AGENDA ITEM E3 – ENHANCING CAPACITY BUILDING IN SUSTAINABLE ENERGY

(Jointly submitted by Pacific Community (SPC), University of the South Pacific (USP) and International Renewable Energy Agency (IRENA))

Purpose

1. The purpose of this paper is to seek the Energy Ministers’ endorsement of the capacity building activities in Sustainable Energy in the Pacific region.

Background

2. Energy security is a major issue that is currently hindering the social, environmental and economic development of Pacific Island countries and territories (PICTs). One of the key barriers to improving PICTs’ energy security status is the lack of local and regional capacity and expertise that are the results of the absence of sustainable training programmes and trained staff and well-resourced and equipped training institutions to deliver on the required training programmes.

3. In 2017, Third Pacific Regional Energy and Transport Ministers’ meeting, the Ministers had agreed to the following:
   - the region’s capacity building and training on sustainable energy to be based on formal accredited Technical and Vocational Education and Training (TVET) qualifications and support to continuing research and development in the area of sustainable energy;
   - encouraging PICTs students to pursue educational pathways and higher qualification opportunities on sustainable energy available from nationally and regionally accredited tertiary education institutions;
   - encouraging a national and regional approach to accreditation of sustainable energy competency-based qualifications and skill sets in the vocational educational sector – including a system for incorporating quality assurance/ accreditation/ recognition of formal and informal learning (project-based training);
   - supporting the development of both national and regional systems for recognition of current competencies and recognition of prior learning;
   - supporting an industry-driven demand based TVET system for sustainable energy through national and regional professional industry associations.

4. There is a lot of progress in the implementation of country/regional projects and initiatives with capacity building components undertaken by SPC, PIFS, PPA, SPREP, USP, GGGI, JICA, GIZ, IRENA, UNIDO, IEA and other partners. These efforts are discussed during annual meetings of the Pacific Energy Oversight group (PEOG) and the Pacific Energy Advisory Group (PEAG) to ensure that these initiatives are consistent with the direction prescribed by the Framework for Action on Energy Security in the Pacific (FAESP).

5. The European Union Pacific Technical and Vocational Educational and Training in Sustainable Energy and Climate Change Adaptation project (EU PacTVET) is a €6.2 million project which is currently being implemented in all 15 P-ACP countries by SPC and USP. It commenced in 2014 with training needs and gap analyses in 15 P-ACP countries (Cook Islands,
Federated States of Micronesia (FSM), Fiji, Kiribati, Nauru, Niue, Palau, Papua New Guinea (PNG), Republic of the Marshall Islands (RMI), Samoa, Solomon Islands, Timor Leste (East Timor), Tonga, Tuvalu, and Vanuatu).

6. These analyses revealed that formal qualifications were required for “genuine” capacity building in the areas of sustainable energy. At the EU PacTVET inception meeting in October 2015, all 15 P-ACP countries reviewed and endorsed national priority areas for sustainable energy.

7. The project was given endorsement from 15 P-ACP countries to proceed with the development of “regional” qualifications (RQs) in sustainable energy incorporating country priority needs. This has led to regional development of Certificate Levels 1 to 4 on the Pacific Qualifications Framework (PQF) in Sustainable Energy using the Fiji Higher Education Commission policies and procedures.

8. The regionally developed qualifications are competency based and countries can adapt the RQs depending on their context and needs. They also have the option to deliver the full qualification, integrate the regional competency standards into their existing training courses in SE or deliver parts of the qualifications only.

9. USP with its 12 member countries, 14 campuses, approximately 27,000 students spread over 30 million sq.km, USP plays crucial role developing human capacity at all levels. The overarching themes of the University’s activities are Human Security and Sustainable Development. USP is involved in human capacity development in the sustainable energy area at various levels – from technical training to PhD research. It also offers short-term training workshops in conjunction with various partners.

