



## EU-GIZ ACSE Final Project Report Federated States of Micronesia

*Project Title: Enhancing investments in small-scale renewable energy technologies in the FSM – PDD7*

*Grant Agreement Number: 81232040*

*Contract Budget: 325,000 EUR*

*Reporting Period: 1 July 2016 - 31 August 2020*

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*Photos: Left top and bottom: Kosrae 3.25 kW installation with inverter and net meter at KUA administration building Right top and bottom - Participants at the Solar PV grid connected training in Guam*

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## Introduction

This report is the progress report (referred to as Annex 7 in the Financing Agreement) for the project *Enhancing investments in small-scale renewable energy technologies in the FSM – FSM7*; implemented in the Federated states of Micronesia (FSM), and funded by the European Union (EU) under the EU-GIZ Adapting to Climate Change and Sustainable Energy (ACSE) Programme. The reporting period covered is 01 July 2016 to 31 August 2020.

The report is structured to align to the GIZ “Capacity Works” Development Model and its Success Factors for capacity development.

These Success Factors as applied under EU-GIZ ACSE are:

1. **Strategy:** Summary of project context, objectives, planned activities and outcomes – As embodied in the Project Design Document (PDDs);
2. **Cooperation systems:** Key, primary and secondary actors.
3. **Steering:** Stakeholder participation in implementing and steering the project; attaining project results based on operational planning and monitoring.
4. **Learning and Innovation:** Evaluations, knowledge attainment, distillation and sharing of knowledge at programme and project level.

## 1.0 Strategy

Table 1. Summary of project start up documents

Title
150422_EU-GIZ ACSE_FSM-MoU
150430_FSM_Concept Note Evaluation-FSM7
150615_FSM_Concept Note_FSM7
160722_EU-GIZ ACSE_FSM7-FA-Eng-81202340
160722_EU-GIZ ACSE_FSM7-FA-Ger-81202340
160722_EU-GIZ ACSE_FSM7-SA-81202340
160722 GIZ ACSE FSM7 PDD _ Enhancing investments in small scale RE
150430_FSM_Concept Note Evaluation-FSM7
180914 FSM7 FA 81202340 -Addendum 1
190912 FSM7 FA 81202340 - Addendum 2
200227 FSM7 FA 81202340 -Addendum 3
200715 FSM7 FA 81202340 Addendum 4

### 1.1 Project Background, Objective and Outcomes

#### **Background**

The Federated States of Micronesia (FSM) is directly facing the challenges associated with climate variability and change. Simultaneously, the FSM is highly dependent on imported petroleum fuels – FSM currently spends approximately US\$50 million on fuel imports. Most fuel is used for electricity generation and transportation. For electricity there is an average tariff of US\$0.50 per kWh, which for the average wage earner can be a challenge – noting that the minimum wage for the FSM is US\$1.75 per hour. The FSM national energy policy has set a renewable energy (RE) target of 30% and energy efficiency (EE) target of 50%. The current priorities for the FSM as outlined in the respective state energy action plans identify the need to increase the penetration of renewable energy and improved energy efficiency. Transitioning to increased use of sustainable energy options will benefit the FSM economy and quality of life.

In the FSM, on average, 37.6% of schools have access to electricity. In 2009 the FSM education sector spent US\$4,789,855 on *other current expenditures*, it is likely a significant portion of these running costs went to energy, either for electricity or transport to isolated schools<sup>1</sup>. The FSM Strategic Development Plan 2004-2023 states that, “on most islands, schools have no electric power or running water and available water is of poor quality<sup>2</sup>”.

Electricity supply at the four states is provided by four independent power utilities. The power utilities’ past experiences with post pay customers on monthly tariffs incurring high debts have all the state utilities reverting to prepayment meters for ease of debt and revenue collection. The number of

<sup>1</sup> JEMCO. 2009. JEMCO Resolution Compendium. [http://kolonia.usembassy.gov/uploads/oT/\\_H/oT\\_HwK3HodU6IWolBINieA/2009-09-jemco-resolutions.pdf](http://kolonia.usembassy.gov/uploads/oT/_H/oT_HwK3HodU6IWolBINieA/2009-09-jemco-resolutions.pdf)

<sup>2</sup> FSM Strategic Development Plan 2004-2023, volume 3, page 87.

customers has increased over the past years particularly in the residential sector. It is estimated that 2400 customers still do not have access to prepayment meters.

Potential funding for the FSM over the period 2014 – 2020 is about US\$47m in grants for energy sector development. A portion (EUR 325,000 equivalent to about US\$366,000 and EUR 450,000 equivalent to about US\$507,000) of this is from ACSE. FSM's current total capacity (conventional) is about 12.1MW. Based on current activities installed renewable energy capacity is 1.9MW as at December 2014. The recent concluded ADB technical assistance on strengthening of the legal framework and investment plans has recommended 6MW of renewable energy for Pohnpei and 2.5MW for Chuuk. This is in addition to the already approved 1.5MW for Yap. Further, for Kosrae a 1.65MW is envisaged. These adds-up to 13.55MW for the FSM, which is equivalent to about 2.71MW net of renewable energy or 70% of the renewable energy target.

Climate change impacts of notable concern include: extreme temperatures, sea level rise, ocean acidification, and heavy rainfall leading to flooding and landslides.<sup>3</sup> Some of the low-lying coral atolls in the north Pacific are especially vulnerable to sea level rise, storm surges, coastal inundation and salination of water lenses. Rising sea levels also exacerbate the pressure on freshwater lenses in these atoll environments and while an overall increase in rainfall is projected, the populations' reliance on water catchments for storage (as opposed to the water lens) will increase. The FSM has also experienced the cyclical effects of the El Niño, La Niña Southern Oscillation Cycle (ENSO) – related weather anomalies. Such climate variability is associated with drought; that often leads to water shortages, crop failures, food shortages, and fires.

Despite the risks associated with climate change, there is a general lack of community awareness and preparedness for climate change and the natural hazards associated with them. Key recommendations in Fletcher and Richmond's recent 2012 study of climate change impacts in the FSM include:

1. Need for a vigorous climate change education programme for local communities, non-governmental organizations, landowners, land-tenured decision makers, permitting authorities and staff, and the public.
2. Need for community-based adaptation that involves stakeholders throughout FSM and is consistent with the traditional community values inherent in Micronesian society<sup>4</sup>.

The FSM ACSE has two components: Protecting islands through Learning and Leading in Adaption and Renewable energy Education programme (PILLAR-Ed); and the Enhancing investments in renewable energy and energy efficiency technologies in the FSM. The ACSE in the FSM is coordinated through the Department of Resources and Development and Department of Finance (national government) with SPC as implementing partner.

## **Objectives**

PDD7 – enhancing investments in small-scale renewable energy technologies in the FSM

Contribute to enhancing energy security in the FSM with the focus on contributing to the national energy policy target for renewable energy and the reduction of fossil fuel use for power generation

## **Outcomes**

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<sup>3</sup> In 1997, heavy rains caused landslides leading to 20 deaths on Pohnpei (FSM government). These landslides were caused by the intense rainfall from tropical storm Jimmy.

<sup>4</sup> Fletcher, Charles & Richmond, Bruce. 2010. Climate Change in the Federated States of Micronesia – Food and Water Security, Climate Risk Management, and Adaptive Strategies. [ftp://soest.hawaii.edu/coastal/Micronesia/FSM%20Appendix\\_ClimateChangeFSM.pdf](ftp://soest.hawaii.edu/coastal/Micronesia/FSM%20Appendix_ClimateChangeFSM.pdf)

The planned outcomes for the project were revised and presented below:

- a) Increased penetration of renewable energy
- b) Increased investment on small scale RE installations for grid connection
- c) Contribution to achievement of national energy policy targets on RE
- d) Diversification of the RE mix by addition of small-scale grid connected RE system(s)
- e) Improving the enabling environment for the installation of small scale RE systems in FSM
- f) Institutionalise training of technicians in design and installation of grid connected PV systems

## 1.2 Outputs and Deliverables

Table 2 below provides the definition of the project’s outcomes and outputs, as planned, and achieved.

