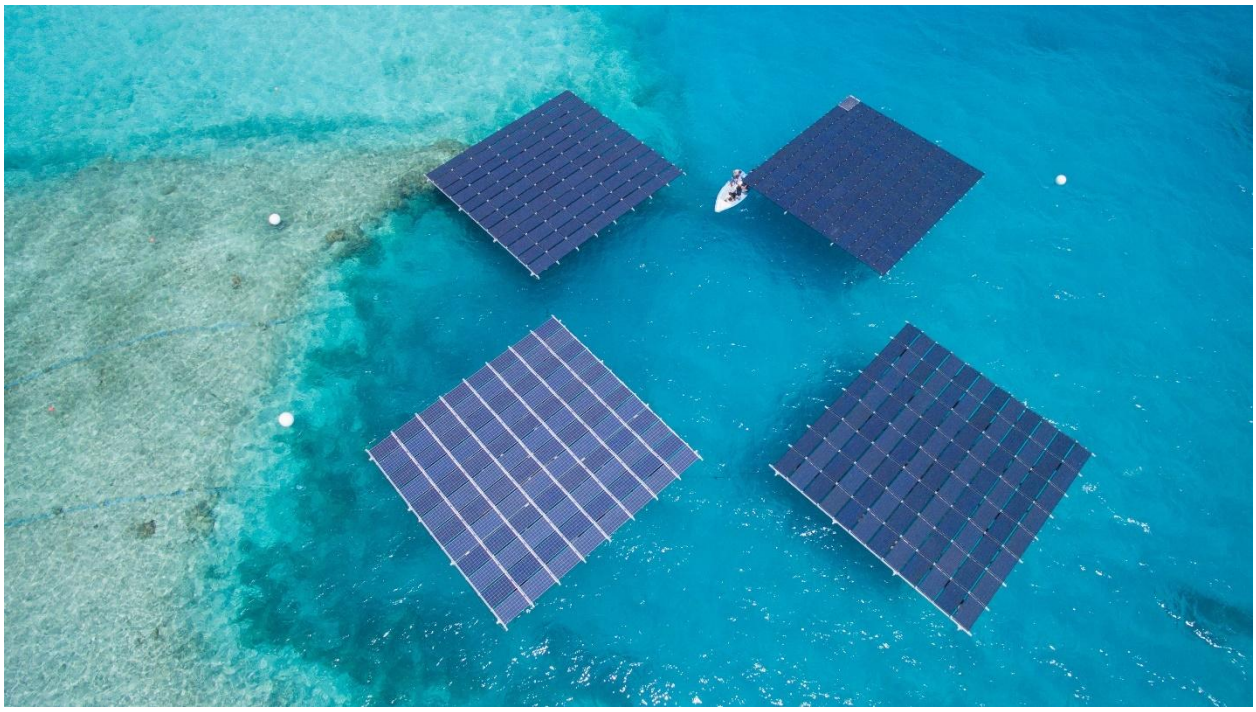
FLOATING SOLAR PLATFORMS FOR CLIMATE CHANGE MITIGATION

TECHNOLOGY DESCRIPTION

TECHNICAL DESCRIPTION

Floating Solar Platforms have similar components as Roof Top Solar systems, however they are deployed in a water body particularly in lakes and shallow lagoon areas. These are platforms moored in the sea with mounted PV arrays on top. These PV floating platforms are connected to the island's grid using a submarine cable. These platforms must be placed in areas close to the islands and with low wave activity to ensure their operations withstand. Effects of salinity over the solar panels must also be considered in the design. The following Figure 1 are photographs of floating solar platforms deployed in a tourist resort in Maldives.



Figur 1: Floating Solar Platforms deployed in a tourist resort in Maldives (Photo credit: Swimsol Maldives)

CURRENT TECHNOLOGY READINESS LEVEL OR COMMERCIAL READINESS INDEX

Technology Readiness Levels (TRL)

TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

Commercial Readiness Index

Level 4 - Multiple commercial applications

CLIMATE RATIONALE OF THE TECHNOLOGY

Floating Solar Platforms are expected to reduce the dependency on fossil fuel-based electricity generation. Floating Solar Platform is expected to have the following benefits:

- Floating Solar Platforms will contribute to the climate change mitigation efforts of the country.
- Floating Solar Platforms will contribute to energy security of the country.
- Floating Solar Platforms will improve the air quality as air pollutants from fossil fuels power plants will be avoided.
- Diesel based power generation requires significant amount of water for cooling purpose and this water pollution and water requirements can be avoided through Floating Solar Platforms.
- The floating solar platforms reduce the need for land or roof space for PV installation.

AMBITION OF THE TECHNOLOGY

SCALE FOR IMPLEMENTATION AND TIME-LINE

The main ambition of technology is to contribute to the renewable energy target of the country. The current RE target is to generate 33% of the country's electricity demand from renewable energy sources by 2028.

In Maldives, currently there are international and local companies which provide installation services of floating solar platforms in tourist resorts. A significant number of tourist resorts has deployed floating solar platforms within their lagoon areas. In addition, 10MW floating solar PV platforms are planned to be installed in the Addu City under the World Bank financed ARISE project. This installation is expected to be completed by 2026.

AMBITION FOR TECHNOLOGY READINESS LEVEL OR COMMERCIAL READINESS INDEX

Technology Readiness Level

TRL 9 – actual system proven in operational environment

Commercial Readiness Index

Level 6 - "Bankable" grade asset class

EXPECTED IMPACTS OF THE TECHNOLOGY

The expected impacts of the Floating Solar Platforms are positive and negative impacts; The main position impacts include

- Reduction of dependency on fossil fuels for electricity generation thus reducing GHG emission.
- Reduction of air pollutants generated from fossil fuel-based electricity generation.

- The floating solar platforms is expected to increase the job opportunities especially for technicians.

The negative impacts of Floating Solar Platforms include;

- Floating Solar Platforms have the potential for covering water surfaces with solar panels reduces sunlight reaching aquatic plants and organisms, disrupting photosynthesis and potentially harming the ecosystem.
- Floating Solar Platforms have the potential to contaminate the water bodies through chemical leaching from the material used for installation of Floating Solar Platforms.
- Large Scale Floating may be aesthetically unpleasant and may be impact recreational activities.

POLICY ACTIONS FOR TECHNOLOGY IMPLEMENTATION

EXISTING POLICIES IN RELATION TO THE TECHNOLOGY

- Maldives Climate Emergency Act (08/2021)
- Maldives Energy Act (18/2021)
- Utility Regulatory Authority Act (26/2020)
- Regulation on Import Export, Re-export (2012/R-34)
- Maldives Energy Policy (2015)
- Maldives Climate Change Policy Framework (2015)
- Maldives Nationally Determined Contribution (2020)
- Maldives SREP investment plan 2013 – 2017

PROPOSED POLICIES TO ENHANCE TECHNOLOGY IMPLEMENTATION

The main proposed policies for enhancement of Floating Solar Platforms include;

1. Waiver of the import duty for the spare parts and different components of the Floating solar platform

COSTS RELATED TO THE IMPLEMENTATION OF POLICIES

- The main cost for implementing the above-mentioned policy includes amendment of the Regulation on Import Export, Re-export (2012/R-34) to include spare-parts required for installation of the Floating Solar Platforms. The study is expected to cost 25,000 USD.

USEFUL INFORMATION

CONTACT DETAILS

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LINKS TO TNA REPORTS

Technology Needs Assessment (TNA) Report and Barrier Analysis and Enabling Framework (BAEF) Report

https://tech-action.unepccc.org/country/maldives/