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ENTREPRENEURSHIP IN RENEWABLE ENERGY & ENERGY EFFICIENCY

Presented by PSE – Mr. P. Nakavulevu

PCREEE
Pacific Centre for Renewable Energy and Energy Efficiency
SE4ALL Centre of Excellence to Promote Sustainable Energy Markets, Industries and Innovation

26 April 2017 – launched of the PCREEE in Tonga

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WHAT IS PCREEE?

- Pacific Centre for Renewable Energy and Energy Efficiency
- Part of a Global Network of Sustainable Centres around the world (GN-SEC) funded by the UNIDO and the Government of Austria
- Hosted by the SPC based in Nuku'alofa, Tonga.

GN SEC Global Network Regional Sustainable Energy Centres

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PCREEE & Gobal Network of Sustainable Energy Centres

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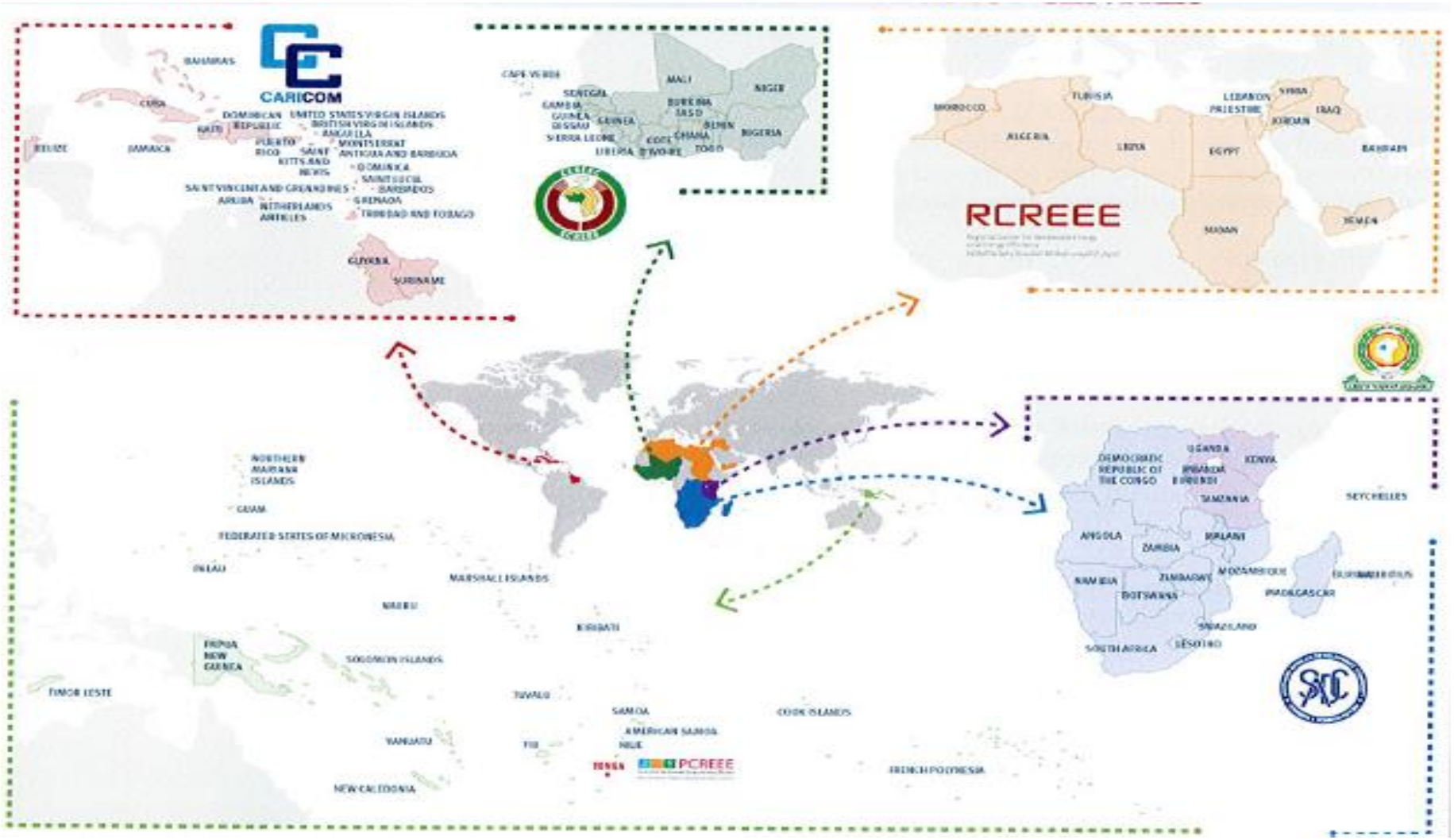

