIAL INFORMATION DELETED.			
Assumptions for Partner Financing			
Not applicable			

^a Government of Viet Nam. 2011. *National Power Development Plan, 2011–2020, with outlook to 2030*. Ha Noi.

^b Government of Viet Nam. 2015. *Intended Nationally Determined Contribution of Viet Nam*. Ha Noi.

^c Financing partner: Japan International Cooperation Agency. Administered by the Asian Development Bank.

^d Participating financial institutions include Standard Chartered Bank, Siam Commercial Bank, and Bangkok Bank.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=53106-001-4>

1. Sector Overview
2. Client Information
3. Details of Implementation Arrangements
4. Contribution to the ADB Results Framework
5. Financial Analysis
6. Economic Analysis
7. Country Economic Indicators
8. Summary Poverty Reduction and Social Strategy
9. Tax Due Diligence Disclosure