

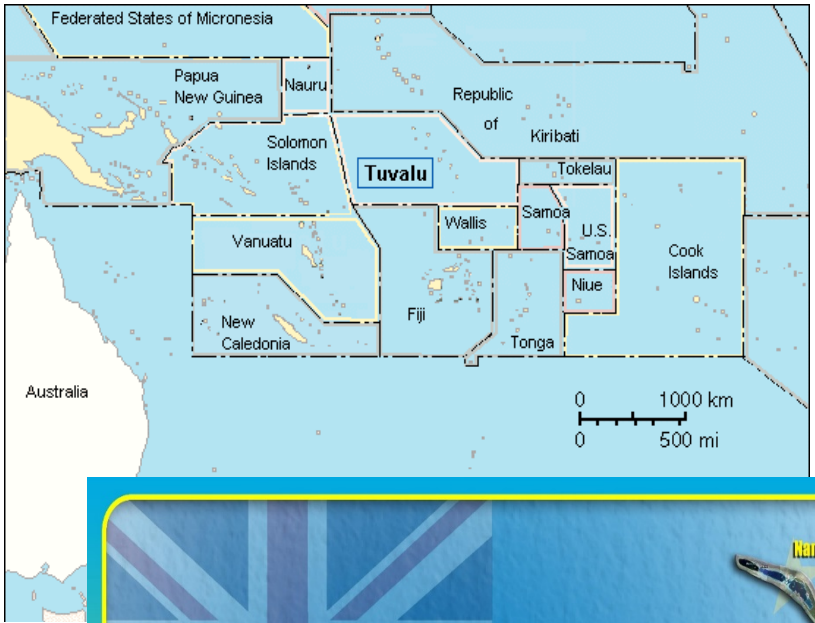
Pacific Islands E-Mobility Working Group Workshop



Mafalu Lotolua
Tuvalu Electricity Corporation (TEC)
Nukualofa, Tonga
15th – 16th June 2023

Background Information

- Consists of 9-Atoll Islands
- Land Area – 26sq.km with EEZ of 900,000sq.km
- Population around 11,000
- Main Island - Funafuti
- Located – North of Fiji about 1,179km's
- Mode of Land Transport – Motorbikes and Cars
- Market June Fuel Price
 - ULP – USD\$1.47/ltr
 - Diesel – USD\$1.69/ltr



What steps have been taken to develop or
Implement an EV Market?

Relevant Legal Framework



National Strategy for
Sustainable Development
2021-2030

Key Strategic Action

*5.19.2 – Strengthen efforts on
decreasing the high
dependency on costly fuel
imports.*



TNEP under review
Old Version - 3.0 Transport

Policy 3.1

*Ensure that the sea and land
transport sectors promote fuel
conservation and efficiency
measures.*

Customs Excise Duties Order 2021

ENVIRONMENTALLY FRIENDLY, RENEWABLE & ENERGY EFFICIENT GOODS & PRODUCTS				
E-vehicles, e-bikes (solar charged only)	85415000	0%	0%	0%
E-bikes (solar charged only)	85414000	0%	0%	0%
Renewable energy products	85414000	0%	0%	0%
Energy efficient products e.g. LED lights	94053000	0%	0%	0%
4 stroke outboard motor	84072100	0%	0%	0%

SCHEDULE

Customs Excise Duties Order 2021

Refrigerator (EE & ODS compliant)	84181000	0%	0%	0%
Chest freezers (EE & ODS compliant)	84183000	0%	0%	0%
Air-condition units (EE & ODS compliant)	84151000	0%	0%	0%

Energy Bill

- Drafted done and was funded by GEF through FASNETT Project
- To be presented to Parliament by the end of the year.

Part 8: Miscellaneous

60. Regulation

(1) The Minister may make regulations for the proper administration of this Bill and to achieve its objectives including but not limited for:

- Electro-mobility transport

TEC Demo E-Motorcycle

Demo of e-Motorcycle Pilot Programme

- An activity of the Tuvalu Energy Sector Development Project (TESDP)
- Funded by – World Bank
- Total Landed Cost - USD \$35K (including spare parts, tools and training)
- Contractor – EastWest, China
- No of e-Motorcycles - 12



Objective of the Demo

- Is to evaluate the technical and economic feasibility of deploying e-mobility at a larger scale while creating synergies with the renewable energy power plants in a harmonized energy system.

