

Overview on Tuvalu Energy Sector



Mafalu Lotolua

TPCC


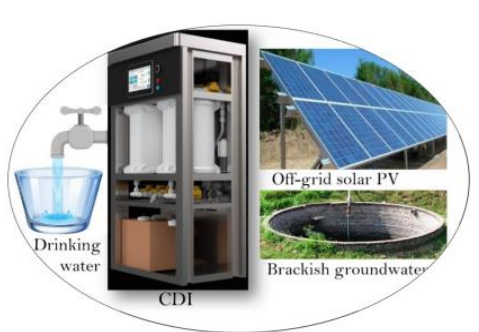
Thursday 3rd August 2023

1. Existing PV Installation




Fogafale & Outer Islands

Site	Capacity			Installation	Comm	Type of Battery (Lead Acid)
	PV (kWp)	Battery (kWhr)	Gen (kVa)			
Nanumea	195	1,440	160	Ground	2015	Maint. Free
Nanumaga	205	1,584	160	Ground	2015	Maint. Free
Niutao	230	1,728	160	Ground	2015	Maint. Free
Vaitupu	400	2,880	160	Ground	2015	Maint. Free
Nui	80	864	180	Ground	2015	Maint. Free
Nukufetau	97	1,008	180	In the Estuary	2015	Maint. Free
Nukulaelae	45	586	114	Ground	2015	Maint. Free
Maritime Institute	8	96	120	Rooftop	2017	Maint. Free
Motufoua Sec. School	46	576	114	Ground	2009	Wet Batt
Fogafale	732	nil	1,800	Roof-Top & Structure	2015	Nil

Demo Projects

Purpose	To be replicated in larger scale			
Donor	Global Environment Facility (GEF)			
No	Demo Title	Purpose	Site	Photo
1	Demand Management Response System (DMRS)	To remotely control of most high powered consumption electrical equipments	Wharf – refrigerated reefers	
2	Standalone Solar Power Capacitive De-Ionisation Desalination Plant (CDI)	New Technology	PWD Compound	

Demo Projects

No	Demo Title	Purpose	Site	Photo
3	Floating Solar PV (FSPV) System	To minimise the cutting down of trees.	Tafua Pond	
4	Solar Roof-Top	Using of the available space.	TEC Demo Fale	
5	E-Car & Charging Station	To reduce petroleum usage for the transport sector.	TEC	


2. On-Going PV Projects

Asian Development Bank (ADB) RE Solar Projects

Project Title	Site	Capacity			Installation	Status	Donor	Remarks
		PV (MWp)	Battery (1MW/MWH)	Gen (kW)				
IAREP 1	Funafuti, Nui, N/tau & N/lae2	0.5 (0.285 O/I)	1/3	1,800	Roof & Ground mounted	Comm. around Dec 2023	ADB	Under Construction
TOTAL		1.5	1/3	1,800				

World Bank (WB) RE Solar Project

Site	Capacity			Installation	Status	Donor	Remarks
	PV (MWp)	Battery (1MW/MWH)	Gen (kW)				
Near Sport Ground	0.7	1/2		Raised Structure	Comm. end of 2024	WB	Construction 2024
TOTAL	0.7	1/2	1,800				

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- Completing of ADB & WB RE Project, the share of renewable may increase to about 30%

3. Planned Project

Asian Development Bank (ADB) RE Solar Projects

Project Title	Site	Capacity			Installation	Status	Donor	Remarks
		PV (MWp)	Battery (1MW/MWH)	Gen (kW)				
IAREP II	Fogafale Lagoon – Near TCS	1	0		Floating	Tender around October	ADB	Tender around Oct'23
TOTAL		1.5	1/3	1,800				

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- Replacement of Outer Island batteries is under discussion with ADB to be part of IAREP II and depending on the availability of Finance.

4. Renewable Energy Target

SHARE OF PV

Stations	2016 (%)	2017 (%)	2018 (%)	2019 (%)	2020 (%)	2021 (%)	2022 (%)
Nanumea	94	95	93	79	55	36	45
Nanumaga	96	93	93	81	64	35	46
Niutao	93	91	90	78	74	13	67
Vaitupu	77	88	88	61	50	37	56
Nui	73	59	38	44	49	48	61
Nukufetau	83	73	53	47	42	52	2
Nukulaelae	14	67	70	49	36	52	67
<i>Outer Islands</i>	81	81	77	63	54	39	53
Funafuti	14	12	9	11	8	10	11
<i>Overall</i>	25	25	21	20	17	17	19

5. Private Sector Business Opportunities

Other PV Installation Systems

Site	Capacity			Installation	Donor	Owned
	PV (kWp)	Battery (kWhr)	Gen (kVa)			
Maritime Institute	8	96	120	Rooftop	Finland	Government
Fisheries	50		Grid	Rooftop	NZ MFAT	Government
USP	6	nil	Grid	Rooftop	USP	Private
EKT Office	3.5	48	Grid	Rooftop	IUCN	Private
Leiley's	5.4	14.4	Grid	Rooftop	Private	Private



- Other PV Installations contributes about 2% in 2022.

Residence Solar Roof-Top

Planning Stage

- TEC is planning for future solar PV installations, to use residence roof-top space.
- Right type of Model to adopt
 - Solar PV only or with batteries
 - Ownership – residence can own and maintain the system.
 - TEC from Panels to Inverter (Generation Part of the System) and Private Certified Technicians after the Inverter.



Demo Fale -
26kWp PV and
20kWh lithium-
ion battery



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- Whatever model adopted, there is opportunities for selling PV Panels, batteries and other related equipment.

6. Moving Forward

- Energy Bill need to be endorsed by Parliament
- Adoption of the right type of model for rooftop systems (Feed-In Tariff (FIT) or other arrangement).
- Training of existing Electrical Contractors to be certified installers and maintenance.
- Also need to train others to get certified
- Upgrading of the Electricity Network to accommodate more solar PV's and e-mobility technology.



Demo Fale - 26kWp
PV and 20kWh
lithium-ion battery



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