



Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 18-Mar-2024 | Report No: PIDA36648

BASIC INFORMATION

A. Basic Project Data

Country Maldives	Project ID P180777	Project Name ACCELERATING SUSTAINABLE CLEAN ENERGY INVESTMENTS FOR NET ZERO TRANSITION	Parent Project ID (if any) P172788
Parent Project Name Accelerating Renewable Energy Integration and Sustainable Energy	Region SOUTH ASIA	Estimated Appraisal Date 26-Feb-2024	Estimated Board Date 15-Apr-2024
Practice Area (Lead) Energy & Extractives	Financing Instrument Investment Project Financing	Borrower(s) Republic of Maldives	Implementing Agency Ministry of Climate Change, Environment and Energy

Proposed Development Objective(s) Parent

The development objective is to increase renewable energy generation capacity and enhance the financial and environmental sustainability of the power sector in the Maldives.

Components

Component 1. Solar PV Risk Mitigation
Component 2. Battery Energy Storage System (BESS)
Component 3. Grid Modernization for VRE Integration
Component 5. New Technologies and Innovation
Component 4. Technical Assistance

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	200.60
Total Financing	200.60
of which IBRD/IDA	15.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	15.00
IDA Credit	15.00

Non-World Bank Group Financing

Trust Funds	30.60
Clean Technology Fund	30.00
Canada Clean Energy and Forest Climate Facility Trust Fund	0.60
Commercial Financing	107.00
Unguaranteed Commercial Financing	107.00
Other Sources	48.00
Asian Infrastructure Investment Bank	18.00
Islamic Development Bank	30.00

Environmental and Social Risk Classification
Moderate

B. Introduction and Context

Country Context

1. Maldives is an island state comprising nearly 1,200 coral islands grouped into 26 atolls, spread across roughly 90,000 square kilometers of Indian Ocean. It is the only upper middle-income country in South Asia with a per-capita income of US\$11,490 as at the end of 2022. The Maldivian population, about 550,000 as of 2022, is widely dispersed across 185 islands, many of which are remote and vulnerable to rising sea levels. Eighty percent of the total land area of the country, which is less than 300 square kilometers, is lower than one meter above mean sea level. The country's exposure to natural hazards and climate variability poses a threat to lives and the economy.

2. Despite having been described as the world's leading tourism destination, Maldives is extremely vulnerable to external shocks due to its economy's high dependence on both tourism and fossil fuel imports. Famous for its natural beauty, coral and marine life, the archipelago has attracted more than 1.7 million tourists annually in the last two years. Tourism and associated services constitute one-third of the



economy, half of government revenues and most private sector jobs. The COVID-19 pandemic negatively impacted the country's tourism sector, but an efficient vaccination program and the dispersed nature of resort islands supported by the "one island, one resort" concept helped restart tourism following a four-month lockdown in 2020. The pandemic underlined the need to accelerate economic diversification in the country, but opportunities outside of tourism will be limited in the near term.

3. The economy is losing its growth momentum despite rising tourist arrivals, and is highly vulnerable to downside risks. After a collapse of 32.9 percent during the pandemic in 2020, the GDP bounced by 37.7 percent and 13.9 percent in 2021 and 2022, respectively. However, the pace of real GDP growth slowed down to 2.5 percent (4-quarter rolling, y-o-y) in 2023Q3 despite total tourist arrivals growing 12.1 percent y-o-y and reaching an all-time high of 1.88 million in 2023. Rising tourist arrivals did not translate into higher real GDP growth due to decreased spending linked to a reduced length of stay. The economy is estimated grow at an annual average of 4.7 percent over the medium term.

