

# Electric Vehicles and Charging Infrastructure on Pacific Islands:

Planning, Deployment and Key Considerations.

## EV Deployment Strategies and Regional Experiences

January 13 – 15, 2025

Holiday Inn, Suva  
Fiji



# Presentation outline

1. Climate Change Targets and EVs
2. PCREEE – background
3. Regional E-mobility Policy – highlight of achievements
4. Known e-mobility projects in the PICs
5. Takeaway messages

## *Global Climate Change Goal!!!*



***“The Paris Agreement has a long-term temperature goal which is to keep the rise in global surface temperature to well below 2 °C (3.6 °F) above pre-industrial levels.....”***

**195 countries signed the agreement**

# Global and Regional Transport Emissions Trends (2010-2019)

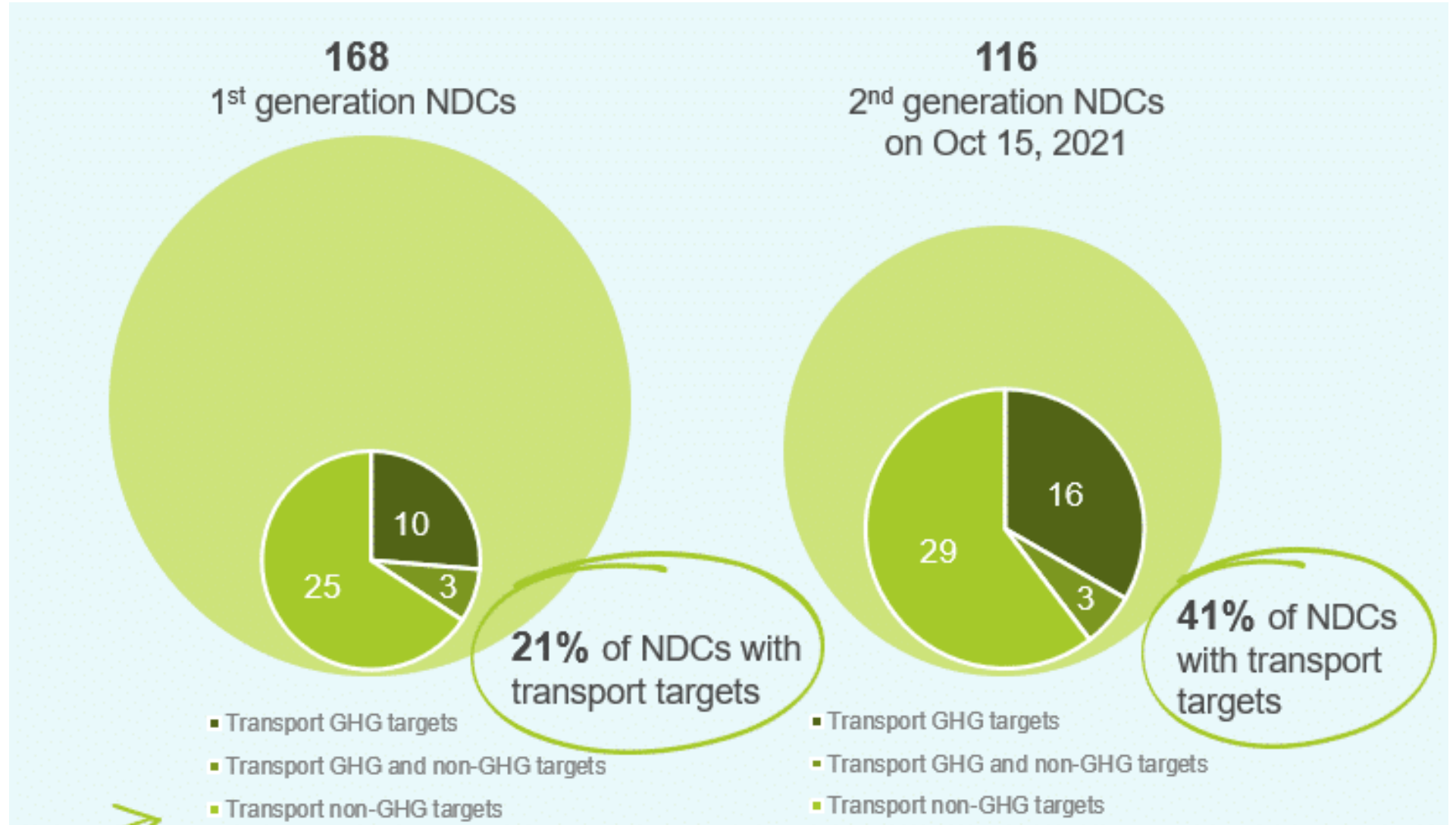


- Global transport associated emissions increased by 17.2%

- 13% increase transport CO<sub>2</sub> in Oceania

# Sustainable Transport and NDCs

- 2<sup>nd</sup> NDCs featuring a transport target almost doubled to 41% from 21%

