Facilitation of the Achievement of Sustainable Energy Targets of Tuvalu (FASNETT) and the Tuvalu Solar Home Systems (SASH) for Funaota

Ministry of Transport, Energy and Tourism (Department of Energy)

Tuvalu Electricity Corporation (TEC)

Minutes of the two Project Board Meetings

Date: Monday 14th December, 2020

Venue: FFEKT Conference Room, Funafuti.

Time: 12:30 pm – 5:00 pm

Attendance in Tuvalu:

Ms. Silati Filiake	- Chair
Mr. Taku Sekieli	- TEC
Mr. Paul Petueli	- DBT
Mr. Macdonald Tau	- DLG
Mr. Tele Siamua	- DoE
Mr. Reuben Kausea	- DoEnv
Mr. Kaal Tili	- Kaupule Funafuti
Ms. Sulufaiga Uota	- PMU
Ms. Tilesa Luka	- PMU
Mr. Asaeli Sinusetaki	- PMU
Attendance via ZOOM	-
Dr. Wini Nainoca	- Co-Chair (UNDP Pacific Office in Fiji)
Ms. Emma Sale	- UNDP Pacific Office in Fiji
Mr. Mafalu Lototele	- TEC (Wellington)
Mr. Roger Z. Aldover	- CTA (Phillipines)
Mr. Lalin Naidu	- FSPV Consultant (Canberra)

Meeting Notes:

1. ***Welcome and opening remarks:***

1.1. The meeting was opened with a word of prayer from FASNETT Project Manager, Ms. Sulufaiga Uota.

1.2 Welcome remarks was delivered by Ms. Silati Tofuola, Assistant Secretary MTET. In her speech, she said that this meeting marks an opportunity to discuss in detail the status and progress of the FASNETT Project. Although scarred by the impact of COVID-19, FASNETT, the project has continued to show perseverance in trying to complete a number of activities, under the different components of the project. Thus continuing to support facilitating Tuvalu's national energy target. Some of the activities mentioned include; (a) completion of the gender assessment of the Project, (b) disbursement of the first loan to suppliers, through the Development Bank of Tuvalu, on the purchase of renewable energy (RE) and energy efficiency (EE) equipment to be made available to the people of Tuvalu, (c) development of a FASNETT website and database, that will record key information on Tuvalu's progress in achieving national energy targets. The website will eventually be handed over to the Department of Energy by the end of the project, (d) ongoing consultations on the development of Tuvalu's first Energy Act, (e) ongoing preparation for the demo projects to begin next year; and (f) awareness activities in communities, through radio and social media. She went to state that this meeting is an important forum through which, the Project Board Members, can exchange ideas on what has motivated these small steps, and how to further progress the activities of the project. She believes that with the support coming from Global Environment Facility (GEF), UNDP Pacific Office in Fiji and the Government of Tuvalu, and the implementation by the FASNETT PMU, there are opportunities to approach progress, and later transition from all relevant angles to a fully equipped Department of Energy of Tuvalu. She concluded with the importance of reflecting on the project's performance since the last Board Meeting, and how exactly the project is working on facilitating Tuvalu's "Te Enetise Tutumau".

1.2. Remarks from UNDP Pacific Office in Fiji was delivered by Dr. Wini Nainoca, RSD Deputy Team Leader. She first expressed UNDP's willingness to support the Government of Tuvalu, in their goal of achieving their national target by 2025. UNDP Pacific Office's work is guided by the Strategic Plan 2018-2021, and particularly strengthening the capacity of the energy sector and supporting initiatives that supports the volume of investment that is leverage by the public/private sources, solutions being applied to scale to accelerate the transition to improve energy efficiency and clean energy. All of these are integrated into the GEF programs, in the field of climate change and mitigation; and support the sustainable livelihood. Globally, the UN has made a commitment in declaring 2014-2024 the Decade of Sustainale Energy for All (SE4All). This is directly related to the FASNETT Project and Tuvalu's Solar Home System for Funaota, where community and household to modern energy services is available to the Funaota islet. UNDP acknowledges MTET, DoE and TEC for continuing to taking on these projects, and for working with UNDP Pacific Office in project implementation in these challenging COVID-19. Sincere thanks to the technical advisers (Roger, Lalin and Noel) and the staff of PMU (Mafalu, Sulu, Tilesa and Asaeli). UNDP looks forward to the discussions and corporation of the project board members.

