



Technical Assistance Report

PUBLIC

Project Number: 57208-001
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Republic of Maldives: Project Preparatory and Capacity Building for Renewable Energy Projects

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Asian Development Bank

CURRENCY EQUIVALENTS
(as of 1 November 2023)

Currency Unit	–	Rufiyaa (Rf)
Rf1.00	=	\$0.06523
\$1.00	=	Rf15.3295

ABBREVIATIONS

ADB	–	Asian Development Bank
TA	–	technical assistance

NOTES

- (i) The fiscal year (FY) of the Government of Maldives ends on 31 December. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2023 ends on 31 December 2023.
- (ii) In this report, “\$” refers to United States dollars.

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ANNEXES

<http://www.adb.org/Documents/LinkedDocs/?id=57208-001-TARreport>

1. Design and Monitoring Framework
2. Cost Estimates and Financing Plan
3. Summary of Projects Under the Technical Assistance
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TRANSACTION TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data		Project Number: 57208-001
Project Name	Project Preparatory and Capacity Building for Renewable Energy Projects	Department/Division SG/SG-ENE
Nature of Activity Modality	Project Preparation Regular	Executing Agency Ministry of Finance (formerly Ministry of Finance and Treasury)
Country	Maldives	
2. Sector	Subsector(s)	ADB Financing (\$ million)
✓ Energy	Energy efficiency and conservation	1.000
	Total	1.000
3. Operational Priorities		Climate Change Information
✓ OP1: Addressing remaining poverty and reducing inequalities		GHG Reductions (tons per annum) 0
✓ OP2: Accelerating progress in gender equality		Climate Change impact on the Project Low
✓ OP3: Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability		ADB Financing
✓ OP6: Strengthening governance and institutional capacity		Adaptation (\$ million) 0.200
		Mitigation (\$ million) 0.800
		Cofinancing
		Adaptation (\$ million) 0.000
		Mitigation (\$ million) 0.000
Sustainable Development Goals		Gender
SDG 7.3		Effective gender mainstreaming (EGM) ✓
		Poverty Targeting
		Geographic Targeting ✓
4. Risk Categorization Low		
5. Safeguard Categorization Safeguard Policy Statement does not apply		
6. Financing		
Modality and Sources		Amount (\$ million)
ADB		1.000
Transaction technical assistance: Technical Assistance Special Fund		1.000
Cofinancing		0.000
None		0.000
Counterpart		0.000
None		0.000
Total		1.000
Currency of ADB Financing: US Dollar		

I. INTRODUCTION

1. The technical assistance (TA) will support project preparation and renewable energy-related capacity building in the Maldives and support project preparation through provision of inputs on technical aspects pertaining to renewable energy and electric mobility, social, environment, financial management, and economic assessments.

2. The TA will build on the experience of the Preparing Outer Islands for Sustainable Development Project and the Accelerating Sustainable System Development Using Renewable Energy Project. It is anchored in (i) pillars 2 and 3¹ of the country partnership strategy for the Maldives, 2020–2024 of the Asian Development Bank (ADB);² and (ii) ADB's Strategy 2030, particularly the operational priorities (a) operational priority 1: reducing poverty and inequalities; (b) operational priority 2: accelerating progress in gender equality; (c) operational priority 3: tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability; and (d) operational priority 6: strengthening governance and institutional capacity.³ The TA is aligned with the Independent Evaluation Department's evaluation of ADB's energy policy and program, 2009–2019 recommendations to address identified challenges by supporting investments in (i) climate mitigation and adaptation, (ii) digitalization of electricity services, and (iii) long-term financial sustainability of utilities.⁴ The TA supports the preparation of project interventions that are fully aligned following the joint multilateral development bank principles for Paris Agreement alignment.