Table 2. Description of projects outcomes and outputs

<b>PDD7: Enhancing investments in small-scale renewable energy technologies in the FSM</b>			
		<b>Deliverables</b>	<b>Revised deliverables</b>
<b>Outcome a</b>	Increased penetration of renewable energy		Installation of small-scale RE technologies such as solar PV systems
<b>Output a</b>	<ul style="list-style-type: none"> <li>▪ Net metering equipment installed at participating consumer premises</li> <li>▪ Net metering equipment purchased (150 meters)</li> </ul>	<ul style="list-style-type: none"> <li>▪ 150 net metering equipment procured for the four State Power Utilities</li> <li>▪ Customers securing loans for small-scale RE systems from the FSM Development Bank (FSMDB) will be installed with net meters</li> </ul>	<ul style="list-style-type: none"> <li>▪ 80 (50 single phase and 30 poly-phase) net metering equipment procured and distributed to the 4 States.</li> </ul>
<b>Outcome b</b>	Increased investment on small scale RE installations for grid connection	Public participation in the FSMDB financing scheme for small-scale RE systems	<ul style="list-style-type: none"> <li>• Public participation in the FSMDB financing scheme for small-scale RE systems. FSMDB already have EE loan scheme in place.</li> </ul>
<b>Output b</b>	<ul style="list-style-type: none"> <li>▪ Net metering legislation developed and adopted in other states (Kosrae, Chuuk and Yap)<sup>5</sup></li> <li>▪ Incentive /promotional programme(s)<sup>6</sup> to access small-scale grid connected RE systems developed /enhanced and operational</li> </ul>	<ul style="list-style-type: none"> <li>• Loan scheme developed at the FSMDB for the public to finance small-scale RE systems</li> <li>• Net metering legislation developed and passed by the State Legislators so as to allow for the small-scale RE systems to be installed in residential /commercial buildings and connected to the grid</li> </ul>	<ul style="list-style-type: none"> <li>• Loan scheme developed at the FSMDB for the public to finance small-scale RE systems</li> <li>• Net metering Manual for PUC developed and presented to PUC for adoption.</li> <li>• Presentation on net metering to the Kosrae Utility Corporation conducted.</li> <li>• Yap State Public Service Corporation (YSPSC) developed own regulation on net metering</li> </ul>

<sup>5</sup> Pohnpei already has an adopted net metering act but this project may not be able to complete the development and adoption of NM legislation in Kosrae, Chuuk and Yap

<sup>6</sup> This will be developed based on the Fiji and Palau experience with similar programmes and with the ongoing work with the FSM Development Bank and IUCN on HELP Loan program that focus only on EE



			implemented February 2020. Distributed to Yap a total of 34 net meters.
<b>Outcome c</b>	Contribution to achievement of national energy policy targets on RE	When all 150 net meters are installed this will result in at least 150kW grid connected RE systems which will contribute to the FSM policy target of 30% by 2020.	<ul style="list-style-type: none"> <li>Only 80 net meters procured and 5 sets of 3.25 kW system, this resulted in 16.25Kw grid connected RE installed capacity</li> </ul>
<b>Output c</b>	Visibility and awareness materials developed and available to all stakeholders <sup>7</sup>	These materials will be developed primarily for schools and the general public. The materials will be translated into the local language.	<ul style="list-style-type: none"> <li>These materials developed primarily on net metering to create awareness on technical, economics and environmental benefits of net metering.</li> </ul>
<b>Outcome d</b>	Diversification of the RE mix by addition of small-scale grid-connected RE system(s)	Almost all RE systems installed – grid connected and off grid RE systems are funded through grants. There are interested general public members that want to invest in small-scale RE systems so as to lower their electricity bill. This project will enable this to materialise.	<ul style="list-style-type: none"> <li>Showcased a small-scale RE system (3.25 kW connected to the grid with net meter in the States. There are interested general public members that want to invest in small-scale RE systems to lower their electricity bill. This project enabled interest on investing in RE.</li> </ul>
<b>Output d</b>	<ul style="list-style-type: none"> <li>Installed small-scale grid connected RE systems</li> </ul>	These will materialise following those participating in the FSMDB loan scheme to own 1-3kW grid connected RE systems.	<ul style="list-style-type: none"> <li>Supported the procurement of 6 sets of small-scale solar grid systems (5 sets x 3.25 kW &amp; 1 x 1kW system) with installations linked to the training at FSMCOM, the targeted institution for net meter and RE grid connect.</li> </ul>

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<sup>7</sup> The impact of the visibility campaign will be assessed separately as to the impact assessment in activity i.

### 1.3 Major Variations and changes in the project outline against the PDD

Table 3. List of project variations

100921 FSM7 FA 81202340 SPC Addendum 1
190912 FSM7 FA 81202340 – SPC Addendum 2
200227 FSM7 FA 81202370 SPC Addendum 3
200715 FSM7 FA 81202340 SPC Addendum 4

The variations to the project made in 2018 and 2019 are listed below:

**1<sup>st</sup> Addendum dated 21.9.2018** – no cost extension timeline from 30<sup>th</sup> September 2019 to 31<sup>st</sup> December 2019

**2<sup>nd</sup> Addendum dated 09. 9. 2019** – no cost extension timeline from 31<sup>st</sup> December 2019 to 29<sup>th</sup> February 2020. Project amendments to the project logframe to ensure that the results to which the project was assessed against to match to the project efforts and attention.

Revised logframe provided below:

Project Description	Indicator	Baseline	Target	Means of Verification	Assumptions
<b>Objectives</b> Contribute to enhancing energy security in the FSM with the focus on contributing to the national energy policy target for renewable energy and the reduction of fossil fuel use for power generation.	<ul style="list-style-type: none"> <li>ACSE project implemented by December 2019</li> <li>Utility and industry are not prepared for net-metering</li> <li>Amount of kW of small scale grid connected RE systems implemented</li> </ul>	<ul style="list-style-type: none"> <li>No /very few small scale grid-connected RE systems in FSM</li> <li>No policy in FSM utilities to guide net-metering and PV installations</li> <li>No promotional programme for small scale grid connected RE systems</li> </ul>	<ul style="list-style-type: none"> <li>Additional 75kW of small scale RE systems through net metering</li> <li>Net metering manual and policy for FSM utilities to be developed</li> <li>An operational incentive /promotional programme for small scale grid connect RE systems</li> </ul>	<ul style="list-style-type: none"> <li>Progress reports</li> <li>Acceptance of FSM Net Metering Manual and policy by at least 1 FSM utility</li> <li>Project briefs</li> <li>Impact survey report</li> </ul>	
<b>Outcomes</b> a. Increased penetration of renewable energy b. Increased investment on small scale RE installations for grid connection c. Contribution to achievement of national energy policy targets on RE d. Diversification of the RE mix by addition of small-scale grid-connected RE system(s) e. Improving the enabling environment for the installation of small scale RE systems in FSM f. Institutionalise training of technicians in design and	a. kW of RE installed through net metering b. Number of investments on small scale RE grid connected installations c. % RE in electricity generation; MWh of energy generated d. % of small scale RE grid connected system as part of RE capacity or generation e. Utility has manuals, rules and procedures that govern the installation of small scale RE systems	a. Zero kW installed through net metering b. Zero investments installations c. 15.7% RE in installed capacity for electricity generation; zero MWh of energy generated from small scale RE grid connected systems through net metering d. zero % of small scale RE grid connected systems e. No formal procedure, policies of manuals for installation of small scale RE systems	a. At least 75kW of RE installed through net metering b. 10 new investments on small scale grid connected RE systems c. At least an additional 75kW RE to the installed electricity generation mix equivalent to an increase in 0.67%; estimated 8MWh of energy generated d. 4% RE grid connected system e. An established program within the utilities that allow	a. Govt. /utility /project reports on new RE installations through net metering b. Reports on new investments on small scale grid connected RE systems c. Installed grid connected RE systems d. Reports on monitoring of the installed systems e. Procedures, rules and manuals that guide the installation of small scale RE systems. Utility	<ul style="list-style-type: none"> <li>Solar PV system are cost-effective compared to grid electricity</li> <li>RE equipment is available locally for customers to purchase</li> <li>Customers can easily access financing mechanisms</li> <li>Utility and industry are trained and prepared for installation of small scale RE systems</li> </ul>

**3<sup>rd</sup> Addendum date 27 February 2020** no cost extension timeline from 29<sup>th</sup> February 2020 to 31<sup>st</sup> May 2020.

**4<sup>th</sup> Addendum dated 02.07 2020** no cost extension timeline from 31<sup>st</sup> May 2020 to 31<sup>st</sup> August 2020.

## 1.4 Capacity Development Strategy

Table 4. Capacity Development Strategy

Phase	Individuals	Organisations	Society	National level
	<b>Competence development</b>	<b>Organisational development</b>	<b>Development of cooperation systems</b>	<b>Development of enabling frameworks</b>
SWOT in the area of social concern	Utility staff current technical knowledge and skills on solar PV grid connections  Not all linesmen are qualified technicians and lack the required qualifications	Ability of SPC/GIZ Project team to develop net metering pamphlets and posters	Installations of demonstration systems in all State to showcase the benefits of net metering  Training of COMFSM staff to teach and offer the GSES Solar PV Grid Connected Training Curriculum	No net metering legislation in Kosrae and Chuuk
Intended capacities	Improves capacity on net metering installation, reading and billing	Improves understanding of the FSM populace on net metering and what it entails	Empowerment of communities on RE and Net metering	Establish net metering regulations and bills where possible
Activities	<ul style="list-style-type: none"> <li>- Purchase of net meters</li> <li>- Purchase of solar PV Systems for demonstrations and training</li> <li>- Purchase and deliver GSES certified Solar PV Grid Connected training to College of Micronesia in FSM (COM FSM)</li> </ul>	Develop awareness and outreach activities on net metering to the private sectors	Installation of solar PV systems (3.25 kW) with net meters  Training of COM FSM teachers – TOT to be certified trainers on Grid Connected PV system in the future.	Development of Net metering bill and regulations
Interaction with other levels	Liaised with Palau Utility Corporation to provide specifications for net meters	Work with GSES to assist in editing and proof reading of the pamphlets and poster  Worked with SPC GIS staff to develop web portal platform to share the information	LOA between SPC and COM FSM signed  The Yap State Utility (Yap State Public Service Corporation) has	RFQ to develop net metering regulations send out twice over the project timeline but no contract done as budget too low compared to quotations received.