2. ***Energy Framework Presentation by Mr. Mafalu Lotolua, Director, Tuvalu Energy Coorporation.***

2.1 Presentation focused on the (a) 100% target and how it links to the TKIII, (b) FASNETT Project,and the (c) **Funaota SASH Project**. Also includes are the challenges along the way and moving to higher penetration level, and Renewable Energy and Energy Efficiency future for Tuvalu.

2.2 In 2008, the world experienced the Fuel crisis, above US$200/barrel around the world and in Tuvalu, above AUD$2.00/litre at the pumping stations. Also, the 1st installation of 40kW PV Grid connected in Tuvalu by the e8 group. The Hon. Minister of Public Utilities and Infrastructure (MPUI)/now the Prime Minister of Tuvalu, Hon. Kausea Natano announced in the Energy Meeting in Vienna, Austria of "Tuvalu's target of 100% renewable energy for power generation by 2020"(revised to 2025). In 2009, the Tuvalu National Energy Policy was born, and later endorsed by the Cabinet. The Motufoua hybrid system was also commissioned in 2009. In 2010, the NZ government assisted TEC to establish its Renewable Energy/Energy Efficiency Department. In 2012, the Govt of Tuvalu endorsed the Master Plan. The following year, at the Energy Summit in Auckland, the Te Enetise Tutumau was presented to donors, where NZ committed to fund work in some of the islands in Tuvalu. By 2015, the projects were commissioned. In 2016, Parliament endorsed the Energy Efficiency Act. This year, the work on the Energy Act is currently in progress.

2.3. The Te Enetise Tutumau (RE&EE Master Plan) is guided and directly linked to the; (a) Tuvalu National Sustainable Development Plan (Te Kakeega III), (b) Tuvalu National Energy Policy 2009, (c) Climate Change Policy (Te Kaniva) and Master Plan has identified the most possible proven technologies for Tuvalu to meet its 100% target.

2.3. The two standard goals of the plan, which is (a) to generate electricity with 100% renewable energy by 2020 (revised 2025), and (b) to increase energy efficiency on Funafuti (main island) by 30%. Energy Efficiency is important in electricity development as it minimizes energy losses.

2.5. The implementation plan will look into solar, wind, and biodiesel. Achieving the 100% national energy target cannot be achieved through one energy source, thus the need to include other RE hybrid combinations. Energy efficiency is also important to avoid additional renewable energy generation.

2.6. In terms of diesel usage versus Solar PV, there was a drop down of diesel usage in 2015. In 2018, there seem to be an increase in diesel usage. RE and EE seem to have a downward shift, and this is due to battery failure. Technical problems most likely contributers to battery fail. Another big contributor to the lowering of the %RE in total power supplied is the increase of diesel power to meet the increase in demand.

2.7. Secured pipeline projects includes projects funded by World Bank, Asian Development Bank, Italy, UN-India and UNDP/GEF. TEC is currently discussing with World Bank and ADB for further financial support for Tuvalu to move closer to its 100% RE target by 2015, which is capital-intensive.

2.8. The UNDP/GEF-funded FASNETT project's major objective is to remove barriers to the entry of more RE/EE technologies in the energy sector to achieve the 100% RE target. It is looking at the regulatory framework, institutional capacity building and financial mechanisms to create conducive environment for RE & EE in Tuvalu, and demonstration projects that will replicate and scale up. These innovations could be embodied in the planned Energy Act that is facilitated by the

Project as the legal basis for a sustainable RE program. The Funaota SASH is now considered as a demonstration activity of FASNETT. Although the UN-India funding was secured for the project there was a funding gap of ~US$30,000 for the overall design, transport, installation, commissioning, and training for the SASH Project. Therefore, FASNETT is addressing the funding gap for the demonstration of the battery system improvement as well as the addition of the communication system for remote monitoring of its operation.

2.9. The Demand Side Management and Response System demonstration activity is to basically gain experience in remotely controlling the matching of the overall grid power, including RE power generation, as supplied to the reefers, and the load dispatching operations. For example, refrigerated reefers when the load is at peak, these reefers can be switched off remotely from the TEC control room. FASNETT is working closely with TEC on this project. Hopefully vendors will send their costing to PMU soon.

2.10 Regarding progress to achieving the 100% national energy target, currently work on Fogafale is on the first stage, where work on the 500kWp and 1MW/3MWhr BESS is ongoing. This is funded by ADB. COVID-19 is currently delaying work, but once this is completed, the share of RE will increase from 37% to 49%. Stage 2 and 3 is currently unfunded.