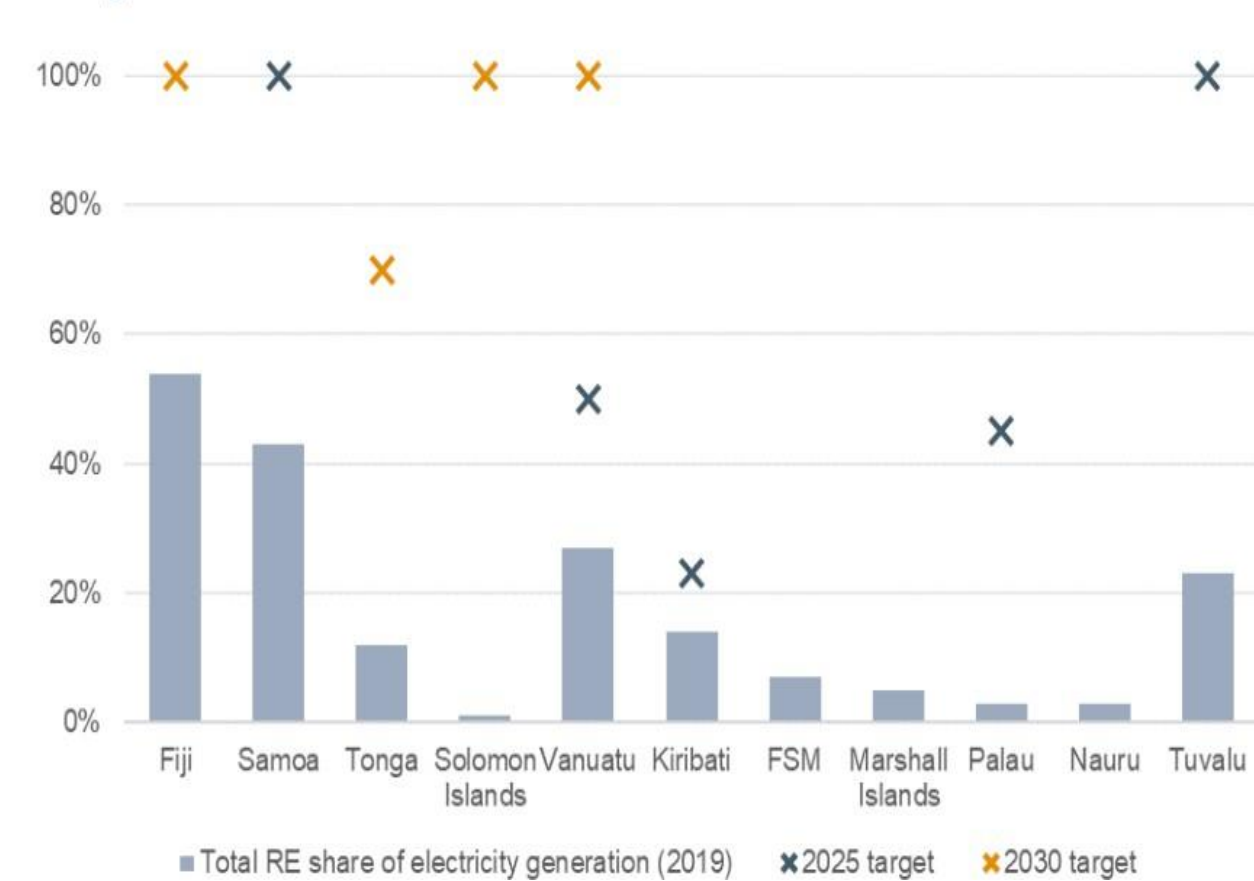


## Regional - PICs NDCs

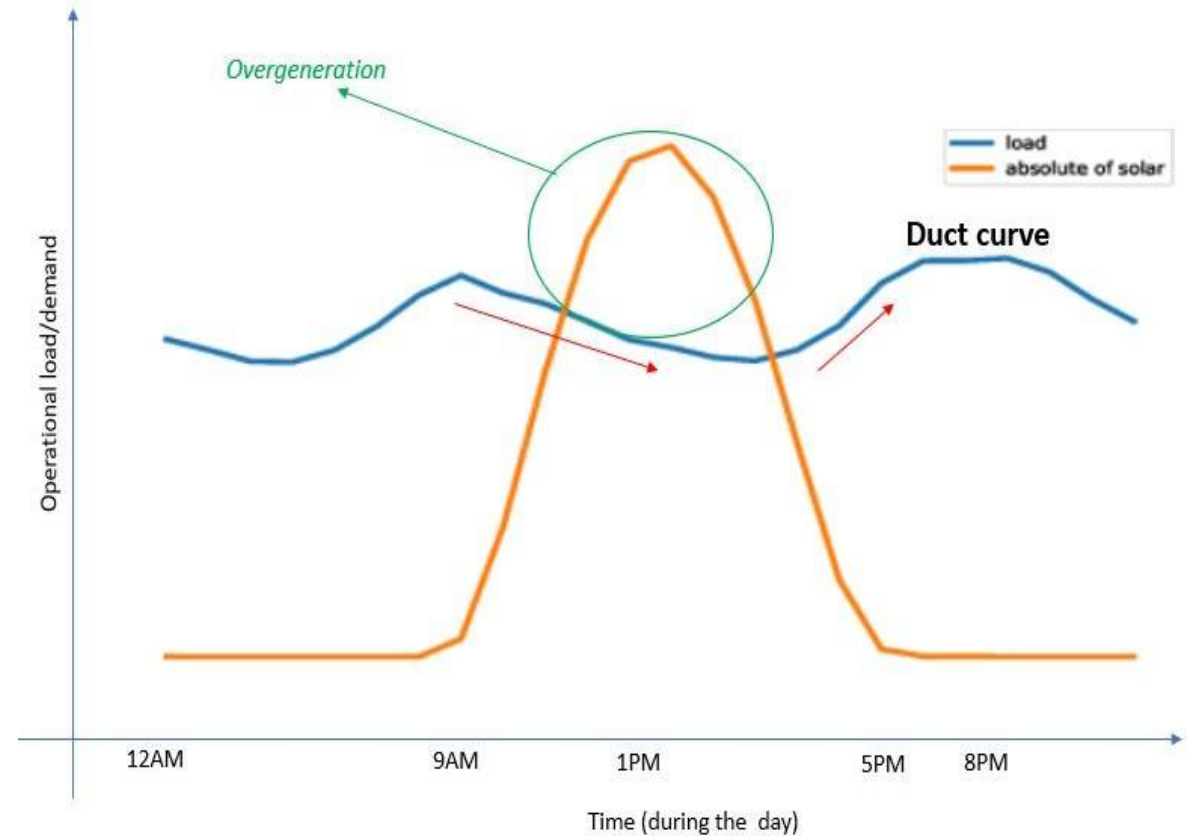
Country	1 <sup>st</sup> NDC Mitigation Target Sector	2 <sup>nd</sup> NDC Mitigation Target Sector
Cook Is	Electricity	No further Revision
FSM	Electricity Generation & Transport	No further Revision
Fiji	Electricity Generation & Transport	Electricity Generation & <b>Transport</b> , inclusive of target in Domestic Maritime shipping
Kiribati	Energy sector: power and Transport, maritime and coastal sector including mangrove, coastal vegetation and seagrass beds	Cross-cutting areas, disaster risk management (DRM), energy, health and <b>transport</b>
Marshall Is	Electricity, transportation (land and sea), waste and cooking and lighting  Indicative target to reduce GHG emissions by 45% below 2010 levels by 2030	**Indicative target to reduce GHG emissions by 58% below 2010 levels by 2030
Nauru	Sectoral (energy sector) - electricity generation sector and energy efficiency through demand side management.	Sectoral (energy sector) commitment focussed on a transition to renewable energy in the electricity generation sector and energy efficiency through demand side management. <b>&amp; Transport</b>
Niue	Energy	No further Revisions
Palau	Energy sector with a focus on electricity and transport	No further revisions
PNG	To become carbon free by 2030 - 100% RE in electricity generation by 2030	Energy: Electricity Supply <b>&amp; Transport</b> and Forestry
Samoa	Energy sector with a focus on the Electricity sub-sector – 100% of its electricity generated from renewable energy sources by 2025	Subsector focus – Electricity, Land <b>Transport</b> , Maritime Transport, Tourism
Solomon Is	Electricity generation, Sea transport & Land transport	Electricity generation, Sea transport & <b>Land transport</b>
Tonga	Energy, Waste & Land Use, Land Use Change and Forestry (LULUCF)	Energy, Waste & Land Use, Land Use Change and Forestry (LULUCF), <b>Transport</b>
Tuvalu	Electricity Sector – achieve 100% of GHG reductions	<i>Electricity and</i> <b>Transport sector</b>
Vanuatu	Mainly electricity generation sub-sector but with ancillary mitigation possible in forestry, agriculture, transport and energy efficiency sector wide.	Electricity generation and <b>Transport sector</b>