<p>Complementarity activities by other projects/actors in the same line of action</p>	<p>Worked with the manufacturer ACLARA to organise training on net metering as a complementary activity</p> <p>Purchase of certified training curriculum</p>	<p>Energy Programme and Geo-Informatics teams now under the GEP (Geo-resources and Energy Programme) worked on establishing the internet portal to house the awareness materials</p>	<p>The Utilities Technicians (2 from each State) attended the GSES training with funding support from the project</p> <p>Chuuk and Yap Utilities are willing to install the demonstration systems since COV-19 has distorted the travel to the two States.</p>	<p>Net metering Operational manual with guidelines for Utilities and public to implement Net metering was developed and shared with the Utilities.</p>
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## 2. Cooperation System

### 2.1 Stakeholders

Table 5 below lists project stakeholders including *key actors* responsible for decisions and activities related to the implementation of the project, *primary actors* which are positively or negatively affected by the project, and *secondary actors* with indirect or temporary involvement with the project.

Table 5 – Stakeholders

Stakeholder	Organization	Role
<b>Key Actors</b>		
Hubert Yamada – Assistant Secretary (Energy)	FSM national government Department of Resources and Development	Lead National Agency – focal contact at the FSM national government
Lara Studzinski	Deputy Director, SPC Northern Micronesia Office, SPC	Overall coordination with national stakeholders and provide oversight coordination and support when required.
Koin Etuati, Energy Policy Officer	SPC	Implementing Partner /Agency
	SPC (Geo-resources and Energy Programme)	Project Manager – overall in charge of the reporting on the progress of the project and advise to the Steering Committee members
Frank Vukikomoala, Energy Database Officer	SPC (Geo-resources and Energy Programme)	Assist to monitor the progress and the implementation of activities
Raksha Ben & Ritesh Verma, Finance Officer & Finance Assistant	SPC (Geoscience, Energy and Maritime Division)	Financial Administrator – provides the financial updates and reporting requirements (2016 to 2018)
Shanupriya Sharma	SPC (Geoscience, Energy and Maritime Division)	Financial Administrator – provides the financial updates and reporting requirements (2019- 2020)
<b>Primary Actors</b>		
Contract Offered (direct recruit by GiZ)	GiZ based at Micronesia Regional Office	GiZ Adviser, Christopher Frenkel based at MRO– compiles all reporting requirements and liaises with GiZ. Chris finished contract with GiZ in March 2019.
Silverina Pretrick	SPC at the Micronesia Regional Office	Project Assistant – PDD6 & PDD7. Coordinates the day-to-day technical activities with the respective stakeholders – reference attached JD for details
Vice President Alik	FSM Development Bank	Implementation of the incentive scheme (loans for small-scale RE systems)
General Managers and Chief Executive Officers	FSM State Power Utilities	Focal point with the power utilities particularly on the net metering and the grid connection of small scale RE systems
<b>Secondary Actors</b>		
FSM as a country	FSM national government	Progress towards its national energy policy target on RE

## 2.2 Project Steering

The actors who provide an important impetus for achieving sub-objectives, who are responsible for achieving objectives and sub-objectives of the project or who make political decisions participate in the steering structure of the project.

The function of this structure is to enable steering tasks to be performed, such as (e.g.) strategy, planning, coordination, control, monitoring, resource management and conflict management.

Table 6 shows participants of the steering structure that participate in the decision-making process (e.g. working groups) or have a formal direct responsibility for decisions (e.g. steering meetings) in the steering of the project.

*Table 6 – Participation in the Steering Structure*

Possible steering participants		
	Participation	Responsibility
Jenny Brown	EU delegation	Financial support (Donor) monitor of project
Hon. Marion Henry Secretary, FSM RND	Chair of the Steering Committee	
Gillian Doone – ODA Officer/NAO – Office of the President, ODA and Compact Manager	ODA Officer/NAO – Office of the President, ODA and Compact Manager	Coordination of Project
Mr Alan Semems, Programme Manager, National Authorizing Officer	NAO – Office of the President, ODA and Compact Manager	Coordination Project
Mr Hubert Yamada Assistant Secretary (Energy), FSM RND	Focal contact at FSM RND	Overall coordination at FSM including
Mr Cliff James, Education Specialist, Secretary, FSM Department of Education (DOE)	Steering committee member	Coordination from DOE perspective particularly with respect to activities at schools
Mr Fabian Nimece, Vice President, FSM Development Bank	Steering committee member	All activities with the FSMDB
Mr Santiago Joanes Jnr, Programme Manager, Department of Environment, Climate Change and Emergency Management OEEM – Office of Environment and Emergency Management, FSM national government	Steering committee member	Represents the CC perspective
Director, SPC MRO	Steering committee member	SPC Executive representative
GIZ Energy Adviser to SPC	FSM ACSE Team member	Contribute to the smooth operation of the ACSE
FSM ACSE Project Assistant, SPC MRO	FSM ACSE Team member	On the ground day-to-day activities of the FSM ACSE
FSM ACSE Project Manager, SPC Geoscience Energy and Maritime (GEM) Division	FSM ACSE Team member	Overall coordination, implementation, monitor and report of the FSM ACSE

Technical Adviser, GIZ Suva	FSM ACSE Team member	Advise and overall in charge of FSM ACSE from GIZ
Vanessa Fread	FSM, Assistant Secretary, Division of Marine Resources	Overall coordination of the Energy Division with FSM R&D, replacing Hubert Yamada who moved to another position

### 3 Plan of Operations

Table 7: Work Plan Implemented

Ref	Activities / Inputs	2017				2018				2019				2020		Comments
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
<b>a.</b>	<b>Purchase Net Meters</b>															
	i. Preparation of specifications and tendering for the supply of net metering equipment															Completed – 50 single phase and 30 three phase meters
	ii. Selection of successful bidder															
	iii. Supply and receipt including customs clearance of equipment															
<b>b.</b>	<b>Preparation of implementation of Net Metering in FSM</b>															
	ii. Selection of consultant															Completed installations of 3 x 3.25 kw (6.5kW) systems, Pohnpei and Kosrae. Due to Covid 19, mission was not completed to Chuuk and Yap. Utilities in these States to install.
	iv. Consultancy to deliver awareness workshops in 3 states including the installation of small solar systems with net meters to consumers and energy provider															
	v. Consultants travel and incidentals															
	v. Catering of awareness workshops															
	ix. Travel cost of FSM focal point to the 3 FSM States on Public Awareness															
	vi. Agreement between implementing agency (i.e. of the incentive programme) and Govt signed and programme launched															Not done due to COVID 19, no handover of the assets and agreements on its use due to travel restrictions and change over in staff at the R&D to progress this further.



	viii. Trainer engagement and travel																Completed
	ix. Catering and Venue hire for awareness workshops in 4 FSM states																Completed – R&D discussions with Utilities CEO on net meters and demonstration system set up, net meter awareness conducted in Kosrae
<b>c</b>	<b>Installation of Net Metering/Solar PV Grid Demonstrations/Training</b>																
	i. Agreement between participating consumers and power utility finalized and signed																Operational Manual to assist Utilities in implementing net metering completed and distributed to all Utilities
	ii. Consultant to deliver the training on solar PV systems and net meters including travel cost ( 15 days consultancy)																Completed
	iii. Utilities cost to attend the training																Completed
	iv. Installation of small-scale grid connected RE systems by consultant																2 x 3.25 kW systems installed by the project, 3 x 3.25 kW systems to install by the Utilities. Chuuk Utility (CPUC) completed the installation at the
	iii. 6 Staff of energy providers to attend the solar PV training (6 pers, 15 days)																Completed. Due to COVID 19 and travel restrictions, theory was done in Guam (1 Week) while the practical sessions were conducted in the States. Only Pohnpei and Kosrae practical sessions and final
	Catering for Solar PV training systems (15 part.+ 2 trainer X 10 days)																

															tests for participant completed
<b>d.</b>	<b>Extension Net-meter Legislation to Chuuk, Kosrae, Yap</b>														
	ii. Advertising of consultancy on legislation for Kosrae only														Not done. RFQ was done in 2018 and quotations received were well above the budget of Euro10,000. The work was narrowed down for a Consultant to provide a template only for the legislation and RFQ advertised in 2019. Lowest quote was Eruo40k, way above the budget, so work evolved around dissemination of the Pohnpei Legislation Act for other states to adopt.
	iii. Consultant contract on legislation for net metering for Kosrae - objective: draft of new legislation														
	vi. Travel and incidental costs for consultant														
	vii. Presentation and responses to queries on draft legislation to FSM Energy Working Group														
	viii. Adoption of legislation														
<b>e.</b>	<b>Gender Analysis</b>														Completed
	i. Development of a ToR for a gender analysis														
	ii. Advertisement for a consultancy														
	iii. Selection of consultant														
	iv. Deliverables against ToR														
<b>F.</b>	<b>Promotion and Awareness Activity</b>														Completed. Net metering awareness materials developed and uploaded to a web-portal for Utilities to access and
	i. Development of a TOR to outline the contents of visibility and awareness material ii. Develop the materials – led by Project Officer /Manager and ICC with support from implementing agencies (IOM & SPC)														