2.11 On the outer islands, funding is currently being sought. A study needs to be done to see how the fuel of the prime mover of the diesel generators could be changed to biodiesel. There is a need to develop a plan for this.

2.12 Some of the challenges on this journey include, logistics, land issue, local capacity support, fund raising, procurement process, environmental and social safeguard, funding conditions, demand increasing and lack of regulation/policy. FASNETT is helpful in this work on regulation/policy and building the capacity of the GoT in developing, administering and steering the RE-based national energy program. While the benefits of RE/EE are forthcoming because of low running costs and environment-friendly as desired, it is capital-intensive for the investment side. There is a need for more funding (around $21m) to fully achieve the 100% national energy target. There is a need to rationalize policies for more tarrif and support from the Government of Tuvalu. Capacity of TEC staff also needs to be developed.

2.13 Other RE & EE projects for Tuvalu includes, electric scooter, roof-top PV and Floating PV. On the electric scooter, World Bank will fund a pilot project, where 8 motorbikes with spare parts will be used. ADB is funding the roof top PV in government offices/residences. Feasibility study will be funded by World Bank. Development of the Energy Act should include potential Independent Power Producers to encourage RE-based self-generation to augment TEC's installed capacities. The World Bank is also funding a feasibility study on floating solar PV. The ADB is on standby to fund this, and will begin work in March 2021.

3. FASNETT Implementation by Ms. Sulufaiga Uota, FASNETT Project Manager.

3.1 The Project has 4 components which are; (1) Raising awareness on RE & EE, (2) Energy Policy Improvement and Institutional Capacity Building, (3) Applications of RE & EE technologies and techniques, (4) Financing of RE & EE.

3.1 Under Component 1, the outcome is "improved awareness and attitude towards sustainable RE & EE". Of the 11 activities, 4 are completed while 1 is ongoing.

3.2 Under Component 2, the outcome is on "coherent and integrated implementation of enhance policies, regulations, and projects on energy development and utilization with the country's energy act in support of national economic development". Of the 12 activities, only 1 is complete, 1 is ongoing, while 5 are pending and another 5 planned for 2021.

3.3. Component 3 has two outcomes. The first is on "enhanced energy utilization efficiency and development and application of feasible renewable energy resources in support of national economic development". The 9 activities are planned to be implemented in 2021. The second outcome of component 3 is on "increased application of viable climate resilience of renewable energy and energy efficiency technologies in the country". The two activities under this outcome will be implemented in 2021.

3.4. Component 4 has two outcomes. The first outcome is on "improved availability of, and access to, financing for climate resilient renewable energy and energy efficiency". The 2 activities will be implemented in 2021. The second outcome focuses on "the Government of Tuvalu, the financial sector and donor agencies providing accessible financing for climate resilient renewable energy and energy efficiency projects". The 4 activities will be implemented in 2021.

3.5. A number of challenges was highlighted as obstacles to the implementation of FASNETT, and these are: lack of staff and staff turnover in the PMU since 2019, lack of staff in DoE to provide support to the PMU, lack of technical personnel in DoE to provide decisions when need arises in the PMU on the implementation of activities.

3.6. Regarding way forward, consultants are to be hired to help accelerate the activities. The implementing parner, DoE and TEC need to provide support in areas where they take lead on. The stakeholders understanding of the activities planned in the annual work plan will provide assurance in the implementation. Administration support from the Ministry is highly appreciated and should continue until the end of the project and sustained even after the Project closes.

4. Quality Assurance Checklist, presented by Ms. Emma Sale, UNDP Programme Analyst and Focal Point for FASNETT Project.

4.1. The Quality Assurance checklist is aligned with UNDP Programming principles, which looks at seven criteria such as: strategic alignment to UNDP's programming frameworks; relevance to national development priorities with focus on beneficiaries; compliance with social and environmental standards; appropriate management and monitoring arrangements; efficiency in terms of use of resources; effectiveness in completing project outputs; and sustainability (life after project) and national ownership (in terms of using national processes). Throughout the lifetime of any UNDP project, three stages of Quality Assurance checks are undertaken i.e.: during design and formulation (Quality Assurance 1); during implementation (Quality Assurance 2); and during closure (Quality Assurance 3). Both FASNETT and Funaota SASH are undergoing Quality Assurance 2 checks for the purpose of this project board meeting.

