



# Report and Recommendation of the President to the Board of Directors

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**PUBLIC**

Project Number: 57173-001  
November 2024

## Proposed Loan and Administration of Loan Gulf Renewable Energy Company Limited Gulf Solar and Solar with Battery Energy Storage Systems Project (Thailand)

This is a redacted version of the document approved by ADB's Board of Directors. The document 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 1 March 2024)

Currency unit	–	baht (B)
B1.00	=	\$0.028
\$1.00	=	B35.896

## ABBREVIATIONS

ADB	–	Asian Development Bank
BESS	–	battery energy storage systems
		<b>CONFIDENTIAL INFORMATION DELETED</b>
COD	–	commercial operations date
CTF	–	Clean Technology Fund
E&S	–	environmental and social
EBITDA	–	earnings before interest, taxes, depreciation, and amortization
EGAT	–	Electricity Generating Authority of Thailand
EPCM	–	engineering, procurement and construction management
ESMS	–	environmental and social management system
FIT	–	feed-in-tariff
GED	–	Gulf Energy Development Public Company Limited
GHG	–	greenhouse gas
GRE	–	Gulf Renewable Energy Company Limited
GW	–	gigawatt
IEE	–	Initial environmental examination
IMF	–	International Monetary Fund
		<b>CONFIDENTIAL INFORMATION DELETED</b>
PPA	–	power purchase agreement
		<b>CONFIDENTIAL INFORMATION DELETED</b>
TRIS	–	Thai Rating and Information Services

## NOTES

- (i) The fiscal year (FY) of Gulf Energy Development Public Company Limited ends on 31 December.
- (ii) In this report, “\$” refers to United States dollars.

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- <sup>a</sup> Outposted to the Thailand Resident Mission.
- <sup>b</sup> Outposted to the Viet Nam Resident Mission

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**PROJECT AT A GLANCE**

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## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan of up to B10,000,000,000 (or its equivalent in United States dollars) from the Asian Development Bank (ADB) to Gulf Renewable Energy Company Limited (GRE) for the Gulf Solar and Solar with Battery Energy Storage Systems Project in Thailand. The report also describes the proposed administration of a loan of up to \$31,350,000 to be provided by the Clean Technology Fund (CTF) for the Gulf Solar and Solar with Battery Energy Storage Systems Project,<sup>1</sup> and if the Board approves the proposed loan, I, acting under the authority delegated to me by the Board, approve the administration of the loan.

2. The transaction is a senior unsecured corporate finance loan to GRE with a maximum tenor of up to 5 years to finance a portfolio of 12 renewable energy projects in Thailand comprising (i) 8 ground-mounted solar photovoltaic plants with a total contracted capacity of 393 megawatts (MW); and (ii) 4 ground-mounted solar photovoltaic plants with a total contracted capacity of 256 MW and 396 MW-hours of integrated battery energy storage systems (BESS)<sup>2</sup>, i.e., solar-BESS. GRE is a 100% subsidiary of Gulf Energy Development Public Company Limited (GED) and GED will provide a guarantee for the loan. The transaction will provide a construction bridge loan to GRE to cover the financing gap until its underlying projects achieve their commercial operations date (COD) and can raise long-term project financing. The initial tenor of the loan is up to 3 years but is extendable to 5 years to allow for flexibility on the timing of the financial close for the long-term take-out financing of the 12 renewable energy projects. ADB is acting as the mandated lead arranger is expected to help catalyze \$2 of cofinancing from development finance and other sources for every \$1 of ADB investment.<sup>3,4</sup> ADB will also provide blended concessional finance from the CTF to allow for the higher execution and operating risks of the solar-BESS projects.