	iv. Knowledge materials published and disseminated														use the materials when progress the net metering in future. <a href="http://phpstack-269780-847707.cloudwaysapps.com/">http://phpstack-269780-847707.cloudwaysapps.com/</a>
	v. Develop a programme to launch the materials including awareness activities														
	vi. Survey to assess level of consumer awareness at the end of project														Not completed due to late installations of demo systems
<b>g.</b>	<b>Others</b>														
	i. Project Officer /Manager to draft reports														Completed
	iii. Finalize reports														
	iv. Submit to GIZ														
	v. Inception meeting														
	vi. Steering committee meetings														
<b>h.</b>	<b>Project Audits</b>														
	i. Develop TOR for project audit														Completed
	ii. Sought quotations for the project audit														
	iii. Select auditing firm														
	iv. Deliverables as per TOR														
	v. Travel and incidental costs														
<b>i.</b>	<b>i. Development of a TOR for the impact survey</b>														
	ii. Advertise for consultancy														Not completed as installations not completed due to COVID 19
	iii. Selection of Consultant														
	iv. Deliverables against TOR														
	v. Travel and incidental costs														
	v. Completion of consultancy and reports available														
<b>j</b>	<b>i. Development of Project Officer /Manager job description</b>														

	ii. Advertisement of vacancy															Completed
	iv. Contract signed															
	v. Travel and incidental costs for PO /PM and ICC															
	vi. Office equipment and supplies for ICC and PO/PM															
	vii. Communications (ICC and PO/PM)															
	viii. Cost sharing of a finance assistant with other SPC ACSE															

### 3 Results Oriented Monitoring

Table 8. Project progress reports

	<b>Project Progress Reports</b>
	160430 FSM 6&FSM7 Technical Report No. 1
	170430 FSM7 Project Technical Report 2
	171231 Annex 7 Technical Report No. 3
	180630 FSM7 Project Technical Report 4
	181231 FSM7 Project Technical Report 5
	190630 FSM7 Annex 7 Technical Report No. 6
	200830 FSM7 – Annex 7 Technical Report No.7
	200830FSM7 Final Evaluation Report
	200830 FSM7 Final Project Report (this report)

#### 4.1 Summary of results

*Provide summary of the key achievements of the project.*

**In Jan to June 2017, the project has achieved the following deliverables:**

- i. In Inception and project steering committee meeting scheduled for the week of 12 June 2017 in Pohnpei
- ii. The JD for the Project Officer job sized by SPC HR and ready to advertise
- iii. FSM Congress formally approved the implementation of the ACSE in May 2017.
- iv. The In-country Coordinator identified with contractual arrangements finalised with GIZ.

**In July to December 2017, the project achieved the following deliverables.**

- Financing Agreements for PDD6 and PDD7 signed between GIZ and SPC
- Job descriptions for the In-Country Coordinator (ICC) and Project Assistant (PA) developed, ICC identified by the FSM national government, PA ready to advertise.
- Draft RFQ (Request for Quotation) for development of net metering legislation – finalised for advertising in early July.
- Year 1 (June 2017 to June 2018) Work Plan developed
- Draft Communications Strategy developed
- First Quarter (1Q) brief on progress submitted to GIZ.
- Endorsement by the FSM Congress to proceed with the implementation of the ACSE, PDD6 and PDD7 – reference attached Congress Resolutions 20-11 and 20-12 dated 31 May 2017.
- In-country mission scheduled and conducted from 12-21 June 2017 to Pohnpei –

**In Jan to June 2018, the project achieved the following deliverables.**

- Recruitment of a GIZ Energy Advisor to SPC, Mr Christopher Frenzel based at Regional Micronesia Office in Pohnpei in January 2018

- Evaluation of the 4 bids received on the RFQ for the development of Net Metering Legislation for the FSM states –This work was not contracted out as the budget was small (Euro11,000) while the lowest bid received were lowest of Euro50,000 highest of Euro122,015 excluding travel cost.
- TOR for Gender Analysis developed and offered to SPC Gender Equity Adviser
- Workshop with Stakeholders from PUC on operationalizing of Net Metering conducted on 1 May 2018
- Developed a one- pager – Distribution feeder limits by PV installations
- Drafted PUC net Metering Connection Manual Policy, Processes and Forms for PUC finalisation
- Commented on the FSM ACSE briefs and endorsed by FSM representatives
- Preparatory discussions with FSM Development Bank on an incentive programme on training opportunities undertaken in August 2018.
- Revised work packages and activity focus due to the limited funds and time available for implementation.

**In July to December 2018, the project achieved the following deliverables.**

- 3<sup>rd</sup> project Steering committee meeting undertaken in September 2018.
- PUC Net metering technical specifications provided by PUC to the project.
- Net metering Awareness materials drafted and Demonstration Sites information.
- Finalised Manual on Net metering and submitted to PUC. Discussion progressed with PUC on the next steps for procurement of net meters.
- Discussions progressed on the procurement of a 1kW GCPV for FSMCOM to be used as training materials and drafting of LOA.
- Update of project presentation to FSM R&D
- Gender Analysis Report Completed

**In January to June 2019, the project achieved the following deliverables**

- Net metering Awareness materials final review. 5 pamphlets on net metering developed (i)Net metering economics (ii) technical description, (iii) Application for net meter connection procedures, (iv) Environmental benefits, (v) General information, what net metering entails.
- Landing page completed – <http://phpstack-269780-847707.cloudwaysapps.com/> with all pamphlets uploaded
- Training module documentations: Agreement between GIZ and PPA signed, Non-Competitive Procurement Justification signed by Implementation partners for ACSE Solomon Islands, Vanuatu and SPC (behalf of FSM), and SPC approval letter for payment to GIZ signed and sent to GIZ. Payment not yet done to GESE for solar training curriculum.
- RFQ for Solar PV Grid Connected systems for demonstrations and training completed with LPO developed for Clay Energy, still awaits confirmation from Clay Energy on the procurement and supply dates.
- Procurement of net meters on PUC preference for ACLARA meters. Discussions on the technical requirements completed.
- Quotation for net meters obtained
  - a. GE KV2C Fitzall Meter, 16S, - - - - 15 meters (Self-contained)
  - b. Ge kv2C Fitzall Meter, 9S - - - -15 meters (Transformer rated)
  - c. I-210+C - 50 Meters

d. Synergy RF – 1 Meter

- Quotations for net metering training support to PUC discussed with ACLARA
- Letter of Agreement with COM-FSM completed and signed.
- RFQ for legal expert to drafting of Net metering legislation was sent out on 16 May 2019 with only one (1) bid received by due date, 31<sup>st</sup> May 2019. Due to the high quote received (Euro30,000 against a budget of Euro15,000.00), the team was advised by R&D to re-evaluate the actual needs of a legal expertise in the 3 states. A letter signed by SPC Micronesia Regional Office and sent by the FSM Resources and Development asking the Utilities to confirm the needs for a legal expertise for Drafting of the Net Metering Bill by 14<sup>th</sup> June 2019. By end of June 2019, there was no response received from the Utilities, R&D advised to meet up with the EWG on the first week of July 2019. The timeline for the turnaround for this work is for two months.
- Request for Quotation on the integration of RE loan into the current FSMDB scheme sent out on 16 May 2019 with end date was 31<sup>st</sup> May 2019. There was no bid or interest received even after liaising with FSMDB to disseminate the RFQ to their consultants.

**In this reporting period, July to December 2019, the project achieved the following deliverables.**

- Procurement of net meters with batteries completed with Quotations and PO developed and signed. ACLARA Company subsidiary in the Philippines supplied and shipped the net meters; Net meters received at SPC Regional Micronesia Office in Pohnpei.
- Solar PV systems for Demonstration and training system arrived in Pohnpei.
- Contract between SPC and GSES to conduct Solar PV Grid Connected Training signed
- Project Steering Committee Meeting conducted on 12 December 2019.
- Contract extension for Project Assistant based in FSM to 29 February 2020 signed.
- Request Letter for No Cost Extension submitted to GIZ and approved.

**In this reporting period January to August 2020, the project achieved the following deliverables.**

- Air waybills for materials from US received in January and February 2020.
- Release of solar PV materials for demonstration (5x 3.25kW systems and 1 x 1.11kW system for FSM College of Micronesia training.
- GSES Contract signed on installations of demonstration and net metering for promotion and awareness.
- Amendment to GSES contract No 19/595 on solar PV Grid Connected training signed.
- Solar PV Grid Connected Training offered by GSES trainer conducted in Guam (17 to 22 February 2020).
- GSES Training continued with practical sessions in Pohnpei and Kosrae.
- Online communication with Yap and Chuuk Utility on the installation of solar PV demonstration site.
- Inspection of remaining items at MRO office and shipment of Yap Utility net meters
- Assets Register compilation for Hand over to FSM Government.