4.2 The Funaota SASH Project, aligns favourably to the quality assurance criteria, and there is a need to fully support the project so that all remaining activities are complete by the end of 2021. Since

the project was not able to be completed in 2019, an extension request was sought and was subsequently approved. The delay in project implementation, which was primarily due to COVID-19 effects and the lack of interest from bidders, caused an extension. When the successful bidder was confirmed, the financial proposal was more than what the project could fund, with the inclusion of the added cost of the battery storage system and the remote tracking and control communication system to optimize its sustainable operation. To address the funding gap of US$30,000, the MTET with the leadership of CEO Avafoa Irata approved that Funaota SASH be subsumed as a FASNETT demonstration activity and therefore FASNETT will fund US$30,000 for the added cost of the battery storage system and the remote tracking and control communication system to optimize its sustainable operation. The lack of gender activities is the only issue in the project. There is a recommendation that a gender survey is to take place prior to the installation of solar home systems on Funaota, so that the project can support the gender-differentiated roles in Funaota.

4.2 The FASNETT's first QA-2 was completed in 2019 a nd is valid for two years. An elaborate QA-2 will be done for 2020/2021 period. Looking at the seven QA criteria, UNDP noted that the project has discontinued its working arrangement with the Solar Energy Research Institute of Singapore (SERIS). The Ministry decided to go through a competitive bidding process and tender out the work on the design and the installation of the FSPV demonstration activity. Upon Government's request, UNDP is undertaking the procurement through the support of the office in Copenhagen. Technical discussions during weekly coordination calls highlighted the need to ensure that the site for the FSPV (i.e. Tafua Pond) cpmplies with social and environmental standards, and therefore there is a need to conduct a social and environmental impact assessment on the Tafua Pond. There is a concern that if the piggery waste disposal in the pond is not addressed at once and the water is not cleared from algae growth properly, it will be hazardous to those who will work in the pond and the demonstration facility itself. The need to undertake an Environment & Impact Assessment (ESIA) is included in the invitation to tender or the request for quotation document that has been put out by UNDP in Copenhagen. The third important point is on the effectiveness on the delivery of expected outputs - it is pleasing to see that the overall delivery has doubled to ~US$400,000 in 2020 compared to 2019, and hope for a steep increase in thee delivery to >US$1m by end of 2021.

5. Matters for Consideration:

5.1. The discussion on the No-Cost extension is due to the delay in the installation of the demos, particularly the FSPV and the Solar/CDI facilities, and the move from Solar Energy Research Institute of Singapore (SERIS) who initially was a partner for the FSPV, but had to be dropped due to the delay in response. Since GEF requirements state that requests can only be made once, the 18-month extension (which falls within GEF requirements), might be the best option, taking into consideration the current COVID-19 situation. One concern raised by members is that the current COVID-19 situation might extend and the 18-month extension may not be enough. In such stuation, the Board would like to know how the UNDP/GEF is going to handle this, and if FASNETT could be extended until December 2023 instead of August 2023. This was explained that GEF can extend for 18 months only, while UNDP can only extend for 12 months. The 18-month extension by GEF requirements is the best we can apply for, however with the Mid Term Review taking place soon, this might be an opportunity to highlight these concerns and therefore may be a window of

opportunity to request for extension until December 2023. The Board Members then agreed that this approach might be best to take, making use of the MTR to highlight these concerns. **The 18-month no-cost extension request was then approved by the Board, which needs to be submitted bu MTET to UNDP**.

5.2. Regarding the Funaota SASH Project, **the Board members agreed to request the donor for a 12-month No Cost Extension and that the additional US$30,000 will be funded from FASNETT, provided that it is seen as the demonstration activity and subsumed in the FASNETT Project.**

5.3. The demonstration activities and implementation plan for the FSPV, Solar/CDI, DMRS, Biogas and the Funaota SASH Project was also presented. The 100kW FSPV will be installed in Tafua Pond. There is a potential the upscale the capacity of FSPV to 2MW. Currently, the procurement process has started with a request for quotation, while an evaluation will be conducted by UNDP Pacific Office in Fiji, UNDP Copenhagen, Government and the FASNETT management and technical team. The scope of work is in two parts. The first Request for Quotation (RFQ) is about designing, engineering, manufacturing, procurement and supplies, storage, installation and documentation of the grid-connected generation facility, and training. The Second RFQ, which is basically on non-hardware related, is about technology feasibility assessment, environment and social impact assessment and, development of the environmental social and management plan.