Distribution

- 8 x for TEC
- 2 x for Energy department
- 2 x available for the Public
- Familiarization - to feel and appreciate the technology

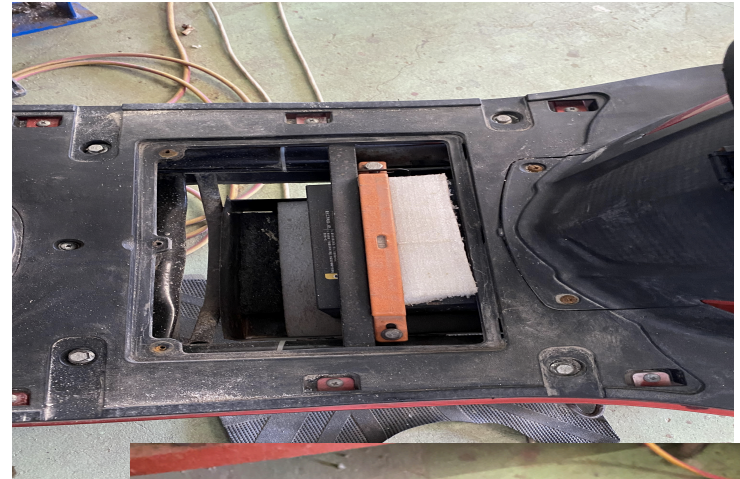
Monitoring

- On the road since December 2022.
- Maximum Speed – 52km/hr
- Experience:
 - Single Charge (down to the red indicator): - 4-5hrs - can not operating until after cooling off period of 2-3hrs
 - 1 to 2 bar down – 2 1/2hrs
 - can operate after charge
 - kWhr for single charge – only 2 units
- Distance covered for a single charge:
 - For driver weight of 119kg – 50km
 - For driver weight of 113kg – 51km
 - For driver weight of 79kg – 70km



Challenges

- Weight limitations – 150kg
- Not to be used under the rain
 - water got easily into the battery compartment and failed
 - 3-batteries failed since December 2022 – water got into the battery compartment
- Not able to start during the battery cooling off period
- Battery replacement, covers have to be removed.
- Sound Proof
- Battery (lithium) not available in the country



Way Forward

Working with the supplier to improve design

Simple Financial Analysis

Description	Normal Motorcycle	E-Motorcycle
Supplier	China	China
Selling Price	~USD\$1,693	
Landed Cost		~USD\$2,916
ULP Price		
○ Market Price/ltr	USD\$1.47	
○ Pump Price/ltr	USD\$1.76	
○ - 5-ltrs (full tank)	USD\$8.80	
○ 1 - Full Charge		2kWh - USD\$0.41cent
Mileage covered	???	~51km's
No of Days	4-5days	~4-days



GGGI will provide support in carrying out the feasibility study on e-Mobility

TEC Other e-Mobility Development

TEC Demo E-Car

- Funded by GEF for the Project Title *“Facilitation of the Achievement of Sustainable National Energy Targets of Tuvalu (FASNETT) Project”*
- Implementing Agency – UNDP, Suva, Office
- Supplier - Leaf Capital Pte Ltd, Suva and owned by Mr. Alex Reddaway.



Charging Station

- Including a Car Park
- Charging Station
 - Solar PV array - 20kWp
 - Battery Storage – 45kWp
- Partnership Arrangement
 - Leaf Capital Pte Ltd, Fiji supply the e-car, charging station, and car park construction materials.
 - TEC will do the construction of the Car Park and installation of the solar PV and battery.



TEC Demo E-Boat

- Funded by ADB
- Phase II of existing Project Title: *“Increasing Access to Renewable Energy Project”*
- Output 1 – climate-resilient floating and grid infrastructure installed. The project will
 - I. install 1 megawatts (MW) of FPV, and support infrastructure in Funafuti.
- Output 2 - Sustainable blue economy and productive use of energy infrastructure installed: The FPV system will be designed to integrate priority sustainable value-added end-uses to maximize the use of daytime solar energy. This indicatively include installation of:
 - (i) aquaculture pilot project for sustainable food production,
 - (ii) **e-boat and solar charging station to reduce transport emissions, and**
 - (iii) coastal protection, reef- regeneration and disaster reduction measures
- Plan for Tender to go out around October 2023



What barriers have been hit? What
benefits are foreseen

Barriers

- Lack of awareness program – TEC demo 1st in Tuvalu
- Lack of finance opportunities for EVs business development
- High cost of EVs
- Expensive sea freight
- Knowledge and Skill Gap
- Ageing of the Electricity Network

Benefits

- Costs savings from high cost of petroleum
- Reduce emission
- Maybe an opportunity to secure funding from donor partner's to improve ageing infrastructures to facilitate for the e-mobility movement.

How are you utilizing your country's strength and avoiding its weaknesses?

Country Strength

- Enacted Custom Excise Duties Order 2021
 - E- Vehicle zero duties
- Energy Bill 2023 will soon goes to Parliament for endorsement
- Small population and can easily implemented
- Solar PV Roof Top Support Scheme
 - Feasibility Study Completed

Take Away

“A Journey of a Thousand Miles begins with a single Steps” – Chinese Proverb

Thank You