## 4.2 Expenditure Summary

The financial settlements for the project are presented separately in the accountability for the project.

In summary though:

The project budget was €325,000

The EU-GIZ contribution was €325,000 -

The project spent – €305,069.63

The project had remaining at closure – €19,903.37

*Include if there were any best practices for financial management that help save money. E.g. engagement of local consultant, cost sharing, multi partnership engagement etc.*

This project was not fully completed due to the COVID-19 travel restrictions which has an impact on the successful delivery of the training and installations of small- scale solar PV and net metering.



### 4.3 Results- Monitoring and Evaluation Plan

Table 9. Key Results achieved against the project monitoring and evaluation plan

Description	Indicator	Baseline	Target	Result	Validation
<b>Objectives</b>					
Objective 1: Household benefitting from the project	Number of households	Zero household	150 households	No installations at households' level	200430 FSM7 GSES Solar PV Grid Training and net Metering Demonstration Installations Report
Objective 2: FAESP indicator for FSM	Indicator 4,8,15,23	2009 baseline	An improvement in the applicable indicators	Promotional and awareness on net metering only	Net metering promotional materials webpage <a href="http://phpstack-269780-847707.cloudwaysapps.com/">http://phpstack-269780-847707.cloudwaysapps.com/</a>
<b>Outcomes</b>					
a. Increased penetration of renewable energy	kW of RE installed through net metering	Zero kW installed through net metering	At least 75kW of RE installed through net metering	<ul style="list-style-type: none"> <li>• 16.25 KW of demonstration small scale RE systems through net metering</li> <li>• Training materials and curriculum provided to COM FSM to take forward in providing accredited training on grid connected PV systems design and installation</li> </ul>	<ul style="list-style-type: none"> <li>▪ 191213 FSM7 GSES Contract _ Trainer Solar PV Grid connected</li> <li>▪ 201018 FSM7 GSES Contract Solar PV Grid and Net meter Promotional Awareness Raising</li> <li>▪ 200430 FSM7 GSES Solar PV Grid Training and net Metering Demonstration Installations Report</li> </ul>
b. Increased investment on small scale RE installations for grid connection	Number of investments on small scale RE grid connected installations	Zero investments installations	At least 20 new investments on small scale grid connected RE systems	Under achieved as installations of demonstrations systems were not installed well ahead of the end of project and there was limited time to promote the FSM Development Bank loan scheme.	<ul style="list-style-type: none"> <li>• 191127 FSM7 Pohnpei 3.25 kW Installation System Design Layout Drawings_ Youth Center</li> <li>• 191127 FSM7 Kosrae 3.25 kW Installation System Design – KUA Admin Building</li> </ul>

					<ul style="list-style-type: none"> <li>• 191127 FSM7 Chuuk 3.25 kW Installation System Design_ Sewerage</li> <li>• 191127 FSM7 Yap 3.25 kW Installation System Design</li> </ul>
c. Contribution to achievement to national energy policy targets on RE	% RE in electricity generation; MWh of energy generated	15.7% RE in installed capacity for electricity generation; zero MWh of energy generated from small scale RE grid connected systems through net metering	At least an additional 75kW RE to the installed electricity generation mix equivalent to an increase in 0.67%; estimated 8MWh of energy generated	Under achieved	<ul style="list-style-type: none"> <li>• 191127 FSM7 Pohnpei 3.25 kW Installation System Design Layout Drawings_ Youth Center</li> <li>• 191127 FSM7 Kosrae 3.25 kW Installation System Design – KUA Admin Building</li> <li>• 191127 FSM7 Chuuk 3.25 kW Installation System Design_ Sewerage</li> <li>• 191127 FSM7 Yap 3.25 kW Installation System Design</li> <li>• 200430 FSM7 GSES Solar PV Grid Training and Net Metering Demonstration Installations Report</li> </ul>
d. Diversification of the RE mix by addition of small-scale grid connected RE systems	% of small scale RE grid connected system as part of RE capacity or generation	Zero % of small scale RE grid connected systems	4% RE grid connected systems	Under achieved 3.25 kW x 3 (9.74kW) total capacity installed.	<ul style="list-style-type: none"> <li>• 200430 FSM7 GSES Solar PV Grid Training and Net Metering Demonstration Installations Report</li> </ul>
e. Improved the enabling environment for the installations of small-scale renewable energy systems in FSM.	Utility has manuals, rules and procedures that govern the installation of small-scale renewable energy systems	No formal procedure, policies or manuals for installation of SSRE	An established program within the utilities that allow installation of SSRE	Awareness materials developed in regard to net metering benefits (social, technical, environment and economics benefits)	<ul style="list-style-type: none"> <li>• 200213 FSM7 GSES Direct Payment Solar PV Training curriculum</li> <li>• 200715 FSM How to get connected to Net Metering Pamphlet</li> </ul>

					<ul style="list-style-type: none"> <li>• 200715 FSM7 Net Metering Technical Pamphlet</li> <li>• 200715 FSM7 Net Metering Initiative Poster</li> <li>• 200715 FSM7 Net Metering Pamphlet Economic Consideration and Benefits</li> <li>• 200715 FSM7 Net Metering Pamphlet Environmental benefits Dimensions</li> <li>• 200715 FSM7 Net Metering Pamphlet What it entails</li> </ul>
f. Institutionalise training of technicians in design and installation of grid connected PV systems	Training organisation that offers technician training in grid connected PV design and install	Zero formal training courses for PV technicians to design and install grid connect systems	1 Training Institution that offers formal, regionally recognised training in grid connected PV	Training materials and curriculum provided to COM FSM to take forward in providing accredited training on grid connected PV systems design and installation.	<ul style="list-style-type: none"> <li>• 191213 FSM7 GSES Contract _ Trainer Solar PV Grid connected</li> <li>• <b>200430 FSM7 GSES Solar PV Grid Training and net Metering Demonstration Installations Report</b></li> <li>• 190404 FSM7 LOA_SPC COMFSM_ Solar PV Grid Connected Training</li> </ul>

#### 4.3.1 Contribution to ACSE Programme Indicators

Table 10 summarises the contributions of the project to the ACSE Programme Level Indicators. The related validation products are also listed and are included, chronologically, in the list of Annexes.

Table 10. ACSE programme indicators milestone achievements

	Intervention logic	Objectively verifiable indicators of achievement	Indicator Definition or Remarks	Target	Total Target Achievement	Results	Validation	Comments
<b>General objective</b>	Enhance sustainable livelihoods in Pacific ACP countries (PACPs)	<ul style="list-style-type: none"> <li>All PACP countries have improved on their MDGs / Sustainable Development Goals</li> </ul>	<p>Yes – improved.</p> <p>Refer to SDGs table.</p>	NA to project reporting	NA to project reporting	NA to project reporting	NA to project reporting	NA to project reporting
<b>Programme purpose</b>	To strengthen the PACPs' capacity to adapt to the adverse effects of climate change and to enhance their energy security at national, provincial and local/community level, addressing the different impact on men and women	<ul style="list-style-type: none"> <li>Number of interventions successfully implemented at national, provincial and local/community level</li> </ul>	<p>'Successfully implemented' means that the Intervention has been put in place and validated through appropriate documentation.</p> <ol style="list-style-type: none"> <li>Governance instruments</li> <li>Water infrastructures</li> <li>Livelihood infrastructures</li> <li>Climate-proofing infrastructures</li> <li>Solar infrastructures</li> <li>Biogas infrastructures</li> <li>RE Institutional infrastructures</li> <li>FAESP - Administrative Systems</li> <li>FAESP - Legislative instruments</li> </ol>	FAESP - Legislative instruments	Not achieved	<p>In February 2020, the Yap State Utility implemented a net metering with total allowable capacity of 200kWp only. The total installed capacity of all customer grid-tied systems is 182kW, The 3.25 kW solar PV demonstration system is additional so estimate of 17kW</p>	<p>170315 FSM Final RFQ – Net Metering Legislation</p> <p>190101 FSM7 Net Metring manual (Utility +Customer)</p> <p>190319 FSM7 2<sup>nd</sup> RFQ_ Drafting Net Meter Bill and Regulation</p>	<p>No legislations developed due to quotes received too way high above budgeted amount of Euro10k.</p> <p>Second RFQ sent out and the work narrowed down quotation received more than the budgeted amount.</p>