# EV – opportunities in the PICs

## RE targets in Pacific Island Countries



- PICs had committed to ambitious RE targets – 2025 and 2050 targets
- Hydro power are dominant source of power in Samoa and Fiji – due to their geographic locations.



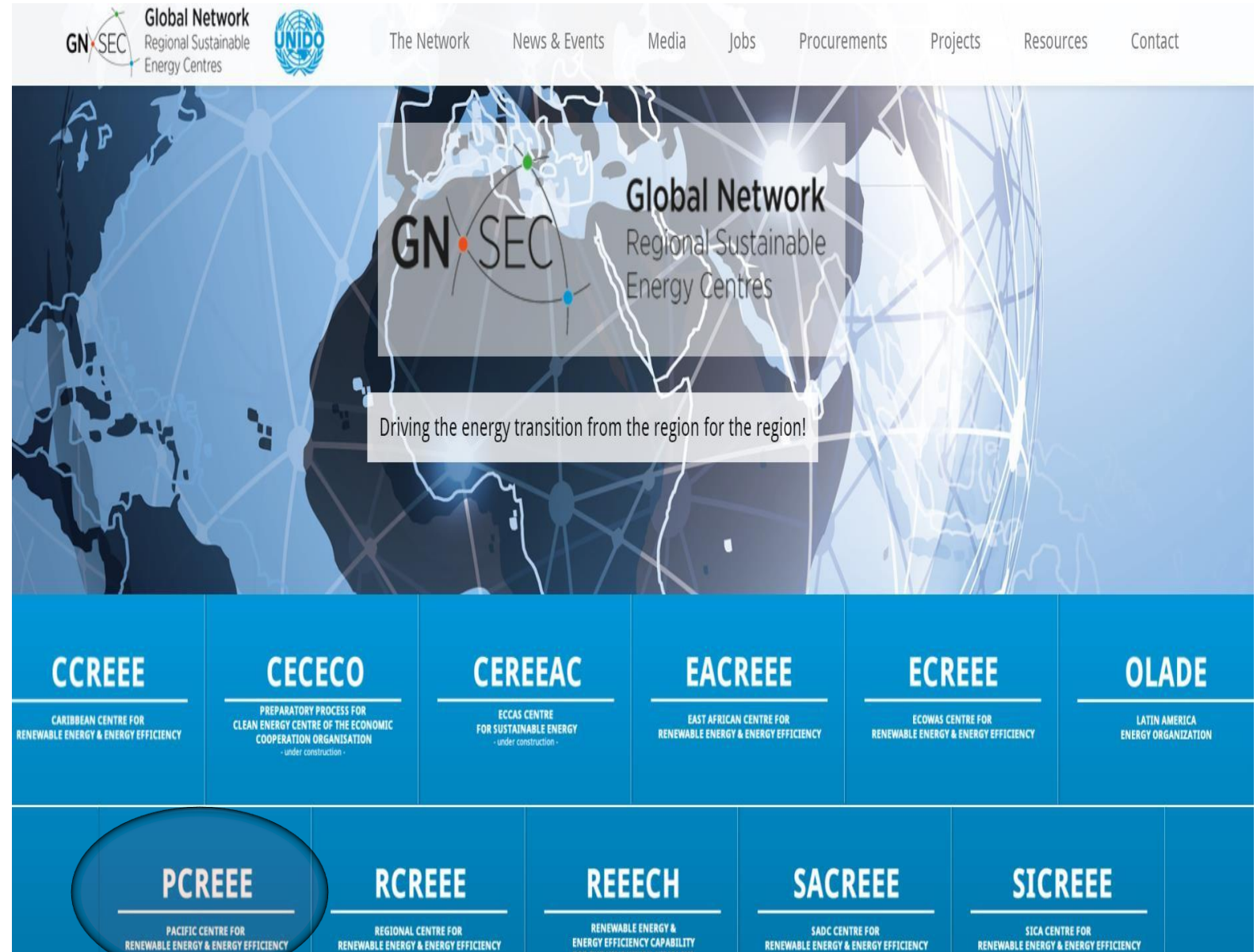
### Overgeneration/curtailment

- Solar energy generates too much power, and no one consumed it during low demand period (mid-day) → overloading and may damage the grid

**\*\* the more that daytime charging can be encouraged, the cheaper the overall cost of supplying EVs**

# What is PCREEE?

- Pacific Centre for Renewable Energy and Energy Efficiency.
- Established in 2017 and going 8 years now
- Part of a global network comprising 11 regional centres
- 2<sup>nd</sup> Operational Phase: 2021-2025
- UNIDO, Austria, Norway & NZ funding support



Global Network Regional Sustainable Energy Centres

UNIDO

The Network News & Events Media Jobs Procurements Projects Resources Contact

Global Network Regional Sustainable Energy Centres

Driving the energy transition from the region for the region!

<p><b>CCREEE</b></p> <p>CARIBBEAN CENTRE FOR RENEWABLE ENERGY &amp; ENERGY EFFICIENCY</p>	<p><b>CECECO</b></p> <p>PREPARATORY PROCESS FOR CLEAN ENERGY CENTRE OF THE ECONOMIC COOPERATION ORGANISATION</p> <p>- under construction -</p>	<p><b>CEREEAC</b></p> <p>ECCAS CENTRE FOR SUSTAINABLE ENERGY</p> <p>- under construction -</p>	<p><b>EACREEE</b></p> <p>EAST AFRICAN CENTRE FOR RENEWABLE ENERGY &amp; ENERGY EFFICIENCY</p>	<p><b>ECREEE</b></p> <p>ECCOWAS CENTRE FOR RENEWABLE ENERGY &amp; ENERGY EFFICIENCY</p>	<p><b>OLADE</b></p> <p>LATIN AMERICA ENERGY ORGANIZATION</p>