4. Large fiscal and external imbalances, combined with external financing gaps have led to declining foreign exchange reserves and substantial liquidity pressures. Elevated capital spending and maintaining a blanket subsidy policy on fuel, electricity, and food have led the government to face significant spending pressures in 2022 and 2023. Merchandise imports remained elevated in 2023 driven by construction and capital goods imports -to support mega infrastructure projects- and fuel imports (around 13 percent of GDP). This resulted in a fall of official reserves from US\$832.1 million or 3.0 months of import coverage as at end-2022 to US\$588.8 million or 2.0 months of imports coverage as of February 2024. Combined with slowing economic growth, the fiscal deficit is estimated to have increased to 13.2 percent of GDP, while the current account deficit widened to an estimated 23.4 percent of GDP in 2023. The high fuel import bill puts extra pressure on the country's already strained fiscal space. The optimal way to reduce fiscal risks, reduce electricity costs—and protect this pristine island paradise—is to move from a fossil-based system toward one based on renewable energy.

5. The high levels of public debt, and associated refinancing risks, leave the Maldivian economy extremely vulnerable to domestic and external shocks. Total public and publicly guaranteed (PPG) debt rose to US\$8.0 billion or an estimated 122.9 percent of GDP in 2023, compared to US\$7.0 billion or 114.5 percent of GDP the year before. Furthermore, the country is projected to pay, on average, about US\$570 million annually of external debt servicing over the 2024–25 period. PPG debt service costs then spike to US\$1.07 billion in 2026, which includes bullet payments for the US\$500 million Sukuk and US\$100 million private placement.

6. A strong multi-year fiscal consolidation program is urgently required to ensure macroeconomic stability and fiscal and debt sustainability, given the high risk of debt distress. As a positive start, the government has announced a homegrown fiscal reform agenda in February 2024 aiming at replenishing fiscal buffers against future shocks, and lowering the cost of growth-enhancing investments. As part of the reform agenda the government plans to implement a subsidy reform program starting July 2024 which is expected to remove universal subsidies on fuel and electricity and save US\$1.5 million (equivalent to 1.3 percent of estimated GDP) during the year.



Sectoral and Institutional Context

7. Electricity in the Maldives is generated and distributed through independent island-based grid systems. Each island has its own powerhouse and distribution setup, functioning as an isolated power grid. There are 184 powerhouses on inhabited islands with a combined generation capacity of 247 megawatts (MW), excluding industrial and exclusive resort islands. The industrial and resort islands are independently managed, having 20 MW and 144 MW of installed capacity respectively. Two primary state-owned utilities, State Electric Company Limited (STELCO) and FENAKA Corporation Limited (FENAKA), manage the distribution. STELCO serves Greater Malé with 35 powerhouses on 35 islands, having 108 MW of electricity generation capacity. Of these, only four islands exceed 1 MW capacity. FENAKA, formed in 2012 by merging six regional utilities, operates 149 powerhouses for 153 outer island communities (excluding resorts). Of these, the electricity generation capacity of 14 islands surpasses 1 MW, with an average load of 450 to 500 kW. FENAKA also oversees sewage, water, and waste treatment for these communities. The dispersed nature of these systems presents operational challenges.

8. Demand for electricity has risen steadily in the Maldives over the past decade, reflecting robust economic growth, but its end-user tariffs rank among the highest in South and South-East Asia, ranging from US\$0.14 to US\$0.50 per kilowatt-hour (kWh). Maldives achieved universal electrification in 2008. The per capita energy consumption in Maldives increased from 15,108 kWh in 2015 to 18,410 kWh in 2019—much higher than other countries in the region but lower than the average upper-middle-income country.