3. ADB's assistance will support GED's long-term target to achieve net-zero greenhouse gas (GHG) emissions by 2050, and Thailand's 5-gigawatt (GW) renewable energy feed-in-tariff (FIT) program for 2022–2030.<sup>5</sup> The FIT program will double Thailand's wind and solar capacity,<sup>6</sup> making a meaningful contribution to Thailand's climate commitments. The ADB-supported project will promote the deployment of solar-BESS plants which is critical to the integration of a growing share of renewable energy capacity and the decarbonization of the energy sector. It will be the first large-scale solar-BESS procurement in Southeast Asia, providing a precedent and demonstration effect for future BESS programs of this type in the region. **CONFIDENTIAL INFORMATION DELETED.**

## II. THE PROJECT

### A. Project Identification and Description

4. **Project identification.** Thailand is ranked as the ninth most vulnerable country in the world to climate change. It aims to reduce its emissions by 20% from the business-as-usual

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<sup>1</sup> Under the Integrated Renewable Energy and Energy Storage Sub-Program.

<sup>2</sup> BESS is a type of energy storage system that uses batteries to store and distribute energy in the form of electricity.

<sup>3</sup> Final mobilization amount will depend on the internal approvals of the co-financiers GED's allocations to each lender.

<sup>4</sup> Calculated as \$600 million of potential cofinancing divided by \$279 million of ADB's proposed loan amount. Potential Parallel Lenders may include Asian Infrastructure Investment Bank, Export Finance Australia, Export-Import Bank of China, Development Finance Institute Canada, Deutsche Investitions- und Entwicklungsgesellschaft (German Investment Corporation) and KEXIM Global (SG) Ltd.

<sup>5</sup> Watson Farley & Williams. 2022. [Thailand's 5 GW Renewable PPA FIT Scheme: 2022–2030](#). Thailand (12 October).

<sup>6</sup> Thailand had about 4.8GW of installed wind and solar at the end of 2023. Department of Alternative Energy Development and Efficiency. 2024. [Energy Statistics & Information](#). (accessed 1 February 2024).

scenario by 2030; achieve carbon neutrality by 2050; and achieve net-zero emissions by 2065.<sup>7</sup> Reaching these goals will require substantial emission reductions in the energy sector, which contributed 61% of Thailand's GHG emissions in 2019.<sup>8</sup> In 2023, fossil fuels accounted for 72% of total electricity generation, while the share of renewables (excluding hydropower) was only 10%.<sup>9</sup> The Government of Thailand has set a target for renewables to supply 30% of the electricity consumed by 2037, and 50% by 2050, to achieve its carbon neutrality targets. The Power Development Plan 2018–2037 Revision 1 includes a target to build an additional 18 GW of renewable energy capacity, including 10 GW of solar power between 2018 and 2037. As Thailand increases its share of intermittent renewable energy sources (solar and wind), energy storage will become an increasingly important technology. Currently, the country has only one utility-scale solar–BESS project with 49 MW of solar capacity and 136 MW-hours of BESS.

5. In response to the country's renewable targets, in 2022, the Energy Regulatory Commission announced a program to purchase up to 5 GW of electricity from renewable energy sources under a FIT scheme (footnote 5). Projects under this program are required to reach COD between 2024 and 2030 and consist of 2,368 MW of ground-mounted solar, 1,000 MW of ground-mounted solar–BESS, 1,500 MW of wind power, and 335 MW of biogas plants.

6. ADB has built strong relationships with key private sector participants in Thailand's energy sector. When the 5 GW FIT scheme was announced, ADB began reaching out to energy companies to discuss funding requirements and potential financing support. Among the companies ADB spoke with, GED's portfolio of projects had the earliest targeted COD, whereas others were not yet looking to raise financing. GED is one of ADB's largest private sector clients with a long-standing relationship since 2007. To date, ADB has approved funding for six project finance transactions with GED and one equity investment (since exited). GED views ADB as a valuable partner, as evidenced by ADB's successful appointment as the mandated lead arranger for this financing.

