# **Report on the EVWG Meeting Webinar** 1

24 April 2023

*11-12 Vanuatu and Solomon Is time/ 12 pm -1pm Fiji, NZ, Tuvalu time / 1 – 2pm Tonga Time*

## Background

In November 2022, a regional workshop on E-mobility was held in Suva, Fiji to discuss the coordination of the e-mobility developments in the PICTs and the early adoption of electric vehicle (EV) policies, standards, and roadmaps at the national level to guide and facilitate the transformation in the energy and transport sectors.

One of the key recommendations brought forward from the workshop was to create a regional EV Working Group (EVWG) to drive and coordinate the developments on emobility in the region and PCREEE has been tasked with the secretariat roles.

In early February 2023, the EVWG was established, and membership was on a voluntary basis. However, PCREEE has suggested having a representative from Development partners, multilateral partners, regional agencies, power utilities, transport authorities, industry, energy office and regulators.

PCREEE is supporting the Pacific Regional Infrastructure Facility (PRIF’s) technical assistance project identifying PICT-appropriate guidelines and standards for e-mobility.

## Meeting objective

To introduce to the members of the EVWG on the PRIF’s draft guidelines and standards for e-mobility and its progress to date.

## Participants

A total of 10 people were joining the webinar virtually.

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| --- | --- | --- |
| **Name** | **Gender** | **Organizations** |
| Andrew Campbell | Male | PRIF’s consultant |
| Solomone Fifita | Male | PCREEE |
| Sosefo Tofu | Male | PCREEE |
| Rikesh Ram | Male | Zekitek |
| Mitch Hoffmann | Male | Zekitek |
| Julia Hollnagel | Female | Global Green Growth Institute (GGI) |
| Feauini Laumanu | Female | Tonga Department of Energy |
| ‘Eliate Laulaupea’alu | Male | Tonga Department of Energy |
| Sione Misi | Male | Tonga Department of Energy |
| Filimone Fifita | Male | Tonga Department of Energy |

8 males (80%) and 2 females (20%)

40% govt, 20% private sector and 40% development partners.

Below are those that conveyed their apology:

1. Mr. Mafalu Lotolua from Tuvalu Electricity Corporation
2. Mr. John Korinihona from the Solomon Islands Department of Energy
3. Mr. Paul Kaun from Vanuatu Regulator Office.

## Discussion points

Andrew Campbell was the key presenter at the webinar, and he is currently contracted by the PRIF to develop an “Electric Vehicle Standards in the Pacific”.

A brief overview of the PRIF project.

* As recalled from the 4th Pacific Regional Energy and Transport Ministers’ Meeting in 2019 in Samoa, the SPC/PCREEE along with UNIDO and the SIDS Dock to develop a regional e-mobility policy document in order to address the barrier to e-mobilities in the PICs. The development process mostly done during 2020 and PCREEE began the roll out in 2021.
* One of the key takeaways from the developed e-mobility policy document was the need to fill a gap in e-mobility-related guidelines and standards.
* The ADB was therefore willing to fund this project and PRIF has been tasked with the management and coordination roles and to be delivered in close co-ordination with PCREEE.

*So why do we need guidelines and standards?*

There are identified knowledge gaps and it may have a potential to result in:

* Poor consumer choices and decisions protection
* Safety issues
* Compatibility issues given the many of parts / components in the market
* Avoid poor practices
* Environment issues

*The implementation of the project involved four key stages:*

1. A needs assessment of PIC-focused guidelines and standards
2. Review of global EV-related guidelines and standards
3. Identification of fitting guidelines/standards interventions for PICs
4. Development of a strategy and roadmap for introduction

The needs assessment was focused on the target EV-system components in below figure:



*High-level summaries of findings to date on each vehicle type.*

**VEHICLE TYPE: MICRO FORMAT**

FINDINGS & RECOMMENDATIONS

* Australia and New Zealand do not have built standard’s requirements for e-bikes /scooters apart from motor power ◊ difficult for PICs to introduce stds.
* New standards in place in US and EU. Difficult to incentivise uptake of these.
* A range of voltages:
• 24V to 72V (charging using matching power supply/chargers).
• 36V and 48V most common.
* No global standardisation of low V, DC charging connectors ◊ risk of mismatch.
* It is relatively easy to purchase and import micromobility vehicle “bargains” from overseas … without appropriate due diligence/knowledge.