II. ISSUES

3. Fossil fuel imports, mainly diesel fuel and liquefied petroleum gas, meet the country's energy demands, accounting for about 8%–10% of the country's gross domestic product. The power generation in the Maldives is primarily from the diesel-generated projects with a capacity of 320 megawatts installed on inhabited islands. Despite the challenges posed by climate change and natural hazards, the Maldives aims to ensure sufficient, reliable, sustainable, secure, and affordable energy for all citizens. The country's vision for the energy sector focuses on three pillars: energy efficiency, renewable energy, and technology innovation.

4. The President of Maldives announced a commitment to achieve net-zero status by 2030 at the United Nations Climate Ambition Summit in 2020.⁵ To support this vision, the country has established a policy framework consisting of the nationally determined contribution, the energy policy and strategy 2016,⁶ the Strategic Action Plan 2019–2023,⁷ and the road map for the energy sector 2020–2030⁸ (currently undergoing revision). The road map for the energy sector, prepared

¹ The TA will support (i) Pillar 2 (strengthen competitiveness and diversify the economic base) by attracting private sector participation in renewable energy, and (ii) Pillar 3 (improve the quality of life of island communities while ensuring environmental sustainability) by improving the quality and reliability of electricity supply and expanding clean energy for power generation.

² ADB. 2020. [Country Partnership Strategy: Maldives, 2020–2024—A Resilient and Sustainable Island Life for All Maldivians](#). Manila.

³ ADB. 2018. [Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific](#). Manila.

⁴ ADB. 2020. [ADB Energy Policy and Program, 2009–2019](#). Manila.

⁵ The President's Office. 2021. ['What will it take for you to listen to us?' President Appeals to World Leaders at COP26, Describes Harsh Realities Faced by Maldivians Due to Climate Change](#) (1 November). Malé.

⁶ Ministry of Environment and Energy. 2016. [Maldives Energy Policy and Strategy](#). Malé.

⁷ Government of Maldives. [Strategic Action Plan, 2019–2023](#). Malé.

⁸ ADB. 2020. [A Brighter Future For Maldives Powered By Renewables: Road Map For The Energy Sector 2020–2030](#). Manila.

under an ongoing ADB project, focuses on the three pillars of the energy sector vision. It emphasizes renewable energy investments for outer islands and outlines future interventions like scaling up solar photovoltaic penetration through private sector investments, mobilizing finances for battery storage and grid enhancement, and establishing market infrastructure for net metering and pilot testing of potential technologies.

5. The renewable energy capacity in the country, primarily from solar photovoltaic systems, is about 53 megawatts, but power generation costs are high because of oversized systems and lack of power interconnection between islands. Further, the deployment of low-cost renewable energy technologies like solar photovoltaic is constrained by limited space in the Greater Malé region and key islands like Maafushi. As a result, in these areas there is a need to explore the use of nearby shallow water bodies to implement floating solar photovoltaic infrastructure, to meet the growing demand for electricity. Further, in the Maldives, the transport sector, including land and sea transport, accounts for more than 40% of the imported fossil fuel consumption. In addition, there are limited renewable energy interventions specifically targeted toward the transport sector. As the country strives to transition to cleaner fuels and work toward its net-zero ambition by 2030, it becomes crucial to identify potential renewable energy-based electric mobility project.

6. The TA support the following activities: (i) survey, technical assessment, and prefeasibility studies for pipeline floating solar and electric mobility projects in the energy sector, whose preparation requires external expertise; (ii) implementation capacity development of key stakeholders, to ensure success project implementation; and (iii) knowledge support to develop and support relevant government agencies in designing policy interventions to scale up renewable energy in the country.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

7. The TA will support the government in (i) preparing the Second Phase of Accelerating Sustainable System Development Using Renewable Energy Project, and (ii) undertaking preliminary studies for a sustainable electric mobility initiative using renewable energy project (electric mobility project). The ensuing projects are in the energy sector and their preparation requires a similar set of technical, safeguard, financial management, or economic assessments. The TA will also support capacity building of the Fenaka Corporation Limited; the State Electricity Company Limited; and the Ministry of Environment, Climate Change and Technology.