7. **Project design.** The projects in the portfolio have 25-year power purchase agreements (PPAs) signed with the Electricity Generating Authority of Thailand (EGAT) to sell electricity at a fixed FIT **CONFIDENTIAL INFORMATION DELETED**. The power output requirement under the PPAs for the solar projects is on a non-firm basis, whereas the PPAs for solar–BESS projects require output on a partial-firm basis, i.e., the project must be capable of generating 100% of the MW capacity specified in the PPA between 9:00 a.m. and 4:00 p.m. and 60% of the MW capacity for 2 hours (or more as ordered by the offtaker) between 6:01 p.m. and 6:00 a.m. The conditions of the PPAs relating to storage output and duration require oversizing the installed solar capacity to charge the BESS. **CONFIDENTIAL INFORMATION DELETED**.

8. **Borrower.** GRE, the borrower, is a wholly owned subsidiary of GED focused on investing in renewable energy and is a key part of GED's growth strategy. It was established in 2018 and registered under the laws of Thailand. **CONFIDENTIAL INFORMATION DELETED**.

9. **Guarantor.** GED, established in 2011, is a leading private sector power generation company in Thailand with a total installed generation capacity of 12,426 MW, of which 11,396 MW is gas-fired and 1,030 MW is renewables, as of November 2023. GED's core businesses fall

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<sup>7</sup> International Monetary Fund. 2022. [Thailand: Selected Issues](#). *IMF Staff Country Reports*. No. 301. Washington, DC; and Government of Thailand, Ministry of Natural Resources and Environment, Office of Natural Resources and Environmental Policy and Planning. 2020. [Thailand's Updated Nationally Determined Contribution](#). Bangkok.

<sup>8</sup> International Monetary Fund. 2022. [Thailand: Selected Issues](#).

<sup>9</sup> Energy Policy and Planning Office, 2024. Thailand: Energy Statistics. Bangkok.

into three business groups: energy, infrastructure and utilities, and digital. The energy business is the main revenue source for GED, which aims to achieve net zero by 2050.

10. To support its 2050 net zero ambition, GED is aiming to significantly increase its investments in renewable energy with an interim target to reduce its scope 1 carbon dioxide emissions intensity by 25% within 2030 compared to the base year of 2019. To achieve this, GED plans to increase its renewable energy capacity from 8% of its portfolio in 2023 to 40% by 2035.

11. As of December 2022 (the most recent full-year results), GED generated \$2.7 billion equivalent in revenues, almost double the 2021 figure, owing to its growing power portfolio. GED's cashflows are highly predictable since about 76% of total revenues in 2022 were backed by long-term PPAs with credible offtakers such as EGAT. Leverage in the form of net debt to equity ratio was acceptable at 1.5 times in 2022, well below its bond covenant of 3.5 times. Thai Rating and Information Services (TRIS) upgraded its GED rating to *A+/stable* in January 2023, and reaffirmed the rating in February 2023 and later in December 2023.

**Table 1: Gulf Energy Development Public Company Limited – Historical Consolidated Financial Performance**

(\$ million)				
Item	2019	2020	2021	2022
Revenues	1,002	1,098	1,422	2,720
EBITDA	266	351	473	624
Adjusted EBITDA <sup>a</sup>	344	455	607	815
Net profit/(loss)	239	205	275	408
Cash and cash equivalents	481	542	664	1,223
<b>Total assets</b>	<b>4,481</b>	<b>8,202</b>	<b>10,869</b>	<b>12,083</b>
Total debt	2,575	4,733	6,698	7,240
Adjusted debt <sup>b</sup>	2,876	6,272	7,685	7,858
<b>Total equity</b>	<b>1,637</b>	<b>2,407</b>	<b>3,222</b>	<b>3,924</b>
<b>Key financial metrics</b>				
Debt / EBITDA	9.66x	13.50x	14.16x	11.61x
Debt / adjusted EBITDA	7.49x	10.41x	11.03x	8.89x
EBITDA interest coverage	2.14x	2.24x	2.31x	2.47x
Net debt / equity	1.28x	1.74x	1.87x	1.53x

( ) = negative; EBITDA = earnings before interest, taxes, depreciation, and amortization; x = times.

Note: Details of the historical consolidated financial performance of Gulf Energy Development Public Company Limited is provided in Annex 2 (Client Information).