<p><b>PCREEE</b></p> <p>PACIFIC CENTRE FOR RENEWABLE ENERGY &amp; ENERGY EFFICIENCY</p>	<p><b>RCREEE</b></p> <p>REGIONAL CENTRE FOR RENEWABLE ENERGY &amp; ENERGY EFFICIENCY</p>	<p><b>REEECH</b></p> <p>RENEWABLE ENERGY &amp; ENERGY EFFICIENCY CAPABILITY FOR THE HORN OF AFRICA</p>	<p><b>SACREEE</b></p> <p>SADC CENTRE FOR RENEWABLE ENERGY &amp; ENERGY EFFICIENCY</p>	<p><b>SICREEE</b></p> <p>SICA CENTRE FOR RENEWABLE ENERGY &amp; ENERGY EFFICIENCY</p>	



# SPC – The Pacific Community



Climate Change and Environmental Sustainability



Educational Quality and Assessment



Fisheries, Aquaculture &amp; Marine Ecosystems



Public Health



Statistics for Development



Flagships



Human Rights and Social Development



Land Resources

**Geoscience, Energy and Maritime**



**Vision: “Promoting sustainable energy markets to transform the lives of Pacific Islands people”.**

**Mission:** To create, educate, and facilitate the increased awareness and development of the RE&EE Agenda in the Pacific region, with special emphasis on the private sector and local industries.

**Objectives:**

- To improve access to modern, affordable, and reliable energy services, energy security, and mitigation of negative externalities of the energy system (e.g. local pollution and GHG emissions)
- To promote RE&EE investments, markets, and industries in the PICTs.





## Four (4) Strategic Areas

- **Programme 1. RE&EE Business Start-Up and Entrepreneurship Support**
- **Programme 2. RE&EE for Sustainable Mobility**
- **Programme 3. RE Mini-grids**
- **Programme 4. Energy Efficiency Investment**



### Support to PICs

1. Capacity Buildings Program
2. Energy Policy Development – (incl. guidelines /standards)
3. Energy Forum, Awareness
4. Development/review of Concept Note and Project Proposal.