PROPOSE

* Responsible imports … goods sold under consumer guarantee provisions.
* Minimum safety features for battery and power supply/chargers.
* Support industry (and public) with guidelines and an awareness campaign.
* Special charging connector to avoid mis-match or clear labelling.
* Propose a move to standardized, labelled connectors for common voltage systems.

**VEHICLE TYPE: SMALL FORMAT**

FINDINGS & RECOMMENDATIONS

* EU requires compliance with UNECE R136. Indian AIS based on UNECE R136.
* China Compulsory Certification (CCC) requires compliance with GB 24155-2020.
* No specific battery/electric drive train requirements in Aust/NZ or US.
* Aust/NZ require anti-lock braking system (ABS) or combined braking system
(CBS) at time of first fleet entry for all 2Ws/3Ws. This should largely avoid
imports of low quality e2Ws/e3Ws.
* Aust/NZ regulatory authorities monitoring. Will introduce standards if required.

PROPOSE

* All (fuelled- and electric-powered) motorcycles must be fitted with ABS or
CBS at border/first entry to fleet.
* Minimum safety features for battery and power supply/chargers ◊ industry
and public guidance/awareness program.
* Special charging connector or labelling ◊ propose a move to standardised, labelled connectors for common voltage systems.

**VEHICLE TYPE: MEDIUM-FORMAT**

FINDINGS & RECOMMENDATIONS

* Global standards include: UNECE, ISO, IEC, SAE, GB, IEEE, NEMA, UL.
* EU requires compliance with UNECE R100. Indian AIS based on UNECE R100,
* Australia, China and Japan standards refer to UNECE R100.
* No specific EV (battery/electric drive train) requirements in New Zealand:
* NZ has frontal impact and electronic stability control (ESC) rule for light
* vehicles at border entry. Highly unlikely an EV with ESC is low quality EV.
* Authorities monitoring and ready to introduce interventions.
* Majority of EV passenger cars imported into PICs expected to be used.

PROPOSE

* ESC required for all light-duty vehicles (ICE and EVs) at border.
* Minimum 80% residual battery capacity at time of import.
* Ensure use of Type 2, CCS Type 2 and/or CHAdeMO charging connector(s).
* • Provide supplier-buyer guidelines and an awareness program.

**VEHICLE TYPE: LARGE-FORMAT**

FINDINGS & RECOMMENDATIONS

* Global standards refer to: UNECE, ISO, IEC, SAE, GB, IEEE, NEMA, UL.
* EU requires compliance with UNECE R100. Indian AIS based on UNECE R100,
* China manufacturers refer to UNECE R100.
* No specific e-bus battery/electric drive train requirements in Aust or NZ:
* But good practice arrives at an UNECE R100 similar standard of design.
* PIC supply options include new and used imports and retrofit.

PROPOSE

* Electric drivetrain compliant with relevant technical principles of UNECE R100.
* Minimum 80% residual battery capacity at time of import, if used.
* Encourage use of Type 2, CCS Type 2 charging connector(s).

**SMALL-MEDIUM-LARGE VESSEL**

FINDINGS & RECOMMENDATIONS

* Can’t open the door and step away … high levels of safety are required.
* Apart from small recreational craft, a recognized\* marine surveyor is required to assess and accept the safety a vessel before it enters service, (\*recognised by the
* country’s regulating authority or is from a recognised classification society) 🡪And they have a responsibility to be current with accepted practices.
* Local PIC boat-building sector has “age-old” codes for wiring. There are now also recognised standards for electrical installations, and now propulsion systems.
* 48V e-outboard market developing quickly. ‘Plug and play’ connectors and systems providing easy installations/access to the technology. Opportunities here for PICs. But still requires careful management of safety of battery.