<sup>a</sup> Adjusted EBITDA includes cash dividends received from joint ventures and associates.

<sup>b</sup> Adjusted debt includes capital commitments for the construction of power plants.

Sources: Gulf Energy Development Public Company Limited. Annual Report. Bangkok (4 years: 2019–2022).

12. Sarath Ratanavadi is the founder and chief executive officer of GED. He and his family hold about 74% of the shares in the company. Institutional and public investors hold 26%. GED is listed on the Stock Exchange of Thailand with a market capitalization of about \$14.7 billion as of 9 January 2024.

13. **Integrity due diligence.** CONFIDENTIAL INFORMATION DELETED.

14. **Tax integrity due diligence.** CONFIDENTIAL INFORMATION DELETED.

## B. Development Impacts, Outcome, and Outputs

15. **Impacts.** The project is aligned with the following impacts: (i) the renewable energy capacity of Thailand increased by 18,833 MW from 2018 to 2037,<sup>10</sup> and (ii) Thailand's GHG emissions reduced by 30% from the projected business-as-usual level by 2030, and meeting the long-term goal of carbon neutrality by 2050 and net-zero GHG emissions by 2065.<sup>11</sup>

16. **Outcome.** The project will have the following outcome: renewable power delivered to the domestic grid increased. **CONFIDENTIAL INFORMATION DELETED.**

17. **Outputs.** The project outputs will be: (i) portfolio of solar power projects and solar power projects with BESS installed, (ii) local employment generated, and (iii) gender equality in GED's operations promoted.

### C. Alignment with ADB Strategy and Operations

18. **Consistency with ADB strategy and country strategy.** The project is consistent with ADB's Strategy 2030.<sup>12</sup> It supports two of the seven operational priorities of Strategy 2030: (i) accelerating progress in gender equality; and (ii) tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability. The project also aligns with ADB's country partnership strategy, 2021–2025 for Thailand, which calls for continued ADB investment in renewable energy including battery energy storage to strengthen resilience and sustainability.<sup>13</sup>

19. **Consistency with sector strategy and relevant ADB operations.** The project is consistent with ADB's Energy Policy, which supports universal access to reliable and affordable energy services, while promoting the low-carbon transition in Asia and the Pacific.<sup>14</sup>

20. **Paris Agreement alignment.** Following the Joint Multilateral Development Banks Methodological Principles for Assessment of Paris Agreement Alignment of New Operations, the operation has been assessed as aligned with the goals of the Paris Agreement.

21. **Lessons from previous operations.** ADB has extensive experience in renewable energy projects throughout Asia and has incorporated lessons from previous projects in Thailand in structuring the project. A key lesson is to work with strong and long-standing sponsors, such as GED, especially for pioneering or first-of-a-kind projects.

### D. Project Cost and Financing Plan

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22. **Climate change financing.** Under the Common Principles for Climate Mitigation Finance Tracking, the project can claim climate mitigation finance under the renewable energy generation

<sup>10</sup> Government of Thailand, Energy Policy and Planning Office. 2020. *Thailand Power Development Plan 2018–2037 Revision 1*. Bangkok.

<sup>11</sup> United Nations Climate Change. 2022. *Thailand's 2nd Updated Nationally Determined Contribution*. (November).

<sup>12</sup> ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

<sup>13</sup> ADB. 2021. *Country Partnership Strategy: Thailand, 2021–2025 — Prosperity and Sustainability through Knowledge and Private Sector-Led Growth*. Manila.

<sup>14</sup> ADB. 2021. *2021 Energy Policy of the Asian Development Bank: Supporting Low-Carbon Transition in Asia and the Pacific*. Manila.

category for the full amount of the loan, i.e., B10,000 million (\$279 million equivalent).<sup>15</sup> The project's cofinancing of up to \$600 million equivalent and the CTF loan of up to \$31,350,000 will also contribute to ADB's ambition for crowding-in further climate finance in addition to its own resources.