## 4<sup>th</sup> Pacific Energy Transport Minsiters Meeting Direction (Samoa, 2019)

Requested SPC/PCREEE, UNIDO and SIDS DOCK to develop a regional policy document with regional e-mobility targets for 2030 & 2050, a regional e-mobility program to address barriers and to promote SIDS-SIDS cooperation and exchange on integrated e-mobility.

Three Reports: Technical Background, Regional Policy & Regional Programme by **Mr Andrew Campbell**

<https://www.pcreee.org/event/online-validation-regional-e-mobility-policy-and-program-pacific-islands>

**Objective:** PICTs are **best prepared** for their respective sustainable mobility futures

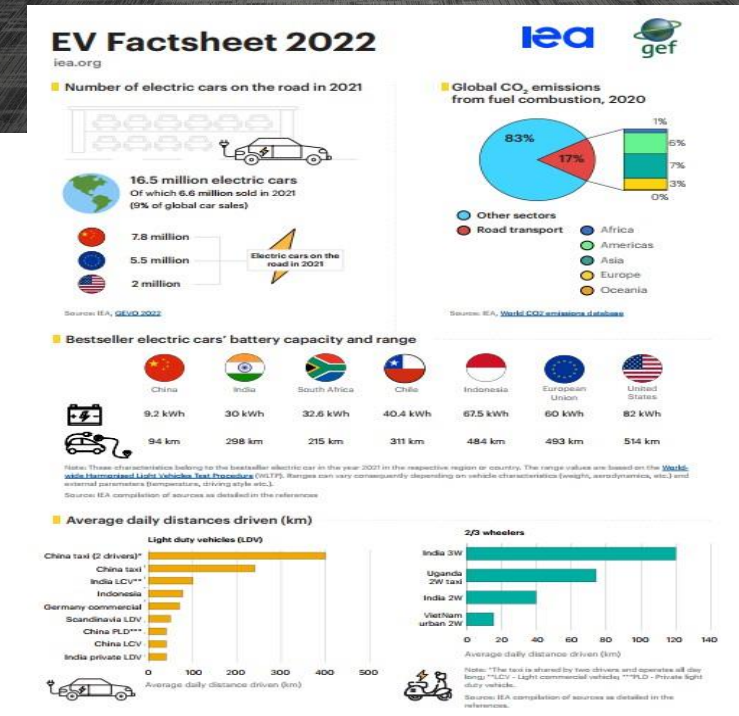
Developed regional e-mobility policy has 4 key components