9. Maldives relies on imported diesel to meet almost all its energy needs. COVID-19 and the Russian invasion of Ukraine have increased global oil prices, resulting in US\$63 million in petrol imports, US\$431 million in diesel, and US\$12.4 million in cooking gas. The cost of fuel imports exceeded US\$753 million in 2023, representing almost 22 percent of total imports in the Maldives. Approximately half of the fuel imports (diesel) are used for electricity generation. With an estimated demand of 1,591 GWh in 2020, electricity demand is expected to increase to 2,666 GWh by 2030. Correspondingly, diesel consumption for electricity production is expected to increase from 377,000 tons to 677,000 tons, resulting in about 2,000 kilotons of CO₂ equivalent in 2030.¹ The transport system in the Maldives runs predominantly on fossil fuels. Malé is becoming increasingly congested and polluted due to the rapid increase in the number of private vehicles and poor management of existing road space. Additionally, the significant increase in sea vessels and speedboats, driven by the growing local and guesthouse tourism in recent years, has led to higher diesel consumption and further contributed to pollution. This leads to high levels of pollution and contributes to the growing current account deficit arising from high fuel imports. Given the short travel distance within islands, Maldives is uniquely positioned to benefit from electric mobility.

10. The Maldives' ambition to reach net-zero emissions by 2030 is demonstrated by the government's leadership and actions. Projected to lose 80 percent of its land over the next few decades to rising sea levels, Maldives strengthened its commitment toward climate change and renewable energy targets at the United Nations (UN) Climate Ambition Summit in December 2020 when the government announced the country's ambition to achieve net-zero emissions by 2030. In its revised Nationally Determined Contribution (NDC) submitted in December 2020, Maldives adopted a conditional emissions reduction target of 26 percent by 2030 compared to business as usual.

¹ Maldives Investment Framework for Net Zero.



11. **The success stories from the country’s initial solar projects are testimony to the efforts and commitment of the Government of Maldives (GoM) to meet its net-zero vision.** Solar photovoltaic (PV) installation in Maldives has grown at an annual rate of 45% to 55% since 2016 and there are several more solar PV projects in the pipeline, in addition to other projects on battery storage, grid upgrades, etc.

12. **Decarbonization of the electricity sector can play the single largest role in reducing emissions and contribute to the Maldives’ 2030 net-zero target.** Decreasing costs of renewables, battery storage and other clean technologies not only provide an option to decarbonize the sector, but also provide an opportunity to address crucial issues of energy security, affordability, employment generation, and so forth.

13. **Despite the government’s clean energy ambitions, the scope for public sector investment is limited due to fiscal constraints.** Mobilizing private sector investment will therefore be a critical catalyst to achieving the government’s renewable energy targets and enabling an energy transition.

14. **However, the current investment climate for the private sector is at a nascent stage and private developers and lenders still face challenges investing in the energy sector.** The perceived off-taker risk in the electricity sector is high, primarily due to its reliance on government subsidies. Furthermore, the retail electricity tariff is not cost-reflective. An additional hurdle to private sector investment is utilities’ lack of track record as counterparts to Power Purchase Agreements (PPAs), contracts for the purchase of power and associated renewable energy credits, with Independent Power Producers (IPPs), which are non-utility generator of electric power. Finally, grid availability risk is another problem, as the small island grid systems are not sufficiently flexible to integrate a significant input of variable renewable energy (VRE). As such, additional investment in grid systems will be required to scale up the penetration of renewable energy to prevent grid instability or curtailment of solar.

C. Proposed Development Objective(s)

Original PDO

The development objective is to increase renewable energy generation capacity and enhance the financial and environmental sustainability of the power sector in the Maldives.

Current PDO

The development objective is to increase renewable energy generation capacity and enhance the financial and environmental sustainability of the power sector in the Maldives.



D. Project Description

15. **The proposed Additional Financing (AF)** (to the Accelerating Renewable Energy Integration and Sustainable Energy (ARISE) Project (P172788)), **Accelerating Sustainable Clean Energy Investments for Net Zero Transition (ASCENT) (the Project)**, with a total project cost of around US\$200 million, aims to support the energy transition in the Maldives from fossil fuel dependency to renewables and thereby support the government to achieve its net-zero ambition.