## E. Implementation Arrangements

23. Table 3 summarizes the implementation arrangements.<sup>16</sup>

**Table 3: Summary of Implementation Arrangements**

Aspects	Arrangement
Regulatory framework	The projects will be subject to the regulations of the Energy Regulatory Commission on the procurement of electricity from renewable energy in the form of the feed-in-tariff in 2022–2030 (B.E.2565–2573) for the Group of No Fuel Cost 2022 (B.E.2565) published in the Government Gazette of 27 September 2022 (B.E.2565).
Implementing entity	CONFIDENTIAL INFORMATION DELETED
Management	CONFIDENTIAL INFORMATION DELETED.
Implementation period	CONFIDENTIAL INFORMATION DELETED
Revenue structure	GRE will sell the electricity generated from the project under the feed-in-tariff program to the Electricity Generating Authority of Thailand. Revenues are fully contracted, with long-term power purchase agreements, providing a stable and reliable revenue structure.
Major cost structure	Capital expenditure investment is required to develop and construct the portfolio of 12 renewable energy projects. Operating costs tend to be low for renewable energy projects, particularly solar, since there are no fuel costs.
Operation and maintenance	The operation and maintenance of renewable power plants is relatively simple and does not present major technical challenges for experienced power project developers.
Performance monitoring	GRE will submit (i) CONFIDENTIAL INFORMATION DELETED, (ii) environmental and social monitoring reports as required, and (iii) development effectiveness reports on a yearly basis.

B.E. = Buddhist era.

Sources: Asian Development Bank and Gulf Energy Development Public Company Limited.

## F. Projected Financial and Economic Performance

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### III. THE PROPOSED ADB ASSISTANCE

#### A. The Assistance

24. ADB will provide a corporate loan of up to B10,000,000,000 from its ordinary capital resources. The loan will have a tenor of up to 5 years with a bullet repayment. GRE will be bound by commercial terms and covenants stipulated in the financing agreements. ADB will also act as the lender of record for a \$31,350,000 concessional loan to be provided by the CTF (footnote 1).

#### B. Value Added by ADB Assistance

25. ADB's assistance will support a significant increase in Thailand's renewable energy capacity and the first large-scale deployment of solar-BESS in Southeast Asia. ADB's financing will be one of the first large-scale financings for the sector in Thailand and will have an important demonstrative impact. ADB will also help mobilize blended concessional finance from the CTF to

<sup>15</sup> ADB. 2021. Common Principles for Climate Mitigation Finance Tracking.

<sup>16</sup> Details of Implementation Arrangements (Annex 3).



support the higher execution risk and likely higher capital expenditure<sup>17</sup> associated with such first mover solar–BESS projects.

26. GED appointed ADB as the mandated lead arranger to help mobilize additional liquidity from multilaterals, development finance institutions, and export credit agencies, which will enable GED and GRE to broaden their sources of funding for a sizable pipeline of projects. ADB's involvement will also require adoption of its safeguards requirements which will enhance environmental and social risk management for ADB funded subprojects, and adoption of best practice gender measures.

### C. Risks

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## IV. POLICY COMPLIANCE

### A. Safeguards and Social Dimensions

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

28. ADB has undertaken corporate- and project specific due diligence and reviewed the potential environmental and social (E&S) impacts of the project and the measures to avoid, minimize, mitigate, and compensate for the adverse impacts. The E&S measures and the institutional capacity and commitment of GRE to manage the project's E&S impacts are mostly adequate but require some enhancements in specific areas that were identified during the due diligence.

29. **Environmental and social audit findings and recommendations.** A corporate audit was undertaken by a qualified external third party in accordance with ADB's Safeguard Policy Statement SR 4 General Corporate Finance. The audit included a review of GED's corporate environmental and social management system (ESMS), which will be adopted by GRE for the 12 solar and solar–BESS projects. The projects will be developed in two phases focusing on five projects commencing construction in 2024 with a COD target in 2024, followed by the remaining seven projects which have a COD target in 2025. The audit included site visits to the five projects targeting COD in 2024 and preliminary review of the additional seven subprojects. GRE carried out initial environmental examinations (IEEs) and social compliance audits for the first five projects, a process that will also be undertaken for the subsequent seven subprojects prior to the relevant disbursement.