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PCREEE's OVERALL OBJECTIVES

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Contribute towards increased access to modern, affordable, and reliable energy services, energy security and mitigation of negative externalities of the energy system (eg. Local pollution, GHG emissions) by creating an enabling environment for renewable energy and energy efficiency markets and investments

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THE PARIS AGREEMENT

- Efforts aimed at the 1.5 degree target are to be supported by the **obligation** of all countries to relook at their low carbon emission development strategies, most of which are (to be) contained in their **Nationally Determined Contributions**.
- As key proponents of the 1.5 degree target, the PICs' ambitions can be seen in the next few slides, where SPC has tried to bring all the targets together to a common year (2025).

THE PARIS AGREEMENT – A GAME CHANGER

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- The Commitment by the 195 Countries to the Paris Agreement being the game changer in solar industry. With the agreement nations have pledged for a low carbon path to cut Green House Gas (GHG) emissions.
- The global solar industry has in the past decade enjoyed rapid growth, with total installed capacity growing more than 200 times from 806 megawatts in 2000 to about 175 gigawatts last year, according to the international renewable energy agency (IRENA). Growth of solar for the past decade … from 806 megawatts in 2000 to 175 GW in 2017. In Singapore alone it has grown from 14 mwp in 2013 to 30 mwp last year – **it doubled.**

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Country	INDC targets	Target	Year
Cook Is	50% islands change from diesel to RE by 2015 to 100% coverage by 2020	38%	2020
Fiji	100% RE by 2030 from 60% in 2013. Reduce 10% emissions for EE improvements economy wide	100%	2030
FSM	Reduce emissions 28% by 2025 below 2000 emissions. Conditional - 35% by 2025 below 2000 emissions	14.7%	2025
Kiribati	Reduce emissions 13.7% by 2025 & 12.8% by 2030	6.58%	2025
Nauru	Solar PV installations worth USD 42 million. DSM improvements of USD 8 million. Unconditional - USD 5 million secured for 0.6 MW PV	50%	2020
Niue	38% RE of total generation by 2020 through to 2025. Of this, 10% reduction of electricity demand by 2020. Conditional - 80% RE by 2025	38%	2020
Palau	45% RE by 2025. 35% EE target by 2025	45%	2025
PNG	100% RE by 2030	100%	2030
RMI	Reduce emissions 32% below 2010 by 2025. Indicative - reduce emissions to 45% below 2010 levels by 2030	55%	2025
Samoa	100% RE through to 2025. Conditional - in reaching the target in 2017.	100%	2025
Solomon Is	Reduce emissions by 12% below 2015 level by 2025 & 30% below 2015 by 2030. Conditional - reduce 27% by 2025 & 45% by 2030, 50% by 2050	4.68%	2025
Tonga	50% RE by 2020.	50%	2020
Tuvalu	Reduce emissions from generation by 100% by 2025.	100%	2025
Vanuatu	100% RE by 2030.	100%	2030