1. Central Policy and Administration
2. Standards and Guidelines
3. Awareness & Promotion.
4. Demonstration & Upscale

**\*\*\*Regional E-mobility Policy adopted in 2020 and started rolling out in 2021**

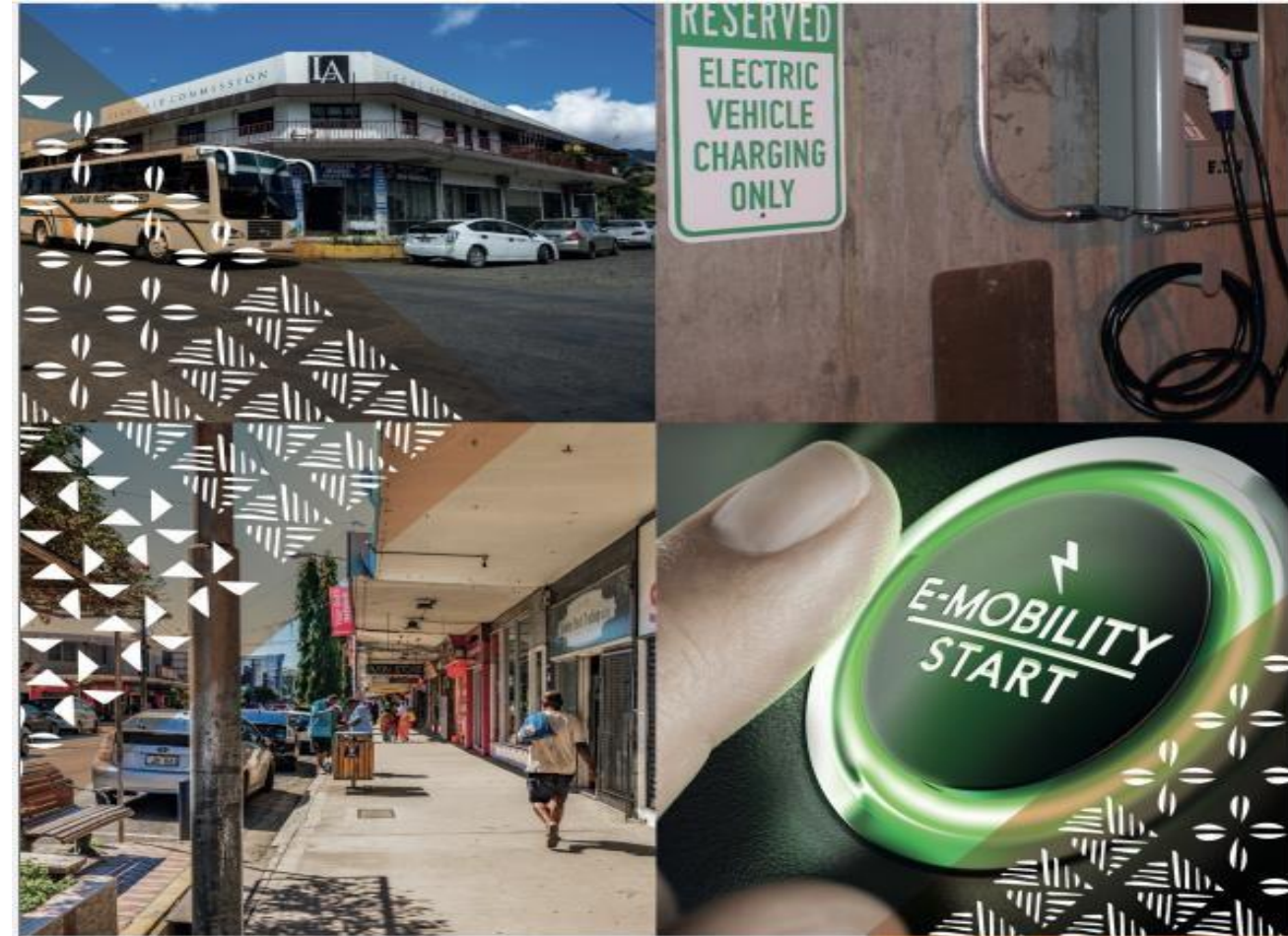
## 1. Central Policy and Administration

1. Develop high-level targets and mandates concerning EV uptake.
2. Establish a staffed and funded Regional EV Hub with regional representatives – **established a Pacific Islands EV Working Group**
3. Identify tax levels or incentive packages to encourage the importation of desired EV goods.
4. Establish partnerships in EVs – **PCREEE, PRIF, WB, GGGI, ADB, NREL**
5. Develop a M & E system for national EV programmes.
6. As appropriate, introduce/amend the regulatory frameworks for transport to include EVs. **Ashurst legal assessments in Tonga, Vanuatu & Kiribati. Legal study in Fiji.**
7. Maintain a watching brief on global EV-related developments. – **Leaflets and EV factsheets**



## 2. Standards & Guidelines

1. Develop and set minimum standards for EVs imports and for fitness testing. **Generally led by the PRIF. Regional workshop in Oct 14 – 18 Nov 2024**
2. Ensure appropriate standards are in place for the retirement of EVs.
3. Set guidelines for charging, including the specification of charging connectors.
4. Develop criteria "EV-readiness" in new construction and infrastructure.
5. Develop guidelines for the use of V2H and on-site managed charging.
6. Develop (at least voluntary) standards for low-voltage vehicles, the charging of them, and the use of "mobility batteries" for local power supply circuits.
7. Develop and introduce accredited technical courses on EVs. **Initial workshop in 2023**
8. Develop guidelines for e-mobility safety.
9. Provide buyer and user guides on low-voltage e-mobility options.



### Electric Vehicle Standards for the Pacific Region

## 3. Awareness & Promotion

1. Undertake social marketing research.
2. Develop and deliver an awareness, information and promotion campaign supporting the uptake of EVs. **Samoa Energy Week 2021, national workshops / webinars in CI, Niue, Kiribati, Tuvalu, SI, brought rep/s from PICs to NZ E-mobility summit etc**
3. Develop, publish and promote guidelines on:
  - EV purchase (micro-mobility through 4-wheelers);
  - Charging (micro-mobility through 4-wheelers);
  - Servicing and Support (micro-mobility through 4-wheelers).
4. Collate and distribute global and PICT EV information. **Leaflets & factsheets**
5. Ensure that first responders are aware of correct procedures.