30. GED is already implementing an ESMS established in 2017 to comply with ADB's Safeguard Policy Statement requirements as applicable at the time of ADB's equity investment in GED. The ESMS is supported by policies and procedures covering environment, health, safety, labor, human rights, and sustainability. Project development activities adhere to the applicable laws and regulations and implement all applicable corporate policies and procedures. Operational

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<sup>17</sup> The projects under the FiT program have scheduled COD from 2024 to 2030 and all of the projects are offered the same FiT level regardless of the timing. GED bid on and was awarded solar plus BESS projects with COD of 2024–2025. Given that capital expenditure for BESS projects is expected to significantly reduce by 2030, GED is exposed to higher capital cost and first mover risks compared to bidders with much later COD.



power generation facilities implement formal environmental, health, and safety management systems that are certified to International Organization for Standardization (ISO) standards. Gaps were identified during the audit and GED will be required to enhance its ESMS mainly in the areas of (i) E&S screening and risk assessment, (ii) E&S organization and capacity at corporate and sub-project levels, (iii) monitoring and reporting arrangements, and (iv) stakeholder engagement and grievance redress mechanisms.

31. The IEEs carried out for the five subprojects indicate that the residual environmental impacts resulting from project activities, after the implementation of proposed management measures, are considered acceptable and meet applicable requirements. The E&S management and monitoring plans (ESMPs) prepared for the subprojects as part of the five IEEs require additional plans and procedures.

32. The social compliance audit undertaken at the five subproject sites determined that all land for the solar plants was acquired prior to any anticipation of ADB financing, and all purchases followed the willing buyer–willing seller principle, in line with Thai law. Land and asset payments were undertaken in line with or in excess of market values. There are no outstanding claims or grievances regarding land acquisition across the five sites. All five sites require transmission lines that are not part of the ADB loan’s use of proceeds; they will be developed by state-owned Provincial Electricity Authority on behalf of the projects and, within government-owned pre-existing rights of way. The ESMS audit and Social Compliance Audit (SCA) found that there are no indigenous peoples or ethnic minorities will be directly or indirectly affected by the projects. GRE will ensure that effective stakeholder engagement plans and procedures are in place to manage grievances from workers and external stakeholders.

33. An E&S action plan (ESAP) was prepared to address E&S gaps and findings and agreed with the borrower which will be included as part of the financial documents.

34. GRE will enhance its ESMS to meet ADB’s safeguard and social requirements in a manner that is satisfactory to ADB and within the agreed timeframes set out in the initial E&S action plan. GRE will report regularly to ADB on its and its projects’ compliance with applicable safeguards and social requirement laws, and on the implementation of the ADB-endorsed ESMS.

35. ADB projects are required to be compliant with ADB’s Safeguard Policy Statement and ADB’s Social Protection Strategy (2001).<sup>18</sup> ADB is applying additional measures to provide practicable mitigation of core labor standard risk in the photovoltaic supply chain, including (i) enhanced due diligence; (ii) representations that the borrower adheres to labor requirements consistent with the Safeguard Policy Statement (prohibited investment activities list, Appendix 5) and requires the same of its relevant suppliers; and (iii) representations and covenants of the borrower that, to its knowledge, its supply chain adheres to these labor requirements. The respective documentation will reflect this approach through the inclusion of suitable provisions.

36. **Some gender elements.** The project is classified to have *some gender elements*. GRE commits to implement measures to promote gender equality and women’s empowerment in its business activities following ADB’s Policy on Gender and Development (1998). These measures are: (i) target allocation for women in the new engineering and technical (referred to as science, technology, engineering, and mathematics [STEM]) jobs at GED; (ii) targeted participation of women in STEM roles at GED in development programs; and (iii) roll out of a gender equality

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<sup>18</sup> ADB. 2003. *Social Protection Strategy*. Manila (adopted in 2001).

training for GRE's staff. GRE will submit periodic reports on the implementation of gender measures to ADB.