8. The impact of the ensuing projects is aligned with the 2021 Maldives Energy Act's objective to make the Maldives a carbon net-zero country.⁹ The outcome of the TA will be the increased technical readiness of the country to achieve additional renewable and cleaner power generation, improved quality of electricity, enhanced energy security, and reduced fiscal burden as envisaged in the Strategic Action Plan 2019–2023.

⁹ The 18/2021 Maldives Energy Act establishes the framework to make energy services available to consumers at a reasonable price, promoting renewable energy sources and ensuring that the energy sector promotes sustainable development that is environmentally friendly and adaptable to climate change. Utility Regulatory Authority. 2022. [18/2021 Maldives Energy Act](#).

B. Outputs, Methods, and Activities

9. **Output 1: Survey and detailed assessment supported for large-scale deployment of floating Solar Photovoltaic in the Greater Malé region.** Under this output, the TA team will prepare a detailed project report with identified project components, technical specifications, engineering estimates, and bid documents for the Second Phase of Accelerating Sustainable System Development Using Renewable Energy Project. The TA team will (i) conduct a comprehensive survey and assessment for the installation of a grid-connected floating solar photovoltaic system in the Greater Malé Region and other potential areas like Maafushi; (ii) conduct a survey to assess the feasibility of interconnecting selected islands through a short-distance submarine cable system, including an evaluation of the existing network condition and considering other requirements for interconnecting the existing microgrids; (iii) analyze and determine the maximum allowable power purchase agreement tariff rates for solar photovoltaic systems and solar photovoltaic systems combined with battery energy storage systems; and (iv) include an assessment of solar photovoltaic generation capacity, levelized cost of electricity, market analysis, and financial viability.

10. **Output 2: Prefeasibility studies conducted for a sustainable renewable energy-powered electric mobility initiative.** The sustainable electric mobility project in the Maldives aims to foster sustainable transportation solutions using renewable energy and reduce carbon emissions in the transportation sector. As preparation for the project, the TA team will conduct preliminary studies to assess the current transportation system, explore potential sustainable transportation options, and identify feasible strategies for the project. The activities for the preliminary studies include (i) a detailed assessment of the current transportation system in the Maldives, including an analysis of existing modes of transportation, infrastructure, and associated challenges; (ii) research and evaluation of best practices and case studies for sustainable transportation implementation from other similar island nations or relevant contexts; (iii) identification of potential sustainable transportation solutions suitable for the Maldives, with a focus on electric vehicles, public transportation systems, cycling infrastructure, and pedestrian-friendly urban planning; and (iv) prefeasibility assessments for each identified sustainable transportation option, considering financial viability, environmental impact, infrastructure requirements, and stakeholder acceptance.

11. **Output 3: Capacity building provided to the implementing agencies.** The output will deliver a comprehensive renewable energy training and capacity building program to Fenaka Corporation Limited; State Electricity Company Limited; and the Ministry of Environment, Climate Change and Technology. These activities will enhance their knowledge and skills in designing and implementing hybrid renewable energy systems, installing, and troubleshooting battery energy storage systems, and understanding renewable energy policies.

12. Activities under each of outputs 1 and 2 will include environmental assessments (including marine and terrestrial ecological evaluations), as well as social safeguards assessments. Additionally, these activities will involve surveys and assessments to enhance gender equality and social inclusion within the project's design. This comprehensive approach will address safeguards considerations related to the environment, involuntary resettlement, and indigenous peoples, and will contribute to the formulation of a gender equality and social inclusion action plan during project preparation. Furthermore, these activities will provide essential inputs for the development of climate adaptation, mitigation, and disaster risk reduction measures.

C. Cost and Financing

13. The TA financing amount is \$1,000,000, which will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF 7). The TA funds will be disbursed in accordance with ADB's *Technical Assistance Disbursement Handbook* (2020, as amended from time to time) and the ADB Procurement Policy (2017, as amended from time to time) and associated project administration instructions and staff instructions. The government will provide counterpart support in the form of counterpart staff, office space, office supplies, project-related information, and other in-kind contributions. The government was informed that approval of the TA does not commit ADB to finance any ensuing project.

