



Ministry of Environment, Climate Change and Technology
Republic of Maldives

Accelerating Renewable Energy Integration and Sustainable Energy (ARISE) Project

Terms of Reference (TOR)

Development of 3D Animation of Conceptual Models of Solar PV Projects Under Accelerating Renewable Energy Integration & Sustainable Energy

A. COUNTRY BACKGROUND

The Republic of Maldives is a low lying, atoll based, archipelagic nation in the central Indian Ocean. It comprises 1,190 islands grouped into 26 atolls that together occupy a land area of 298 km² and form a chain over 820 km in length, spread over an area of around 90,000 square kilometers. With a total population of the Maldives is 324,992, it is the smallest Asian country in terms of area and population. It is also amongst the most susceptible to climate change. The country is with an average elevation of 1.5 meters above ground level. The two most important sectors of the economy are tourism and fisheries, which contribute nearly 80% of the country's Gross Domestic Product (GDP). The Maldives is regularly exposed to multiple natural hazards such as storms, droughts, heavy rains and high waves caused by cyclones in the southern Indian Ocean – and the disaster risk scenario for the country can be described as moderate.

Demand for electricity has risen steadily in Maldives over the past decade, reflecting robust economic growth. Between 2007 and 2017, total electricity consumption grew by 6.2 percent annually on average, outpacing average annual GDP growth of 5.4 percent over the same period. Total electricity consumption amounted to 750 Giga Watt-hour (GWh) in 2018—much higher on a per capita basis than other countries in the region but lower than the average upper-middle-income country. The increase in electricity demand partly reflects the growth of the tourism sector, the mainstay of the Maldivian economy.

Electricity is generated and distributed through a patchwork of independent isolated island-based grid systems. Each island has its own powerhouse and distribution facility, effectively operating as single, isolated island power grids. There are 186 powerhouses on inhabited islands (excluding industrial islands and islands used exclusively as resorts or where service is provided by Island Councils) collectively generating 319 Mega Watt (MW) from diesel and 21.52 MW from solar. The highly dispersed nature of these power systems poses system operation and flexibility challenges. Two major state-owned utilities, State Electric Company Limited (STELCO) and FENAKA Corporation Limited (FENAKA), are responsible for delivering power supply to most of the inhabited islands. STELCO is the utility serving Greater Malé and manages 35 powerhouses in 35 islands. FENAKA was formed in 2012 as a merger of six regional utilities to serve the outer islands, except resort islands. FENAKA operates 148

powerhouses to serve 152 outer island communities and FENAKA handles sewage, water, and waste treatment for these islands.

The Strategic Action Plan of the GoM have a key priority in promoting green energy use. This includes creating an enabling environment for the growth of sustainable energy use in the sector. Thus, the GoM had been taking measures under this policy to address the issues faced within the sector and promote renewable energy in power generation side as well at the consumer end. As a result, through donor support GoM had, since 2014 started to invest, through both the private sector and public sector mode, in renewable energy technology.

The Accelerating Sustainable Private Investments in Renewable Energy (ASPIRE) Project, hence had become one of the key projects, that had commenced. The project kick started private investments in solar PV technology under Independent Power Produce (IPP) model, through the development and use of an investment framework in conjunction with a comprehensive risk mitigation package to address investment risks for Private Sector in the Maldives.

The framework has been appraised considering government and institutional considerations and informed by feedback from potential private investors. As of date 1.5MW had been installed with an ongoing 5MW installation in Male' region under this model.

Furthermore, the more recently approved Accelerating Renewable-Energy Investments and Sustainable Energy (ARISE) Project will complement the ASPIRE Project by further assisting to scale up PV installations through provision of Battery Energy Storage Systems (BESS) and complementary grid upgrades for Variable Renewable Energy integration through EPC contracts funded through the ASPIRE Project. The new project is expected to add another 36MW of solar PV into the national energy mix.

Since the proposed Project would reduce the islands' financial exposure to oil price volatility, and generate savings by replacing higher cost, imported diesel fueled generation, with cleaner PV generation. The Project also reduces the need for public investment in the power sector, and helps reduce the operating and capital expenses of the state utility companies. Not only would this get the GoM closer to its stated goal of carbon neutrality, but it would also free up resources to fund key social needs such as education and health.

B. PROJECT CONTEXT

The main objective of ASPIRE and ARISE Project is to increase renewable energy generation capacity and enhance the financial and environmental sustainability of the power sector in the Maldives. The initial subprojects under ARISE will target larger outer islands and will consider potential sub-projects for Male' region. The consumer base would later expand to other islands in Maldives, and would receive improved electricity services, with lower local environmental externalities.