10. IRENA with a global membership of 160 countries is the facilitator of the Small Island Developing States (SIDS) Lighthouses Initiative (LHI), a framework for action to support SIDS in their energy transformation to a resilient renewables-based energy system. SIDS LHI consists of 59 partners, of which 15 of the 36 SIDS are from the Pacific region¹ and 23 development partners. New priority areas were identified from the vigorous consultation that was undertaken after the SIDS LHI met its targets three years in advance, which are:

- Support SIDS in reviewing and implementing NDCs, with technical assistance and capacity building
- Expand from assessment and planning to implementing effective, innovative solutions
- Promote all renewable sources, including geothermal and ocean energy, and step up work on wind and solar PV
- Support the development of bankable projects, access to finance and co-operation with the private sector
- Strengthen institutional and human capacity in all segments of the renewable energy value chain
- Expand focus beyond power generation to include transportation and other end-use sectors
- Leverage synergies between renewables and energy efficiency
- Nexus between RE and agriculture, food, health and water – to foster broad socio-economic development
- Raising awareness about job creation, gender equality and women’s empowerment through renewables
- Link renewable energy uptake to climate resilience and more effective disaster recovery
- Enhance collection and dissemination of statistics, supporting informed decision-making

¹ Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu
• Reinforce and expand partner engagement, leveraging synergies with other SIDS initiatives
• Boost renewable power deployment, aiming for a target of 5 GW of installed capacity in SIDS by 2023

11. From the inception of IRENA in 2012 to the launch of the SIDS LHI in 2014 and setting of new targets and priority areas in 2018, the Agency has delivered capacity building activities in collaboration with partners at both the national and regional levels of the Pacific region focusing on key areas, such as grid stability, renewable readiness assessments, RE roadmaps, creation of enabling environments, local vocational and technical capacity development, entrepreneurship support, certification of solar photovoltaic (PV) technicians, access to finance and training of financial institutions, uptake of RE in the tourism sector, strengthening energy services companies (ESCOs) capacity, strengthening resilience in SIDS through RE.

From 2014 – 2018, 14 capacity building activities were undertaken in the Pacific region with approximately 400 personnel participating in these capacity building activities from the national energy, statistics, environment and climate change, tourism offices, power utilities and the private sector.

**Current Status**

12. The EU-PacTVET project had partnered with the Fiji Higher Education Commission (FHEC) and the Educational Quality Assessment Programme (EQAP) to develop and accredit the regional TVET qualifications in sustainable energy. A Regional Industry Standards Advisory Committee (ISAC) for sustainable energy was established to provide technical input (members included the Pacific Power Association, and 60% representation from private sector and utilities). While Industry Standards Advisory Committee (ISAC) meetings were held face to face in Fiji, representatives from all 15 P-ACP countries participated through online management platform “Basecamp” and two regional ISAC meetings were held.

The Certificates 1 to 4 are “owned” by the Sustainable Energy Industry Association of the Pacific Islands (SEIAPI) who will be responsible for updating and reviewing the qualifications. However, sustainable energy qualifications and learning resources are an “open educational resource”.

13. All four (4) regional qualifications in sustainable energy (certificate Levels 1-4) have been regionally accredited by EQAP on the Pacific Qualifications Framework and are now registered on the Pacific Register of Qualifications and Standards.

14. An update of the activities by the PacTVET project by country is provided in **Annex 1**

15. USP is involved in a multitude of activities dealing with education and research in the area of sustainable energy. A summary of these actions is given below:

   i. Renewable energy related academic programmes: *Postgraduate (PG) Programmes:* PG Diploma in Physics (Renewable Energy emphasis); Masters in Renewable Energy (Engineering/Physics); and PhD in Renewable Energy (Engineering/Physics). *Undergraduate (UG) Programmes:* Undergraduate courses and projects in Renewable Energy; the two accredited Engineering programmes include renewable energy courses.

   ii. Research areas: long term energy planning; ocean energy assessments and devices; wind energy assessments and blades design; solar photovoltaic (PV) systems – grid-connected
systems, standalone systems, electric vehicle charging systems etc; mini/micro grid control strategies; renewable energy hybrid systems; sustainable sea transport; techno-economic and policy analysis; and high penetration of solar PV on island grids – case of Kiribati: a collaborative project with the International Renewable Energy Agency and the Pacific Power Association. The research findings are expected to be useful to Tarawa utility and development partners.