5.4. The Solar/CDI Demo will be directly contracted to a university-based technology developer of the CDI water treatment technology, as they had done the scoping mission in 2019. UTS will be contracted for the installation. The scope of work includes detailed planning and design and specifications of the demonstration activity; procurement and installation and commissioning of the pilot project; training of host operators on the long-term operation; and regular monitoring, troubleshooting, advising and disseminating key results and lessons learnt.

5.5. On DMRS, as explained by the presentation of CEO of TEC, is to basically gain experience in remotely controlling the matching of the overall grid power, including RE power generation, as supplied to the reefers, and the load dispatching operations. It also show real time data from the different sites that can be seen at the control room, and can increase efficiency from 81% to 90% in power.

5.6. The Biogas demonstration activity will consider technical improvements on the present biogas systems installed in Tuvalu, incuding the issues caused by salt-water instrusion. The PMU has twice visited the Amatuku Biogas System that was used by the Maritime School. There is a need to conduct a detailed study on the biogas digester in Amatuku with the assistance of the expert from Fiji who was involved in its initial design.

5.7 A total of US$660,000 is budgeted for all the demonstration activities as follows: US$300,000 for FSPV; US$286,000 for solar-powered CDI; US$30,000 for DMRS; US$30K for Funaota SASH; while the remaiing US$14,000 could be used for the biogas demonstration.

6. **Annual Work Plan (AWP) 2021, presented by Ms. Sulufaiga Uota, FASNETT Project Manager.**

6.1. There is a carry-over of the unimplemented activities from the 2020 AWP that is included in the 2021 AWP. Approximamtely US$1.9m is budgetd for 2021 with the following allocations: US$68,000 for Outcome 1; US$238,000 for Outcome 2; US$103,000 for Outcome 3.1; US$1.4m

for Outcome 3.2; US$5,800 for Outcome 4.1; US$25,000 for Outcome 4.2; and US$6,623 for Project Management costs.

6.2. **The Project Board approved the 2021 AWPs for FASNETT and Funaota SASH, including the request for a No Cost Extension for Funaota SASH.**

7. Mid-Term Review, presented by Ms. Emma Sale, UNDP Pacific Office

7.1. The MTR is one of the monitoring and evaluation milestones for any UNDP Project, which is independently undertaken. It assesses the project's progress towards the achievement of the project objectives and outcomes as specified in the project document, and assesses early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results. It will also review the project's strategy and its risks to sustainability.

7.2. Two consultants have been hired to conduct the MTR. An international consultant and a local consultant will be working closely together to interview major stakeholders, the PMU, and UNDP. The work will commence from mid-December 2020 to February 2021.

8. Approval of the International Consultants to extend services throughout 2021

8.1 Two of the consultants are overseas-based: Roger Aldover (Phillipines) and Lalin (Australia); while one (Asaeli Sinusetaki) is currently based in Tuvalu.

8.2. All three consultants have been approved by the Board to continue assist the project with its major activities. New contracts for all three consultants will be developed for their engagement in 2021, and will be shared before the consultants signed on them..

8.3. UNDP Management appreciated the approval as there has been evidence in the value of their work and they are looking forward to seeing them working in the project in 2021.

9. Review of the 2019 Board Meeting Minutes, by Ms. Sulufaiga Uota.

9.1. The minutes of the last Board meeting was reviewed and the Board endorsed to be correct.

10. Any Other Business

10.1 Mr. Paul Petueli (DBT Representative), suggested that there should be two Project Board Meetings annually so that the members are updated regularly on the progress of the project.

10.2 Ms. Emma Sale, on behalf of UNDP Pacific Office in Fiji management, thanked Madame Chair for her leadership and the Project Board Members for their proactive participation, although it has been a tough year for everyone. Also acknowledged were: Mr. Lotolua on his energy expertise and the work in Tuvalu, as well as managing the Funaota SASH; Mr. Aldover, for his patience and his leadership role as the Chief Technical Advisor; Mr. Lalin for his specialized skills in ensuring that Tuvalu will be one of the first countries in the region to install FSPV and Asaeli's support to Sulu and Tilesa in PMU. Also acknowledged is the PMU Team of Sulu and Tilesa for their hardwork and commitment in the day-to-day coordination of FASNETT.

10.1 Mr. Roger Aldover thank the team and wishing everyone the best for 2021.

10.2. Mr. Mafalu Lotolua also acknowledged everyone.

10.3 Madame Chair also thanked the Project Board members and those who are tuned in virtually before she declared the meeting officially closed.

I declare that these minutes are true records of our meeting

Silaati Filiake

Assistant Secretary

Madam Chair

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Dept Team Leader - RSD