The ARISE project would support solar PV generation through IPP sub-projects; support BESS deployment and grid modernization to enable VRE integration; and provide technical assistance (TA) for institutional capacity building, pipeline development, and support for early

stage feasibility work associated with the development of other sustainable energy sources (including electric mobility, wind and wave energy, and green hydrogen). The project has been specifically designed to address various risks associated with project development and deployment.

The key areas of project include solar PV risk mitigation (Component 1) which aims to support the Government in mobilizing private sector investment to deploy solar PV generation capacity by providing a risk mitigation package for private sector IPPs. Where feasible, particularly in smaller islands, IPPs may be requested to invest in solar PV and BESS.

The Battery Energy Storage System component (Component 2) will support deployment of BESS in Addu City and other large islands to enable a high penetration of solar PV in the power system while ensuring reliable supply in a cost-efficient manner. The component will support approximately 50 MWh of BESS in the selected grid systems, subject to market price trends. In the case where BESS is required for VRE integration, storage will be introduced to provide ancillary services, load shifting, and other benefits. Project is expected to finance the procurement of the BESS and its short-term operation and maintenance (O&M) contract to build O&M capacity of the utilities.

The grid modernization for VRE component (Component 3) will support grid upgrades and reinforcement to accommodate an increasing volume of renewable energy and BESS, in selected grid systems. This will be implemented in close coordination with STELCO and FENAKA. The primary scope of Component 3 will include strengthening network capacity; deploying supervisory control and data acquisition (SCADA) systems; and optimizing interactions among renewable energy generations, BESS, and existing conventional power plants. In particular, this will include upgrades in Low Voltage and Medium Voltage distribution lines, transformers, and distribution boxes, to facilitate optimization between solar PV, distributed generation, and BESS. In addition, ME will also lead the co-ordination on site preparation while defining parameters for design configurations, engineering and functional requirements including retrofitting rooftops and developing land for renewable energy generation sites. As the penetration of solar PV and renewable energy increases, interconnection among islands will also be considered to improve system balancing and flexibility.

C. OBJECTIVE OF THIS ASSIGNMENT

The Accelerating Renewable energy integration and Sustainable Energy (ARISE) Project seeks an Animation firm capable of producing a 5 -7-minute 3D Animation Video that will highlight the conceptual Models of Solar PV installation ongoing under ARISE Project. The video will incorporate the design of the Solar Mounting Structures, Floating Solar platform and other Mounting Structures. The Animator should have modern production equipment and qualified creative personnel capable of designing creative concepts with guidance from the team members of Project Management Unit (PMU) of Ministry of Environment, Climate Change and Technology (MECCT).

D. SCOPE OF WORK

The Scope of Work includes the following:

1. Meet the Project management team and get accurate detail/data to be used for the animation;
2. Develop a Technical and Price Proposal for the production of the animation;
3. Develop detailed storyboard concept(s) with assistance from the PMU;
4. The 3D models must be animated according to the structural designs provided by the PMU;
5. Finalize the animation according to feedback provided by the PMU; and
6. Deliver original artwork and high-quality video files.

E. FACILITIES TO BE PROVIDED BY MECCT PMU

1. PMU will also provide data required for the storyboard.
2. Any further relevant data and designs required for the production of the animation can be provided by the Employer.

F. RESPONSIBILITY OF ANIMATOR

1. Hiring of all equipment and/or any processing software to be use for the production of the animation.

G. DELIVERABLES & WORK PLAN

The following are the key deliverables of this task:

No.	Deliverables	Duration
D1	Detailed work plan, including methodology of work	1 Week
<i>MECCT Approval Period</i>		2 Day
D2	First draft of the 3D Animation model of the assignment	8 Weeks
<i>MECCT Approval Period</i>		1 Week
D3	Final Animation with High-Definition Quality	2 Weeks
<i>MECCT Approval Period</i>		1 Week

H. QUALIFICATION REQUIREMENT

The Animation will be selected based on the merits summed up between adequacy and quality of the proposed methodology, work plan, Animator's qualifications and competence. The Animator shall be experienced in related area of works particularly relevant experience and expertise in developing awareness campaigns.

1. Professional experience in prescribed sector; &
2. At least 5 year of demonstrated working experience in the similar fields nationally and/or internationally.
3. Bachelor's Degree in Multimedia.

I. EVALUATION

The technical proposal will be evaluated using the following criteria:

No.	Criteria	Points
1	Adequacy and quality of the proposed methodology, and work plan in responding to the Terms of Reference	40
2	Animator's specific experience	10
3	Animators qualifications and competence for the Assignment	50
Total Points		100
Pass % for each Technical Score		=> 70%

Contract will be awarded to the substantially responsive bidders with a pass marks and with the lowest evaluated price.