16. **The ARISE project was conceived to scale up the ASPIRE project by adding BESS and grid modernization as part of the project design, and ASCENT integrates additional dimensions into the ARISE model.** ARISE has 36MW of solar capacity, and ASPIRE has 17.5MW of solar capacity, generating around 84 million kWh of clean electricity annually. The projects also reduce diesel consumption by reducing diesel genset (DG) operations. The proposed AF ASCENT project goes one step further to help save on diesel imports and electrify the country's transport sector by increasing solar PV generation to support charging stations and increase the number of e-buses and e-ferries. The government has ambitious renewable energy targets, including a commitment to reaching net-zero emissions by 2030. The proposed project will support the government in achieving these targets by helping mobilize approximately US\$107 million in private capital to support the net-zero transition.

17. **ASCENT is expected to install 55 MW of solar and 90 MWh of BESS. This will support the Maldivian economy by reducing the import bill by approximately US\$42.38 million annually and by over US\$1 billion over the project lifetime of 25 years.** This will not only support the expansion of renewable energy in Maldives but also support the Maldivian economy and its fiscal pressure by reducing the import bill by approximately US\$42.38 million annually and by over US\$1 billion over the project lifetime of 25 years. By generating more electricity through solar PV installations, integrating BESS and supporting grid modernization and E mobility, the overall dependence on fossil fuels will be reduced in Maldives contributing to reduced importation of fossil fuels and thereby lower the import bill in Maldives.

18. **The AF is designed to address climate change concerns and to foster a blue economy, while integrating gender mainstreaming and promoting fiscal benefits for the island nation.** ASCENT will reduce fuel dependency for electricity generation, minimize fuel consumption in the transport sector, and facilitate the operation of privately funded solar PV plants. The ASCENT project will support the Maldives' broader energy transition through grid upgrades, added capacity for renewables and storage, and a pathway to market-based tariffs and renewable energy procurement that is independent of public support and subsidy (through de-risking and tariff buydown, amongst other forms of support). Based on the assumption of constant annual GHG emissions, without the project, the alternative scenario's (with the project) gross GHG emissions over the first year are estimated at 40,775 metric tons, and over the project lifetime of 25 years, it is estimated at 1,019,375 metric tons.

19. **ASCENT is expected to de-risk investments in the renewable energy sector and mobilize private sector investments and investments by several co-financers. Emphasizing the One World Bank Approach,² this comprehensive energy program aims to leverage resources and expertise from IFC, MIGA and other financial institution partners and the private sector, enhancing resilience against climate risks and ensuring the financial sustainability of Maldives.** By aligning with key action areas, ASCENT seeks to contribute to a more sustainable and equitable future for the small island nation. A One World Bank approach is being implemented to provide the most flexible financing solution for the private sector. There are ongoing collaborations to mobilize capital with MIGA and the International Finance Corporation (IFC) to support ASCENT, in a similar modality to that underpinning ARISE. IFC will engage with the winning bidders of each round to provide financing support, subject to its own due diligence, and MIGA will consider further guarantees where expanded risk mitigation coverage is required. In addition to the risk mitigation instruments financed under the project, MIGA, subject to internal approval, has agreed to propose its guaranteed

products to the IPP subprojects as a further layer of project risk mitigation. Indicative guarantee terms from MIGA would be included as part of the bidding package. These would propose coverage of noncommercial risks as follows: (a) termination risk through its breach of contract coverage, (b) transfer restriction, (c) expropriation, and (d) war and civil disturbance risk. The private sector bidders will decide whether or not to opt for MIGA guarantees. Once the winning bidder is selected, if interested, MIGA would conduct its own due diligence for decision-making.

20. A key area of enhancement will be the Gender Mainstreaming subcomponent of ARISE, currently being implemented under, and guided by, the ARISE Gender Action Plan (GAP). The ARISE GAP supports the government’s commitment to inclusivity and women’s employment and empowerment within the sector and the project will support the creation of 12 new jobs for women in the sector (out of 18 new jobs created). Since the beginning of ARISE, the number of females employed in the sector has remained unchanged. Therefore, even though the targets are not increased for ASCENT, a more systemic approach is being undertaken that can help in implementing longer-term policy changes required for Gender Mainstreaming in the sector.