14. The total TA amount is broken down per output in Table 1.

Table 1: Cost Breakdown per Output

Output	Indicative Cost (\$)	Percentage of TA Amount (%)
Output 1: Survey and detailed assessment supported for large-scale deployment of floating solar photovoltaic in the Greater Malé region	\$650,000	65
Output 2: Prefeasibility studies conducted for a sustainable renewable energy-powered electric mobility initiative	\$150,000	15
Output 3: Capacity building provided to the implementing agencies	\$200,000	20
Total	\$1,000,000	100

TA = technical assistance.

Source: Asian Development Bank estimates.

D. Implementation Arrangements

15. ADB will administer the TA. The Energy Sector Office of the Sectors Group, in consultation with the executing agency and implementing agency, will select, supervise, and evaluate the consultants. Implementation arrangements are summarized in Table 2. The Ministry of Finance, Government of Maldives will be the executing agency, and the Ministry of Environment, Climate Change and Technology will be the implementing agency of the TA.

16. Implementation arrangements are summarized in Table 2.

Table 2: Implementation Arrangements

Aspects	Arrangements		
Indicative implementation period of the TA	October 2023–September 2025		
Executing agency	Ministry of Finance		
Implementing agency	Ministry of Environment, Climate Change and Technology		
Consultants	To be selected and engaged by ADB		
	Firm: Quality- and cost-based selection	Survey firm to do site assessment, bathymetry, and required consultations	\$225,000
	ICS (international)	(25 person-months)	\$440,000

Aspects	Arrangements		
	ICS (national)	(65 person-months)	\$230,000
Disbursement	The TA resources will be disbursed following ADB's <i>Technical Assistance Disbursement Handbook</i> (2020, as amended from time to time).		
Asset turnover or disposal arrangement upon TA completion	The assets purchased under this TA will be handed over to the Ministry of Environment, Climate Change and Technology upon TA completion.		

ADB = Asian Development Bank, ICS = individual consultant selection, TA = technical assistance.
Source: Asian Development Bank.

17. **Consulting services.** The TA will provide an initial 90 person-months of consulting services (25 person-months international and 65 person-months national)¹⁰ in renewable energy studies, power system planning, and submarine cable interconnection and due diligence support for procurement, financial management, financial analysis, economic analysis, environment and social safeguard assessment, climate change assessment, and climate risk and vulnerability assessment. The TA will also support the required survey, purchase of software, and simulation required for energy sector project preparation and capacity building activities. The TA will engage consulting firms and individual consultants for deployment based on the requirements during project preparation and implementation. ADB will engage the consultants following the ADB Procurement Policy (2017, as amended from time to time) and its associated project administration instructions and/or staff instructions. Except for the survey activities of floating solar photovoltaic sites and marine surveys required for the submarine cables,¹¹ individual consultant selection is appropriate for support of other TA activities because the TA involves multiple activities that are not necessarily interdependent and will require a varied range of consultants and services.

E. Governance

18. Since ADB will administer the TA, the financial management, procurement capacity, and integrity risks during TA implementation are assessed to be low. However, thorough risk assessments for procurement, financial management, and integrity for ensuing investment projects will be conducted under the TA.

IV. THE PRESIDENT'S DECISION

19. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$1,000,000 on a grant basis to the Republic of Maldives for Project Preparatory and Capacity Building for Renewable Energy Projects, and hereby reports this action to the Board.

¹⁰ TA facility savings may be utilized for additional consultant inputs, as may be necessary.

¹¹ The offshore survey and hydrodynamic study require specialized equipment, and trained equipment operators and technicians. Hence, it is recommended to engage a firm with experience working in ocean waters to carry out this marine survey assignment.