iii. Community projects: USP is also engaged in development of community projects ranging from solar water pumping at remote schools to PV based refrigeration systems for fishing communities in Fiji. This work is done in collaboration with international donors and also involves basic training of recipients. These type of projects have assisted local communities and clearly illustrates USP’s commitment to the environment, community engagement and sustainable development.

iv. USP-UNSW cooperation in solar energy capacity development has hosted regional workshops on integration of variable renewable energy (VRE) into Pacific grids.

v. USP-Masdar-Elemental cooperation has conducted two workshops for regional utilities on integration of renewable energy.

**Issues (PacTVET)**

16. The PacTVET project is a response to the millions of dollars that is spent in the region on ad-hoc, informal, one-off and unaccredited trainings of various sizes and shapes in sustainable energy. The formal qualifications offered under the PacTVET courses would support advancements of the trainees in their work places and career. It would enable gradual advancement of trainees to higher qualifications and would support labour mobility within and outside of the region. Donor support for sustainable energy non-formal training delivered by external providers rather than genuine capacity building via formal accredited qualifications in sustainable energy delivered by in-country educational providers is not the best use of scarce resources and should be discouraged.

17. The formal qualifications offered by the PacTVET project is recognised by the national and regional industry and professional associations and trainees could easily become members and given licenses to practice.

18. With the commitments that the PICTs have made on their intended nationally determined contributions (NDCs) and their respective national energy targets, the demand for trained and qualified people in sustainable energy is increasing. USP is offering courses and programmes at undergraduate, postgraduate, Masters and PhD levels. Current enrolment of PIC students in these programmes are increasing and PICT governments are encouraged to make use of these homegrown opportunities.

**Issues (IRENA - SIDS Lighthouses Initiative)**

19. Further consultations undertaken by IRENA with SIDS in 2018 to identify new priority areas of SIDS LHI and set a new target after the initial target was met three years in advance, highlighted several priority areas for supporting energy transformation in SIDS, in the form of technical advisory and capacity building needs. This includes but not limited to: -

   - the development and review of national energy roadmaps for identifying cost-effective renewable energy options for deployment in power generation and end-use sectors (with emphasis on transport), in conjunction with relevant energy efficiency measures,
   - studies to assess power system flexibility and identify system improvements needed to integrate high shares of variable renewable energy,
• guidance for creating strong policy, regulatory and institutional frameworks conducive to renewable energy investments,
• awareness raising on socio-economic benefits of renewable energy deployment (with emphasis on creating employment, leveraging local value additions and empowering women) and development of comprehensive policies incorporating such aspects,
• capacity enhancement in the collection and analysis of energy data and statistics and provide support for enhancing data-driven decision making,
• promotion of renewable energy solutions for social sectors such as agriculture, health, education and transportation to disseminate information on latest advancements in electrification of non-power sectors,
• development of more ambitious NDCs and enhanced capacities for their effective implementation;
• support SIDS in developing attainable NDC implementation plans to help achieve the targets effectively,
• development of bankable renewable energy projects, with focus on development of bankable project documentation and assessment of financial viability of renewable energy sites earmarked for development,
• facilitation of access to affordable finance through promotion of improved dialogue between developers and financiers through matchmaking events and promote platforms and resources that can improve access to renewable energy finance,
• introduction of international standards in geothermal energy resource classification, improvement of quality standards for renewable energy technologies and service providers,
• supporting SIDS in developing capacity in the identification of technology options for building resilient energy systems to combat climate change and improved disaster recovery,
• development of educational programmes and certification schemes in renewable energy and energy efficiency to nurture and empower local capacities and skilled labour and;
• capacity building on marine energy development.

Issues (USP)

20. Increased number of targeted scholarships would help more regional students to be enrolled in science and engineering programmes with emphasis on RE offered by USP.

21. Enhanced collaboration between various stakeholders to answer research questions that would help in developing renewable energy resources in the region.