21. The Project will also investigate pioneering clean energy technologies, such as harnessing wave and tidal energy and the development of green hydrogen trade. This comprehensive approach aims to position Maldives as a pioneer in renewable energy among small island developing states (SIDS). The goal is to build resilience against climate risks and ensure financial sustainability, contributing to a more sustainable and equitable future for the country.

22. The Project Components are as follows:

A. Mitigating Financing Risks

23. Component 1: Risk Mitigation Framework (US\$ 9 million). Under this component, ASCENT will install 50 MW of solar, mobilizing approx. US\$62 million of private sector financing. As described in above sections, a three-tier risk mitigation framework is offered to independent power producers selected for deploying sustainable subprojects, in the form of:

- **Component 1.A: Tariff Buydown (TBD) Grant (US\$3 million).** The government will pay the tariff buydown grant to IPPs in accordance with the PPAs and Implementation Agreement (IA), and the amount will be linked with the performance of the IPPs in commissioning and operating the renewable energy projects especially floating solar projects.
- **Component 1.B: Payment Security Mechanism (US\$6 million).** Payment security funds will go into an escrow account at an Escrow Bank and will cover delay in payments by utilizes. It will cover three to six months of PPA payments for projects implemented under Component 1.

² Over the past 20 years, successive World Bank Group (WBG) policy and operational initiatives have sought to increase the number of joint ([World Bank](#), [IFC](#) and [MIGA](#)) projects in order to work as a cohesive institution. According to a [report by the Independent Evaluation Group \(IEG\) reviewing two decades of WBG joint projects](#), nearly three-quarters of those which were approved (83 out of 112) supported investment projects through a blend of IFC investments, MIGA guarantees, or World Bank Investment Project Financing (IPFs) and guarantees. Joint projects with IFC consisted mostly of investments, primarily loans. The main region where these projects came to fruition was Africa, followed by the Middle East and North Africa. The study also found that 46 percent of the World Bank Group’s co-financed projects supported the infrastructure sector, mainly in the energy area. Their added value includes aspects such as facilitating investment in high-risk situations, supporting pioneering investments in member countries, paving the way for foreign direct investment for first-time cross-border investors and advancing complex and complicated transnational projects.

B. Mitigating Technical Risks

24. **Component 2: Battery Energy Storage Systems (BESS) (US\$12 million).** This component is scaled-up from the ARISE project and includes deployment (procurement and operation) of BESS and related equipment in selected grid systems. It will support approximately 90 MWh of BESS in the selected areas, subject to market price trends. The 90 MWh storage capacity will utilize around 20 MWh from public sector procurement. The remaining 70 MWh will be bid out in an IPP/PPA mode (including IFC and MIGA financing instruments) and will mobilize approximately \$45 million from the private sector.

25. **Component 3: Grid Modernization for Variable Renewable Energy Integration (US\$33 million).** The total investment in this component is critical grid infrastructure modernization. This includes urgently needed upgrades to enhance capacity, stability, and reliability; smart grid technology such as advanced metering and automation; and interconnections to facilitate integration of new renewable energy projects by strengthening transmission networks and substations.

C. Enhancing Capacity Building and Innovation

26. **Component 4: Technical Assistance (US\$3.6 million).** Provision of technical assistance to support: (a) institutional capacity building of the stakeholders relevant for renewable energy integration, e-mobility, and net-metering regulation; (b) project management and implementation; and (c) gender mainstreaming. The component will provide technical assistance to be implemented by the Ministry of Climate Change Environment and Energy (MoCCEE- new name as of November 2023) through the PMU.

27. **Component 5: New Technologies and Innovation (US\$36 million).** This is a new component under the ASCENT project. This component aims to support new technologies and innovations in the renewable energy sector including e-mobility.

Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Assessment of Environmental and Social Risks and Impacts

28. **The proposed project activities include the conversion to solar energy to produce electricity via the establishment of floating, land and roof top solar energy generation systems. Via the ASCENT project, support is provided to introduce innovation pilots for other forms of renewable energy and support e-mobility initiatives. All these interventions will reduce the fossil fuel-based energy production dependency in the Maldives.** The energy storage systems and grid upgradation works to the existing grid, can provide social and environmental benefits through the improvements of energy resilience and efficiency. They will also promote the increased use of clean electricity from renewable sources.



Although specific information on subprojects such as the exact locations are unknown at this concept stage, the proposed subprojects are not likely to be complex. The footprint size of proposed subprojects is expected to be small to medium in scale. Project sites including those to be selected for land based solar installation, charging stations for e-vehicles, BESS system installation and grid infrastructure will be on inhabited islands and in areas where anthropogenic activities have taken place already. Areas such as harbors, jetty areas and docks, are being explored as sites for the establishment of floating solar systems to ensure they are located away from sensitive lagoon and marine areas and other environmentally sensitive locations. Negative environmental impacts that have moderate risks are associated with solar energy generation system investments and e-mobility interventions. The grid upgradation works are expected to be localized in nature and arise only during the construction/upgradation stage and future decommissioning of the solar energy systems at the end of their lifetime. These impacts would be in the form of civil works related environmental impacts such as localized dust, noise and minor worker and public health and safety issues as well as waste generation. While the proposed Battery Energy Storage System (BESS) are not complex and are small in installation footprint, the environmental risks associated with this activity will be moderate in nature. In particular, potential fire and explosion risks and environmental hazards related to the disposal of used batteries containing hazardous waste will be mitigated via risk management measures that will include product specifications and provisions in the contracts of supplier for batteries used in the BESS and solar cells in accordance with International best practice. Due to these reasons the overall environmental risks and impacts have been assessed as moderate at the project concept stage.

29. The project is expected to have positive social impacts through the promotion and use of renewable energy technology which has been identified as the best solution in terms of cost-benefits and socio-environmental needs of the country. Risks associated with land acquisition and involuntary resettlement are not expected under the project but installation of solar panels in port areas, residential and commercial areas, poses risks in terms of disturbances to commercial activities, restriction on access to land or use of other resources. Other social risks such as exclusion of vulnerable groups from consultations and decision-making processes, insufficient coordination and engagement with different stakeholders, influx of labor, particular migrant workers and the concomitant issues of GBV, social tensions, burden on community resources and public utilities, are also important considerations for the project. At this stage, since the exact nature and location of the sub-projects is not known, the precise risks and impacts will be known only after the environment and social screening is carried out, as per the due diligence procedure mentioned in Section B.1.

The MoCCEE has demonstrated good capacity and experiences for successfully implementing World Bank safeguards, the ESF and WBG ESHS Guidelines for over a decade. Sector specific E&S risks have also been successfully managed under the Parent Project, ARISE and the ASPIRE project. Further capacity is required on E&S due diligence, in line with the ESF, and associated supervision, via the project intervention with a specific focus on the ESF has also been provided via the parent project. The MoCCEE has prepared both an Environmental and Social Commitment Plan (ESCP) and an Environmental and an addendum to the Social Management Framework (ESMF) which outlines the processes to be followed to ensure good upstream E&S due diligence and management in association with Component 5. In addition, an addendum to the Stakeholder Engagement Plan has been prepared. The ESMF of the original project will remain relevant for the Additional Financing including Components 1 to 4 and the Labor Management Plan of the parent project will be applied for the additional financing as well.

E. Implementation

Institutional and Implementation Arrangements

The institutional arrangements for ASCENT will remain the same as those for ARISE, while the Project Management Unit (PMU) will remain within MoCCEE.



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APPROVAL

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