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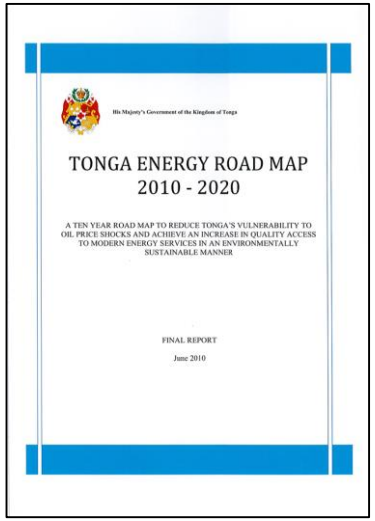
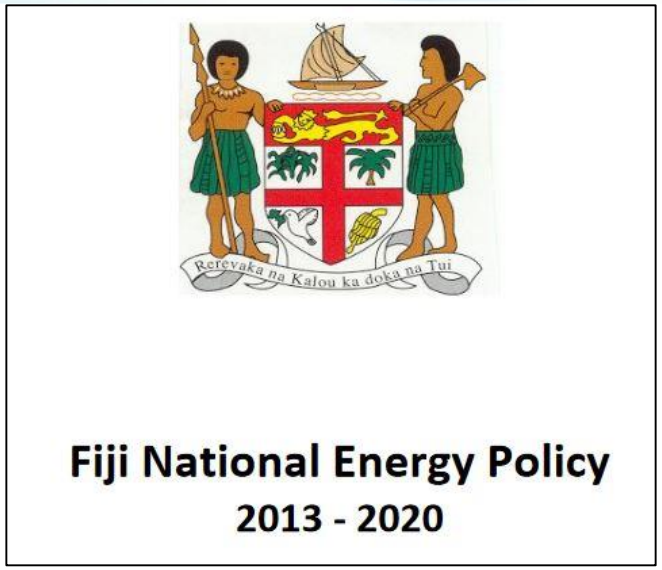
ENERGY ROADMAPS & PLANS

- 2010 – Tonga Energy Roadmap (TERM)
- 2011 – Cook Is RE Chart (CIREC)
- 2012 – Samoa Energy Plan
- **2012 - Vanuatu Energy Roadmap**
- 2013 – Nauru Energy Roadmap
- **2013 – Fiji National Energy Policy**
- 2014 – Solomon Is Energy Policy and Action Plan
- 2015 – Niue Strategic Energy Roadmap
- **2017 – Kiribati Energy Roadmap**





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FORUM ECONOMIC MINISTERS MEETING: Koror, Palau
26-27 April, 2018

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1. A significant portion of NDC targets by Forum Island Countries is "conditional" on the provision of international climate change finance. For example **Fiji's conditional NDC will require at least USD 500 Million**

2. Economic Ministers acknowledged the issues raised by the private sector and discussed the regional repository for government procurement for regional private sector, support for disaster risk management, focus on renewable energy and financing, and private sector representation.

Renewable Energy

- recognised that the private sector will be an important vehicle for supporting investment in renewable energy, in particular, local investments; and
- shared a vision with the private sector for the region becoming 100% reliable on self-generated renewable energies.

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BUSINESS/JOB OPPORTUNITIES IN RENEWABLE ENERGY & ENERGY EFFICIENCY

- Tourism
- Energy Auditing
- Agriculture
- Independent Power Producer
- Fishing
- Battery storage system

TOURISM – Energy Efficiency Application

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Tebara Electric bus

Building Services Consultant – Irwin Alsop Pacific Ltd

Solar Tuk Tuk - Tonga

Hybrid cars - Fiji

Solar Water Pumping & PV lighting in Hotels, Resorts and especially remote lodges

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INDEPENDENT POWER PRODUCER (IPP)

2MW *Matatoa* Solar Farm - Tonga

1.1MW Coca Cola Rooftop Solar Panels

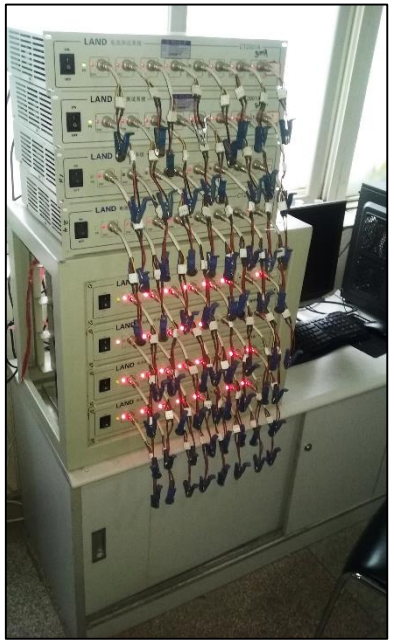
- Power Purchase Agreement plays a key role in this type of Investment

FISHING

- Solar Freezers in remote islands

- Solar Freezers funded by the PEC Fund Projects in Vava'u & Ha'apai – Tonga
- Management run by women committee in the islands

BATTERY STORAGE SYSTEM



- Increase interest in Battery storage system
- Ongoing research in terms of comparing Lithium ion based batteries and Zinc bromine flow batteries
- Samoa: First in the Pacific to install battery storage system

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EVERYONE NEEDS ENERGY/ELECTRICITY

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WHERE CAN YOU COME IN??