Recommendations

22. The meeting is invited to:

i. Support the continuing delivery of the RQs in SE at levels 1-4 and the development of further regional qualifications at levels 5 and 6 to develop higher level competencies required for the changing and complex technologies in the SE sector.

ii. Acknowledge the activities being carried out by the SPC and the University of the South Pacific for the implementation of the EU PacTVET project.

iii. Acknowledge the capacity building activities in sustainable energy undertaken through the SIDS Lighthouses Initiative at the national and regional levels and supporting the newly identified areas of priority for undertaking additional capacity building activities as itemized in Paragraph 8.
iv. **Call** on development partners to support the capacity building efforts in the region through a coordinated manner.

v. **Encourage** PICTs students to make use of educational pathways and training/higher education opportunities on sustainable energy available from nationally and regionally accredited higher education institutions.

vi. **Acknowledge** USP’s role in sustainable energy capacity development at various levels.
Annex 1: Update of PacTVET project Activities

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<tr>
<th>COUNTRY</th>
<th>ACTIVITIES</th>
<th>REMARKS</th>
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| 1. Fiji                        | • Delivery of Sustainable Energy Qualification at the **TCF Lautoka** campus in August 2019  
                                 | • Alignment of training at EFL to the RQs  
                                 | • Support to EFL for the delivery of training in SE  
                                 | • Developed the following provider programmes for the Fiji National University:  
                                 | 1. Certificate in Bio Energy L4  
                                 | 2. Certificate in Energy Efficiency L4  
                                 | 3. Certificate in Renewable Energy L4  
                                 | 4. Certificate in Hybrid Sea Transport L4  
                                 | 5. Certificate in Bio Fuel L3  
                                 | 6. Certificate in Energy Efficiency L3  
                                 | 7. Certificate in Traditional Sea Transport L3  
                                 | 10. Certificate 1 in Sustainable Energy L1  
                                 |                                                                                       | LoA with SGs office  
                                 | Preparation for Procurement of training equipment  
                                 |                                                                                       | JICA training Curriculum mapped to RQ Level 3 and 4 (Solar strand) |
| 2. Timor Leste                 | • Will deliver SE Level 1 & 2 at CNEFP Tibar  
                                 |                                                                                       | Working on ICC contract and MoA with Govt. Ministry |
| 3. Federated States Of Micronesia | • Currently working on integrating competency standards from the RQs into the existing courses at FSM COM  
                                 |                                                                                       | Have an ICC that coordinates the work |
| 4. Tuvalu                      | • PacTVET supports the ACSE Tuvalu Biogas project – installation of 40 small scale Biogas systems Conducted training on Biogas in 2018 on installation, operation and maintenance of Biogas systems  
                                 | • Produced development of a Bio Gas Toolkit, a best practices report and a video on the project  
                                 |                                                                                       | Trainees had graduated with RQ in SE |
| 5. Kiribati                    | • Submitted proposal to deliver RQ in SE Level III (Solar strand) from 2020  
                                 |                                                                                       | Had been submitted to KIT |
| 6. Cook Islands                | • RE training for Energy workers at power stations in northern and southern group of Islands  
                                 | • Integration of competency standards from the RQs into the existing courses at the Cook Islands Technical Training institute (CITTI)  
                                 |                                                                                       | 2017-2018  
                                 |                                                                                       | Currently in progress |
| 7. Solomon                     | • Procured teaching/learning materials for Cert 4  
                                 |                                                                                       | |


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<tr>
<th>Islands</th>
<th>in Refrigeration and Air Conditioning (RAC)</th>
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<tr>
<td></td>
<td>• Developed learning resources for Cert 4 in RAC</td>
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<td>• TOT conducted for SINU trainers</td>
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<td>• 1st cohort of students for Cert 4 in RAC in June 2018</td>
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<td>8. Samoa/Tonga</td>
<td>Plans for integration of competencies from the RQs into the existing Electrical Engineering and Mechanical Engineering programmes</td>
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<td>• Plan for ToT</td>
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<td>9. PNG</td>
<td>• TVET Institution Guideline for SE drafted</td>
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<td></td>
<td>• Contextualising and Validation of SE training materials</td>
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<td>• Printing of curriculum materials in SE</td>
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