PROPOSE

* Support capacity building on batteries/e-propulsion for local marine surveyors.
* Minimum requirements for recreational craft (list over).

**AIRCRAFT-TYPE**

FINDINGS & RECOMMENDATIONS

Aircraft

* Sector controlled by national aviation regulatory body.
* The technology is new. There are no global or national standards. Some
* manufacturers have developed own standards for own use.
* Country regulators cannot accept private standards  aircraft model requires
* certification from a recognised aviation authority (e.g. FAA) to be permitted for
* use in a country.
* Electricity normally supplied to aircraft at 28 V d.c. and 115/200 V or 230/400 V
* three-phase a.c. at 400 or 600Hz  require new equipment and new standards.
* Regardless, must be approved by national aviation regulatory body.

Drones

* There are no rules and regulations concerning the build specification of unmanned aircraft, irrespective of how they are propelled.

**END OF LIFE MANAGEMENT**

FINDINGS & RECOMMENDATIONS

* The battery is the main end of life (EOL) difference between an ICE and an EV.
* Globally, there is normally a good local market for repurposed and professionally refurbished vehicle batteries. PICs should be no different.
* Systems and standards for managing EOL batteries are still in development.
	+ OEMs normally take responsibility of EOL batteries in markets they provide to-unlikely to apply for EVs shipped to PICs by third parties.
	+ Sector working towards the use of a “battery passport” that follows the battery through its various lives.
	+ EU: OEMs expected to design batteries/vehicle to make recovery/recycling easier.
	+ EU: OEMs expected to support the repurposing providers.
* In the meantime, global practice is to store unusable batteries.
* Batteries are unsafe when damaged and must not travel by air and should not travel by sea  once on an island, there to stay until recycling/deposal develops.

PROPOSE

* + Promote repurposing, refurbishment of after-vehicle batteries, supported with

capacity development and certification of permitted service providers.

* + Appropriate storage of EOL batteries (until a PIC recycling/disposal solution becomes available) 🡪 capacity development and certification.

**ELECTRIC VEHICLE CHARGING**

RECOMMENDATIONS

* Power supply/chargers: manufacturer’s label must show rated for local supply.
* Mode 1 (electrically unprotected extension cord): strongly discouraged. Should only be supplied through RCD-protected electricity supplies.
* Mode 2 (in-cord control and protection device, IC-CPD. Compliance with IEC 62752):
	+ Manufacturer’s label must show compatible for local electricity supply.
	+ Plugs must only be changed by an approved electrician.
	+ Supply socket-outlet circuit must be checked (rating, earth safety circuit)
	+ and ideally RCD-protected.
	+ Not for commercial/public charging.
* Mode 3 (hard-wired, often wall-mounted, compliance with IEC 61851 and IEC 62196):
	+ Is the preferred AC charging option.
	+ Must have suitable overload- and RCD-protection.
	+ Ideally “smart” (allowing remote control of charging).
	+ Currently best to have female, Type 2 outlet charging point.
* Mode 4 (DC charging, compliance with rel. parts of IEC 61851 and IEC 62196):
	+ Careful due diligence required, including checking the ability to on-sell electricity and affordability of demand charges.

It was found out that the greatest risk amongst all types was the battery system and potentially there is an immediate need to look at the fire event demands management. While at the aviation space, it was found out that there is no global or national standards and some manufactures have developed own standards for own use. In that case, the country’s regulators cannot accept private standards and it has to be certified from a recognized aviation authority (e.g. FAA) to obtain a valid permit for use in that country. At the marine sector, an area of supporting capacity building on batteries/e-propulsion for local marine surveyor was highly recommended. These findings will be documented in detail in the final project report.

*Progress to date of the project in general*

The draft PRIF EV Standard’s report is aimed to be circulated to stakeholders in early May and for feedbacks and comments to be received no later than end of May 2023. The draft will be presented at Vanuatu to the PETMM. The final wrap up of review process is set to begin in early June 2023 until the completion of the Pacific EV workshop in Tonga [12-16 June] before the final submission to PRIF towards end of June 2023.