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HOWEVER …..

- **PROGRESS IS SLOW: 2013 UNIDO – SPC STUDY ON REGIONAL ENERGY SERVICE DELIVERY IN THE PICTS**
- **There still exists a broad range of barriers which need to be addressed, in order to take full advantage of RE & EE potentials.**
- While the potential for RE resources is considered high, significant barriers for the development of commercially driven and sustainable energy markets.
- Lack of appropriate policies, capacities, knowledge, finance and the respective business environment are constraints that restrict the dissemination of RE & EE technologies and services.
- Apart from large hydropower, so far only a small fraction of the grid-connected electricity produced is from renewable sources such as PV, wind and biomass/biofuels.
- The off-grid and decentralized sector particularly in rural areas (e.g. mini-grids, stand-alone systems) remains underdeveloped in the PICTs with significant rural populations.

CHALLENGES FOR PICTS

1. Rural Electrification – A total of 70% of the population in PICTs do not have electricity.
2. Renewable Energy : Huge Resources but remains un tapped.
3. Cost of Electricity is one of the Highest in the world.
4. Some countries still predominantly rely on Petroleum Fuels even though there have abundance of Renewable Energy Sources (cost of doing business).
5. Regulatory Issues

INTERVENTIONS BY PCREEE

- Work on other renewable energy - Circular economy – biogas & biofuel can come into play here.
- Mini grid – currently developing a regional mini-grid programme with feasibility study at Peleliu, Palau.
- SEIAPI Training & Standards – 8th October 2018 : (Operation & MTCE of PV Systems Grid Connect, Energy Storage Utility Scale, Installation of Grid Connected PV Systems, Design of Grid Connect PV System, Design of Off Grid & Hybrid Systems and Installation).
- Online sustainable energy courses (EU PacTVET & CIEMAT).

PCREEE PROMOTION & INITIATIVES

1. **PSEEF - PCREEE SUSTAINABLE ENERGY ENTREPRENEURSHIP FACILITY**

2. **PCREEE Competition on RE & EE Innovation**

3. **PCREEE SE Research Support Fund**

1. PCREEE SUSTAINABLE ENERGY ENTREPRENEURSHIP FACILITY (PSEEF)

- Support to the setting up new businesses relating to sustainable energy
- No cash grants but a technical facility
- Market studies, packaging of loan proposals, TA on preparing tenders, mentoring by established sister businesses in the region
- Seed funding of 50,000 Euro p.a for the next 4 years
- https://www.pcreee.org/content/pcreee-sustainable-energy-entrepreneurship-facility-pseef

2. PCREEE COMPETITION ON RE & EE INNOVATION

- To promote technical innovation in renewable energy and energy efficiency in the PICTs
- Innovation in capturing solar, wind, hydro, tidal and wave energy
- Innovation in reusing waste heat
- Real experiences in the industrial, tourism and the manufacturing sectors
- Competition includes the secondary schools
- https://www.pcreee.org/content/pcreee-competition-renewable-energy-energy-efficiency-innovation

3. PCREEE SUSTAINABLE ENERGY RESEARCH SUPPORT FUND

- Support Pacific Islands tertiary students to conduct research relating to sustainable energy in the Pacific Islands
- Two awards to date
- https://www.pcreee.org/content/pcreee-sustainable-energy-research-support-fund

- Kakau-Moe-Loa Foliaki
- A PhD student at the Centre for Sustainability
- University of Otago, NZ
- Topic – "Understanding the energy cultures profile for the residential sector of Tonga and how to inform effective energy efficiency policy "
- Total research budget NZD 22,000

- Vinak Vishal Prakash
- A Masters student at the Faculty of Science, Technology and Enviromnent
- USP
- Topic – "A sustainable island community and the role of Renewable energy in providing access to Energy services in a remote island."
- Total research budget FJD 9985.59

PCREEE BUSINESS DEVELOPMENT TRAINING PROGRAMME & AWARENESS PROGRAMME

- raising the awareness about the business opportunities in the local energy sector
- promoting entrepreneurship and private sector investment in sustainable energy
- enhancing opportunities for private sector collaboration

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