			9. Coordination/Cooperation interventions 10. Gender Balance interventions			is available for private sector net metering.		Enquired with the Utilities on their endorsement of the work from Utilities and received no responses
		Increased availability of regional and national technical support (RTSM)	'Increased availability' means there are more technical personnel are registered with RTSM	NA	NA	NA	NA	NA
		Proportion of women and men in climate change decision-making bodies	Not clear	NA	NA	NA	NA	NA
		Number of interventions which promote the involvement of women in climate change adaptation / sustainable energy management processes	'Promoting involvement of women' means measurable actions taken in a project. These may include gender assessment/study and analysis, or workshops/trainings, or establishment of a body with fair participation and or carrying out relevant event.	0	Gender analysis on impacts of net metering policy.	1	190731 FSM7 Gender Analysis Report	
<b>Expected results</b>	<b>Result 1:</b> Enabling environment and communities' adaptive capacity to cope with climate change challenges,	<ul style="list-style-type: none"> <li>At least one CCA project in at least eight PACP implemented by end of 2018</li> </ul>	'Implemented' means all on groundwork completed.	NA		NA	NA	NA

	including gender specific challenges, are enhanced							
		At least 75% of national implementation partners on the regional EU-GIZ ACSE steering committee agree that adaptive capacity has been enhanced	<p>'Capacity' means the ability of people, organisations and societies to manage their own sustainable development processes and adapt to climate change. This includes recognising obstacles to development, designing strategies to tackle them, and then successfully implementing these.</p> <p>Multilevel approach:</p> <p>Individual competence e.g. trainings, workshops, mentoring</p> <p>Organisational development e.g. policies, plans, establishments of new work unit - REGIONAL, NATIONAL, PROVINCIAL AND VILLAGE LEVEL</p> <p>Development of cooperation and partnerships e.g. commission, bilateral partnership through formal partnership with MoU - ALL LEVEL</p> <p>Development of enabling frameworks e.g. legislations - National Level</p>	NA		NA	NA	NA
		Number of (new or reviewed) national, provincial and local policies, strategies, plans integrating CCA *	New or reviewed' products 'integrating CCA' means only relevant pre-approved products produced by the projects	1	1	NA	190101 FSM7 Net Metering Manual (Utility +Governance	Target – 4 (Ref//FSM7 Technical Progress Report 4-pp22) What does the other 2 targets represent?

								<p>The target does not correlate with the GIZ ACSE Team record.</p> <p>Net metering legislation reviewed and drafted.</p> <p>Comment by Gavin 10/7 this target is unlikely to be achieved by the project.</p>
		<p>Number of improved water infrastructures linked to the mitigation of and/or adaptation to climate change*</p>	<p>Only infrastructures improved through the projects.</p> <p>'Intervention' is the establishment of functioning system of the infrastructure.</p> <p>'Improved' means capacity of supply increased, security of supply enhanced, sustainability of management improved, robustness of design, and sustainability of supply.</p> <p>The result of the improved infrastructure is enhanced adaptation to climate change</p>	NA	NA	NA	NA	NA
		<p>Number of improved food production systems linked to the mitigation of and/or adaptation to climate change</p>	<p>'Improved food production system' means capacity of food production supply increased, security of food production supply enhanced, sustainability of food production management improved, robustness of food product system design,</p>	NA	NA	NA	NA	NA

			<p>sustainability of food production systems supply.</p> <p>The result of the improved infrastructure is enhanced adaptation to climate change</p>					
		Number of climate-proofed infrastructures linked to the mitigation of and/or adaptation to climate change	<p>‘Climate- proofed infrastructures’ examples are:</p> <ul style="list-style-type: none"> <li>- Cyclone proofed e.g. Vanuatu.</li> <li>- Australian standard design for cyclone rating for water and solar infrastructures design and house design;</li> <li>- Longevity of system (durability) in harsh environment e.g. Kiribati.</li> <li>- Seawall and coastal barrier design to withstand sea level rise and storm surge e.g. Tonga</li> </ul>	NA	NA	NA	NA	NA
		Number of households and communities benefiting from CCA projects*	<p>Benefiting means ‘directly benefiting from the impact of the project.</p> <p>Examples:</p> <p>Communities and households impacted by water systems, solar systems, food production systems, sea wall.</p>	NA	NA	NA	NA	NA
		Number of interventions successfully	<p>Replication as flagged in the PDD.</p> <p>“Intervention replicated” means replicating existing or past</p>	NA	NA	NA	NA	NA



		replicated at national, provincial and local/community level*	intervention before the project (can be an improved replica) at national, provincial and local/community level. E.g. CK1.					
		Number of interventions which combine implementation and strengthening of systems for capacity building, planning, public finance management, mainstreaming and country-led coordination* (only projects that have this as a high level outcome)	'Combine intervention' means intervention with multi-dimensional approach that includes 3 of the 5 components listed above. E.g. TO31 -JNAPP II	1	NA	NA	<p>180822 FSM7 Net Metering for Private solar installations _Fact Sheet.</p> <p>180201 FSM7 Guideline for PV Penetration</p> <p>190101 FSM7 Net Metering Manual (Utility and Customer)</p> <p>200430 FSM7 GSES Solar PV Grid Training and Net metering Demonstration Installation Report</p>	<p>Target – 1 (Target do not correlate from FSM6 Contribution to ACSE Programme Indicators (No Target) to the GIZ ACSE Team record)</p> <p>1 procedure and operational plan document for coordination between government and Pohnpei utilities corporation</p> <p>The manual provides practical guidelines for the Pohnpei Utilities Corporation (PUC) to govern how they implement net metering.</p> <p>(0 at the moment, Net Metering Governance Guideline and Connection Manual is a contributing part of the intervention, the other part if the</p>

								installation of the net meters with small scale (3.25 kW system), the other part also includes training on certified solar PV Grid connected curriculum)
		Number of interventions which enhance gender equality. * <i>Note: sex disaggregated data</i>	Validation - Gender Products  'Enhance gender equality' means where a project demonstrates an intervention at the activity level on the equality of roles for decision making.  E.g. Establishment of gender-neutral decision-making body; Gender assessment influencing infrastructure, policy, plan and legislative design; Trainings/ Workshops/ Consultations	1	1	Gender Analysis report on the ACSE projects	181120 FSM6&FSM7 ACSE Gender analysis	
		Number of trainings and people trained in SE/CCA interventions	Number of trainings validated by training reports.  Number of people trained recorded as by product of training.	10	1 training with around 23 people training on solar PV grid connected and net metering. However, training was incomplete training due to COVID-19)	Due to COVID 19, the training programme was changed with theory delivered in Guam and practical parts in the States. Only two states were done as trainer has to abort the mission due to lockdown in FSM started early March 2020.	200430 FSM7 GSES Solar PV Grid Training and Net metering Demonstration Installation Report	Due to COVID 19, the training programme was changed with theory delivered in Guam and practical parts in the States. Only two states were done as trainer has to abort the mission due to lockdown in FSM started early March 2020.

						8 Utility staff attended the theoretical part of the training in Guam. All are males.		
						2 COM FSM staff did both theory and practical in one week		
		Number of partnerships established between EU-GIZ ACSE and governments, development partners, regional organisations, and the like.	'Partnerships established' means formal partnership established validated by MoUs, or contracts		3	190404 FSM7 LOA SPC COMFSM_ Solar PV Grid Connected Training  191213 FSM7 GSES Contract  Trainer Solar PV Grid Connected  200118 FSM7 GSES _Contract Net meter installation, Promotional and Awareness Raising		
	<b>Result 2:</b> Cost-effectiveness and efficiency of energy systems are improved and dependence on fossil fuels is reduced	At least one SE project in at least seven PACP is implemented by end of 2018	'Implemented' means all on groundwork completed.	1	3	3 solar PV installation completed (without net metering)- 1 Pohnpei, 1 Kosrae, 1 Chuuk (utility own installation)	200430 FSM7 GSES Solar PV Grid Training and net Metering Demonstration Installations Report	

		Number of solar infrastructures linked to the development of national renewable energy	'Solar infrastructures' refers to solar systems (hardware infrastructures).  Solar infrastructures E.g. solar hybrid system or solar systems.	1	6	Purchased of 5 sets of 3.25 kW solar PV systems  Purchased 1kW solar PV system	200323 FSM7 Inspection Report Solar PV Demonstration Systems  200701 FSM7 Net Meters _ Inspection Report _Post COVID 19  200830 FSM7 Asset external Transfer form _MRO+GEP_ FSM RD	5 demonstration systems received, and 3 set of systems shipped to Yap, Chuuk and Kosrae, 2 for Pohnpei.  0 Net Metering Equipment installed, at Pohnpei, PUC unwilling to connect solar set up with net metering to the grid line.  Kosrae, the net meter was not installed as it was not programmed, and trainer could not get password off ACLARA on time.
		Kilowatts			10.8 kW (3.25kW x5 sets + 1.1kW)	1 set of 1kW system procured and handed over to COM FSM for training purposes.  2 systems installed – 1 at the Pohnpei Youth Centre, and one in Kosrae at KUA administration building.  Procured 80 net meters, 50 Single phase and 30 three phase meters distribute to the Utility States		
		Number of biogas infrastructures linked to the development of national renewable energy	'Biogas infrastructures' refers to biogas systems (hardware infrastructures).  Biogas infrastructures E.g. biogas system, biomass plant.	NA	NA	NA	NA	NA