## 4. Demonstration & Upscale

1. Promote government leadership in purchasing of appropriate EVs.
2. Consider supporting electric bus demonstrations. **Nauru – Auck EV bus fleet**
3. Consider supporting the demonstration of other non-passenger car EV projects if there is a good case for them.
4. Consider methods to share heavy EV technical support capability across fleets and PICTs.
5. Consider opportunities for the electrification of small marine vessels. **Done by SPC Maritime Programme in Fiji**
6. Facilitate or co-invest in public charging infrastructure.
7. Provide facilities in support of micro through large e-mobility options, beginning with facilities at public offices.
8. Develop EV service industry and support local capability and capacity. – **Cook Islands TAU TA**
9. (Support the introduction of Time of Use (TOU) electricity pricing).
10. Conduct investment forums on EVs – **Vanuatu, Kiribati & Tuvalu**

# Known E-mobility Projects [pilot] in the PICs

## Cook Islands

- CI hosted the 52<sup>nd</sup> Pacific Islands Forum meeting in 2023.
- CI govt procured 25 EVs – for transporting of leaders in Rarotonga.
- Upon completion of Forum’s meeting, CI gov’t was allocating EVs cars to its line ministries.
- Power Utility [Te Aponga] been tasked with ensuring the charging infrastructures are strategically positioned around Rarotonga.
- Te Aponga approached PCREEE for technical support to:
  - Study the existing power and road infrastructure in Rarotonga and recommend appropriate and strategic charging sites and other charging technology that would enable Te Aponga Uira to capture usage.
  - Identify an appropriate business model/payment platform that is suitable for the recommended charging infrastructure.
- Technical support successfully completed in June 2024







- **Switch Network** launches first-ever electric vehicle charging network at Kundan Singh Supermarket in late September 2022.
- It is a 30kW charger that can fully charge an EV in 20 minutes and can travel in 155kms.
- Station has a solar generator in case of power outage.

# Tuvalu



## E-bikes

- Funded by – World Bank
- Total Landed Cost - USD\$35K (including spare parts, tools and training)
- Contractor – EastWest, China
- No of e-Motorcycles - 12

## E-Cars with Charging Station Demo

- 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.
- 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.



INDIA'S FIRST PURE ELECTRIC INTERNET SUV



# Republic of Nauru

## E-bus Demo

- Thru GEF-funded project – SMARTEN
- Two electric buses and a charging station, the first in Nauru!!
- Capacity of 12- 15 people
- 5 local mechanics in Nauru were selected to travel to E-Bus manufacturer – ANKAI in China.
- 1-week site visits & hands-on technical trainings on operating /servicing of the eBus.



## Clean on Wheels: Nauru Launches its First Electric Bus

DECEMBER 19, 2024

## Republic of Marshall Islands

### EVs Demo

- 3 Evs gov't procured.
- Under the World Bank's sustainable energy development project (SEDep) – 4EVs
- 4 EVs (Hyundai models), 2 with NEO office, 2 with the MEC
- As well as 2 public charging stations – both have installed at the MEC premises.
- NEO provided a prepaid warranty payment to local Hyundai supplier to cover maintenance services during 1<sup>st</sup> and 2<sup>nd</sup> year.
- Data collection is on-going (NEO & MEC)



# SAMOA

## 2016

### Now here's Samoa's first electric car!

SAMOA



<https://www.samoobserver.ws/category/samoa/25944>

### Bill waiving taxes on electric car imports becomes law

SAMOA



The Government is encouraging the importation of electric cars. (Photo: Supplied: EPC)



By Joyetter Feagaimaali'i • 19 November 2020, 9:00AM



<https://www.samoobserver.ws/category/samoa/74699>

2020 New legislation was to be introduced in October to remove exercise taxes on electric vehicles.

**By 2022, approx 24 EVs on the ground in Samoa**

### **Message 1:**

*Promotion of EVs must be carried out jointly with the pursuit of each country's renewable energy and energy efficiency targets*

### **Message 2:**

*Promotion of EVs cannot be done in isolation from the Power Utilities and authorities who are responsible for the generation and distribution of electricity & tariff setting too*

### **Message 3:**

*PICs must be fully informed and prepared with the necessary policies, legislations and structures IN PLACE before a nation-wide uptake of EVs*

Take away Messages



Thank you!

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