## **B. Anticorruption Policy**

37. GRE was advised of ADB's policy of implementing best international practice relating to combating corruption and 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**

38. The proposed corporate loan is within the medium-term, country, industry, group, and single exposure limits for nonsovereign investments. Any constraints on exposure limits will be managed through the use of risk transfer arrangements as needed.

## **D. Assurances**

39. Consistent with the Agreement Establishing the Asian Development Bank (the Charter),<sup>19</sup> ADB will proceed with the proposed assistance upon establishing that the Government of Thailand has no objection to the proposed assistance to GRE. 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**

40. 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 B10,000,000,000 (or its equivalent in United States dollars) from ADB's ordinary capital resources to Gulf Renewable Energy Company Limited for the Gulf Solar and Solar with Battery Energy Storage Systems Project in Thailand, 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.

Masatsugu Asakawa  
President

26 March 2024

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<sup>19</sup> ADB. 1966. *Agreement Establishing the Asian Development Bank*. Manila.

## DESIGN AND MONITORING FRAMEWORK

### Impacts the Project is Aligned with

- (i) Renewable energy capacity of Thailand increased by 18,833 MW from 2018–2037;<sup>a</sup> and  
(ii) Thailand's GHG emissions reduced by 30% from the projected business-as-usual level by 2030, and meeting the long-term goal of carbon neutrality by 2050 and net-zero GHG emissions by 2065.<sup>b</sup>

Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
<b>Outcome</b> Renewable power delivered to the domestic grid increased	CONFIDENTIAL INFORMATION DELETED	a.–b. Annual development effectiveness monitoring reports by the borrower	CONFIDENTIAL INFORMATION DELETED
<b>Outputs</b> 1. Portfolio of solar power projects and solar power projects with BESS installed 2. Local employment generated 3. Gender equality in GED's operations promoted	CONFIDENTIAL INFORMATION DELETED	1a.–3c. Annual development effectiveness monitoring reports by the borrower.	CONFIDENTIAL INFORMATION DELETED

### Key Activities with Milestones

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### Inputs

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A = assumption; BESS = battery energy storage systems; GED = Gulf Energy Development Public Company Limited; GHG = greenhouse gas; GRE = Gulf Renewable Energy Company Limited; MW = megawatt; OP = operational priority; PPA = power purchase agreement; Q = quarter; R = risk; STEM = science, technology, engineering, and mathematics.

<sup>a</sup> Government of Thailand, Energy Policy and Planning Office. 2020. *Thailand Power Development Plan 2018–2037 Revision 1*. Bangkok.

<sup>b</sup> United Nations Climate Change. 2022. *Thailand's 2nd Updated Nationally Determined Contribution*. (November).

<sup>c</sup> GED defines STEM jobs in the following job categories: accountant, engineering, financial analyst, tax analyst, environmental engineering, and chemist. For reference, as of December 2023, women accounted for 17% of total STEM

jobs at GED. GED here refers to GED itself and subsidiaries in which GED has a controlling interest, i.e., owns more than 50%.

- <sup>d</sup> Development programs will include both general professional training and specific technical training, such as coaching for performance, financial foundations, growth mindset, and high-impact communication. GED here refers to GED and subsidiaries in which GED has a controlling interest, i.e., owns more than 50%.
- <sup>e</sup> Gender equality training may include topics relating to (i) gender-sensitive work environment, gender equality principles, unconscious bias, and inclusive work distribution; and (ii) provisions set in GED's gender-sensitive policies (on diversity, discrimination and harassment, and human rights). GRE will introduce this new training by leveraging its code of conduct training and adjusting it as it gets implemented. GRE will hold an end-of-training evaluation to capture acquired knowledge from the trainees.

**Contribution to Strategy 2030 Operational Priorities**

Expected values and methodological details for all OP indicators to which this project will contribute results are detailed in Contribution to Strategy 2030 Operational Priorities (Annex 4).

Source: Asian Development Bank.