		Number of institutional strengthening measures linked to the development of national renewable energy	'Institutional strengthening measures' refers to formal national legislative policy and planning processes and mechanisms.	1	1	an operational manual for the Pohnpei Utilities to implement net metering.  Presentation on net metering conducted to PUC staff and KUA staff	190101 FSM7 Net Metering Manual (Utility +Customer)  190101 FSM7 Presentation Net Metering Details  200430 FSM7 GSES Solar PV Grid Training and Net Metering demonstration installations Report	1 of 1 (standard operating procedures for utility)  Validation - Net metering Policy and procedures Manual
		The projects contribute to the improvement of regionally agreed energy security indicators (FAESP <sup>8</sup> ) using a 2009 baseline		See below	See below			
		FAESP 3 - Direct access to modern energy-rural	(Definition - Solar. Contribution in KW. )		7.0kW	5x 3.25 kW solar system procured total of 17.25kW total capacity	200323 FSM7 Inspection Report Solar PV Demonstration Systems	
		FAESP 15 - Legislative instrument	(Definition & Contribution- Formal Law, Regulation, Policy, Plans.)		1	Operational manual on net metering developed for PUC and shared	190101 FSM7 Net Metering Manual (Utility +Customer)	

<sup>8</sup> The Framework for Action on Energy Security for the Pacific (FAESP), its implementation plan and 36 energy security indicators were developed by the Secretariat of the Pacific Community (SPC) through a consultative process with 14 PACPs, regional agencies and other key stakeholders and were endorsed by 14 PACP Ministers for Energy in 2011. In 2012, SPC compiled the data necessary to calculate the indicators for the baseline year of 2009 and published the 2009 energy security indicators for 14 PACPs (Timor-Leste was the only PACP not included in this process).

						to other utilities to adopt		
	FAESP 14 - Administrative system (	Definition & Contribution - Measurable changes in the governance system. Validation - Report or Agreement showcasing changes)			NA	NA	NA	NA
	FAESP 25 - Increase exposure to RE knowledge	(Definition & Contribution- Quantifiable formal engagement processes e.g. training/ workshops/structured community or technician consultations/ onsite and field assessment or survey.)			1	Training on solar Grid Connected conducted for FSM COM trainers and FSM State Utilities	200430 FSM7 GSES Solar PV Grid Training and Net Metering Demonstration	Training was not completed due to COVID-19.
	Number of households and communities directly benefiting from SE projects* Households	Examples - Directly benefitting e.g. communities and households directly receiving renewable energy from the ramifications of enacted legislations, or national energy systems.  Communities types - school community, social community as defined by govt.	150		0	2 systems installed – 1 at the Pohnpei Youth Centre, and one in Kosrae at KUA administration building.  KUA staff attended the net metering presentation were 15 (5 Females and 10 males)	200430 FSM7 GSES Solar PV-Grid Training and Net Metering Demonstration Installations Report	The number of net meters were reduced.  4 demonstration sites installations per state for net metering and the procurement of 80 meters.
	Communities		1		2		200730 FSM7 Asset Register External Transfer Form	4 states communities – population (men & women)
	Number of interventions successfully replicated at	Replication as flagged in the PDD.  Replicating existing or past intervention before the project (can be an improved replica) at national,	NA		NA	NA	NA	NA

		national, provincial and local/community level*	provincial and local/community level.					
		Number of institutions and people covered by respective interventions related to capacity building, planning, and institutional strengthening*	'Interventions related to capacity building, planning, and institutional strengthening measures' refers to formal national legislative policy and planning processes and mechanisms or development of formal training program for institutions.	NA	NA	NA	NA	NA
		Number of interventions which enhance gender equality	Validation - Gender Products Definition: 'Enhance Gender Equality - Where a project demonstrates an intervention at the activity level on the equality of roles for decision making.  Examples - Establishment of gender-neutral decision-making body; Gender assessment influencing infrastructure, policy, plan and legislative design; Trainings/ Workshops/ Consultations	0	1	Gender analysis on impacts of net metering policy and FSM 6 project activity.	181120 FSM6&7 ACSE Gender Analysis	
		Number of trainings and people trained in SE/CCA interventions  <i>* Note: sex disaggregated data</i>		4	1	11 male technicians attended the training.	200430 FSM7 GSES Solar PV Grid Training and Net Metering Demonstratio	Training to be embedded at COMFSM in grid connected PV.

		No. of people trained			11	M –11 F - 0	n Installations Report	COM FSM staff (2) participated in the training. Only 1 staff was able to sit for the test and passed
		Number of partnerships established between EU-GIZ ACSE and governments, development partners, regional organisations, and the like.	Formal partnership established validated by MoUs, or contracts.	1	4	1 MOA 1FA 1LOA 2 Contracts	150422 FSM7 EU GIZ ACSE MoU FSM 160722_EU-GIZ ACSE_FSM7-FA-Eng-81202340 190404 FSM7 LOA_SPC COMFSM _Solar PV Grid Connected Training 191213 FSM7 GSES Contract _ Trainer Solar PV Grid Connected 200118 FSM7 GSES Contract Net meter Installation, Promotional and Awareness Raising.	
	<b>Result 3:</b> Regional and national technical expertise in the field of CCA and SE is created and/or enhanced	Nucleus of pool of regional technical experts (Regional Technical Support Mechanism - RTSM) established and functional				NA	NA	NA



#### 4.4 Summary of Project Outputs, Visibility and Validation Products

The table below lists all project outputs including Annex 7 technical reports and validation products to the monitoring and evaluation plan, workshop reports of all kinds, policies, plans, manuals, guidelines, project mid-term and final reports, consultancy reports, construction reports. These are presented in chronological order

Table 11. Project Outputs and Validation Products

<b>Annexes</b>	<b>Project Start Up and Management</b>	<b>M&amp;E Validation</b>	<b>Comms Output</b>	<b>Project Outputs</b>
1	150422_EU-GIZ ACSE_FSM-MoU	X		
2	150430_FSM_Concept Note Evaluation-FSM7	X		
3	150615_FSM_Concept Note_FSM7	X		
4	160722_EU-GIZ ACSE_FSM7-FA-Eng-81202340	X		
5	160722_EU-GIZ ACSE_FSM7-FA-Ger-81202340	X		
6	160722_EU-GIZ ACSE_FSM7-SA-81202340	X		
7	160722 FSM 7 GIZ Annex A Project Design Document_ Enhancing investments in small-scale RE	X		
8	170517 FSM7 Congressional Resolution No. 20-11	X		
9	180914 FSM7 FA 81202340 -Addendum 1	X		
10	190912 FSM7 FA 81202340 - Addendum 2	X		
11	200227 FSM7 FA 81202340 -Addendum 3	X		
12	200715 fsm7 FA 81202340 SPC Addendum 4	X		
<b>Annexes</b>	<b>Project Outputs and Validation</b>	<b>M&amp;E Validation</b>	<b>Comms Output</b>	<b>Project Outputs</b>
1	160430 FSM6&FSM7 Technical Report No. 1	X		
2	170315 FSM7 FINAL RFQ – Net metering legislation			X
3	170430 FSM7 Project Technical Report 2			X
4	171031 FSM7 - FSM Training Needs & Gap Analysis_EUPacTVET_ACSE			X

5	171114 FSM6&FSM7 ACSE PSC Meeting Minutes No. 1	X		
6	171231 FSM7 Annex 7 Technical Report No. 3			X
7	180101 FSM7 Reading & Billing with Net Meter (bidirectional meter Factsheets		x	
8	180105 FSM7 Presentation Net Metering PUC			X
9	180513 FSM7 Net metering Minutes Meeting PUC SPC GIZ meeting		X	X
10	180630 FSM7 Annex 7 Technical Report 4			X
11	180822 FSM7 Net Metering for Private Solar Installations _Factsheet		x	
12	181120 FSM 6&FSM7 ACSE Gender analysis			x
13	181201 FSM7 Guideline for PV Penetration (PV)			X
14	181231 FSM7 Annex 7 Technical Report 5			X
15	190101 FSM7 PUC Net Metering Connection Manual		X	X
16	190101 FSM7 Presentation net Metering Details		X	
17	190404 FSM7 LOA_SPC_COMFSM Solar PV Grid Connected Training			X
18	190513 FSM7 Meter Configuration Workshop Report			X
19	190516 FSM7 2 <sup>nd</sup> RFQ _Drafting of Net metering Bill and Regulations			X
20	190630 FSM7 Annex 7 Technical Report No. 6			X
21	191030 FSM7 SPC Net Meters and Batteries Procurement			X
22	191127 FSM7 Chuuk 3.25 kW Installation System Design Layout Drawings			X
23	191127 FSM7 Kosrae 3.25 kW installation System Design Layout Drawings			X

24	191127 FSM7 Pohnpei 3.25kW Installation System Design Layout Drawings			X
25	191127 FSM7 Yap 3.25kW Installation System Design Layout Drawings			X
26	190513 FSM7 Meter Configuration Workshop Report			X
27	191204 FSM7 FA 81202340 Contract Variation Justification Letter	X		
28	191212 FSM6&FSM7 PSC Meeting Minutes No. 4	X		
29	191213 FSM 7 GSES Contract _Trainer Solar PV Grid Connected	X		
30	201117 FSM7 Invitation Letter training – FSM-COM+Utilities Final			X
31	200118 FSM7 GSES Contract Solar PV Grid and Net Meter Promotional and Awareness Raising	X		
32	200213 FSM GSES Direct Payment Solar PV Training Curriculum	X		
33	200310 FSM7 Presentation Net Metering Final Kosrae KUA		X	
34	200325 FSM7 Inspection Report Solar PV Demonstration systems _ Clay Energy			X
35	200403 FSM7 Project Flashes	X		
36	200430 FSM7 GSES Solar PV Grid Training & Net Metering Demonstration Installations Report			X
37	200715 FSM7 How to get connected to Net Metering		X	X
38	200715 FSM7 Net Metering Technical Pamphlet		X	X
39	200715 FSM7 Net Metering Pamphlet Economic Considerations and Benefits		X	X
40	200715 FSM7 Net Metering Environmental Benefits Dimensions		X	X
41	200715 FSM7 Net Metering Pamphlet What it entails		X	X

42	200715 FSM7_Net Metering Initiative Poster Web		X	X
43	200730 FSM7 Asset Register External Transfer Form	X		
44	200830 FSM7 – Annex 7 Technical Report No.7			X
45	200830FSM7 Final Evaluation Report			X
46	200830 FSM7 Final Project Report (this report)			X

## 5 Learning & Innovation

Learnings in this project were gathered through the final project review with SPC teams and lessons learnt exercise conducted. In summary, the project can report the following, but fuller elaboration and learnings are best gained from the respective reports:

### 5.1 Key Learnings

Key learnings from this project.

1. The procurement of the micro inverters was new and learnt that it provided optimal maximum outputs from solar panels. During sunset and cloudy hours, solar energy outputs was still recorded showing this was a good and new item to introduce to other remote islands.
2. Consultation through face to face meetings is the best way to share information and to obtain feedback on issues. The work in FSM has been costly due to the travel that is required to consult with the 3 States, Kosrae, Chuuk and Yap.
3. The procurement of the net meters from ACLARA, Philippines have empowered the project team on net metering specifications. However, there were missing and important information that the project team did not obtain during the initial planning especially from Yap Utility, which has in fact implemented the net metering and have procured similar type of net meters.
4. If the project involves all States, then project steering committees should be set up for each of the state and the project team to make sure that all are consulted in the initial planning and in the implementation.
5. Different Pamphlets and Posters on net metering provided the team with new information on net metering.

### 5.2 Best success story

The ability to procure net meters is one success story of this project as the discussions with the Pohnpei Utility Corporation (PUC) has been concluded long time however the correct technical specifications was a challenge to the PUC and the team. Reaching out to Palau Public Utilities Corporation on the technical specification and the direct supplier contract was a good decision that enabled the successful procurement of the meters. In addition, the costs of the net meters were far less compared to quotes received from other companies (not direct suppliers).

### 5.3 Key Innovation

Due to COVID 19 and the restriction that was put in place for the trainer to enter FSM was a challenging situation at that time, however due to sharing and seeking ideas, the plan was changed with the theory part of the Solar PV Grid connected training done in Guam so the remaining 7 days of the trainer's quarantine days was better utilised. The 5 working days was used for theory exercises and practical exercises were completed in the States.

The system developed for this small-scale solar PV grid connected and net metering is a good idea that could be recommended for wider implementation however lessons learnt in this project should be considered.

Table 12 lists the visibility products developed by the project. These are annexed to this report and have been submitted separately to GIZ as part of the project master file. Note that many project outputs also formed part of the visibility actions but are listed elsewhere.

*Table 12.* Project Visibility Products (include all ) (update the table with all visibility products)

180105 FSM7 Presentation Net Metering PUC
180807 FSM7 Solar PV stickers
180822 FSM7 Net Metering for Private solar installations Fact Sheet
190101 FSM7 Presentation Net Metering Details
191103 FSM7 Project Flashes
200310 FSM7 Presentation Net Metering Final Kosrae KUA
200715 FSM7 Net Metering Pamphlet Economic Considerations and Benefits
200715 FSM7 Net Metering Technical Pamphlet
200715 FSM7 How to get connected to Net Metering Pamphlet
200715 FSM7 Net Metering Pamphlet Environmental Benefits Dimensions
200715 FSM7 Net Metering Pamphlet What it entails
200715 FSM7_Net Metering Initiative Poster

## 7. Annexes

The list of Annexes related to this report is provided in Table 11. These annexes will be submitted separately to this report due to their large size.

Table X: List of Annexes

<b>Annexes</b>	<b>Project Start Up and Management</b>	<b>M&amp;E Validation</b>	<b>Comms Output</b>	<b>Project Outputs</b>
1	150422_EU-GIZ ACSE_FSM-MoU	X		
2	150430_FSM_Concept Note Evaluation-FSM7	X		
3	150615_FSM_Concept Note_FSM7	X		
4	160722_EU-GIZ ACSE_FSM7-FA-Eng-81202340	X		
5	160722_EU-GIZ ACSE_FSM7-FA-Ger-81202340	X		
6	160722_EU-GIZ ACSE_FSM7-SA-81202340	X		
7	160722 FSM 7 GIZ Annex A Project Design Document_ Enhancing investments in small-scale RE	X		
8	170517 FSM7 Congressional Resolution No. 20-11	X		
9	180914 FSM7 FA 81202340 -Addendum 1	X		
10	190912 FSM7 FA 81202340 - Addendum 2	X		
11	200227 FSM7 FA 81202340 -Addendum 3	X		
12	200715 fsm7 FA 81202340 SPC Addendum 4	X		
<b>Annexes</b>	<b>Project Outputs and Validation</b>	<b>M&amp;E Validation</b>	<b>Comms Output</b>	<b>Project Outputs</b>
1	160430 FSM6&FSM7 Technical Report No. 1	X		
2	170315 FSM7 FINAL RFQ – Net metering legislation			X
3	170430 FSM7 Project Technical Report 2			X
4	171031 FSM7 - FSM Training Needs & Gap Analysis_EUPacTVET_ACSE			X
5	171114 FSM6&FSM7 ACSE PSC Meeting Minutes No. 1	X		

6	171231 FSM7 Annex 7 Technical Report No. 3			X
7	180101 FSM7 Reading & Billing with Net Meter (bidirectional meter Factsheets		x	
8	180105 FSM7 Presentation Net Metering PUC			X
9	180513 FSM7 Net metering Minutes Meeting PUC SPC GIZ meeting		X	X
10	180630 FSM7 Annex 7 Technical Report 4			X
11	180822 FSM7 Net Metering for Private Solar Installations _Factsheet		X	
12	181120 FSM 6&FSM7 ACSE Gender analysis			X
13	181201 FSM7 Guideline for PV Penetration (PV)			X
14	181231 FSM7 Annex 7 Technical Report 5			X
15	190101 FSM7 PUC Net Metering Connection Manual		X	X
16	190101 FSM7 Presentation net Metering Details		X	
17	190404 FSM7 LOA_SPC_COMFSM Solar PV Grid Connected Training			X
18	190513 FSM7 Meter Configuration Workshop Report			X
19	190516 FSM7 2 <sup>nd</sup> RFQ_Drafting of Net metering Bill and Regulations			X
20	190630 FSM7 Annex 7 Technical Report No. 6			X
21	191030 FSM7 SPC Net Meters and Batteries Procurement			X
22	191127 FSM7 Chuuk 3.25 kW Installation System Design Layout Drawings			X
23	191127 FSM7 Kosrae 3.25 kW installation System Design Layout Drawings			X
24	191127 FSM7 Pohnpei 3.25kW Installation System Design Layout Drawings			X



25	191127 FSM7 Yap 3.25kW Installation System Design Layout Drawings			X
26	190513 FSM7 Meter Configuration Workshop Report			X
27	191204 FSM7 FA 81202340 Contract Variation Justification Letter	X		
28	191212 FSM6&FSM7 PSC Meeting Minutes No. 4	X		
29	191213 FSM 7 GSES Contract _Trainer Solar PV Grid Connected	X		
30	201117 FSM7 Invitation Letter training – FSM-COM+Utilities Final			X
31	200118 FSM7 GSES Contract Solar PV Grid and Net Meter Promotional and Awareness Raising	X		
32	200213 FSM GSES Direct Payment Solar PV Training Curriculum	X		
33	200310 FSM7 Presentation Net Metering Final Kosrae KUA		X	
34	200325 FSM7 Inspection Report Solar PV Demonstration systems _ Clay Energy			X
35	200403 FSM7 Project Flashes	X		
36	200430 FSM7 GSES Solar PV Grid Training & Net Metering Demonstration Installations Report			X
37	200715 FSM7 How to get connected to Net Metering		X	X
38	200715 FSM7 Net Metering Technical Pamphlet		X	X
39	200715 FSM7 Net Metering Pamphlet Economic Considerations and Benefits		X	X
40	200715 FSM7 Net Metering Environmental Benefits Dimensions		X	X
41	200715 FSM7 Net Metering Pamphlet What it entails		X	X
42	200715 FSM7 _Net Metering Initiative Poster Web		X	X

43	200730 FSM7 Asset Register External Transfer Form	X		
44	200830 FSM7 – Annex 7 Technical Report No.7			X
45	200830FSM7 Final Evaluation Report			X
46	200830 FSM7 Final Project Report (this report)			X