



United Nations Industrial Development Organization

TERMS OF REFERENCE (TOR)

Solomon Water- Energy Efficiency and Self-Generation Plan

CTCN request ref: 2017000039

1 BACKGROUND INFORMATION

The Climate Technology Centre and Network (CTCN) is the operational arm of the United Nations Framework Convention on Climate Change (UNFCCC) Technology Mechanism and co-hosted by the United Nations Environment (UNEP) in collaboration with the United Nations Industrial Development Organization (UNIDO) and supported by 11 partner institutions with expertise in climate technologies. The mission of the CTCN is to promote accelerated development and transfer of climate technologies at the request of developing countries for energy-efficient, low-carbon and climate-resilient development.

These requests for Technical Assistance (TA) are being submitted to the CTCN by the National Designated Entity (NDE) of the respective country. Eligible requests are processed by a group of selected experts who develop a Response Plan. The scope of services under these Terms of Reference shall be executed based on a restricted solicitation process where only accepted Members of the CTCN Network, are eligible to submit proposals.

In case you are not a CTCN network member yet, you may bid for implementation of the technical assistance, subject to the condition that you submit your completed application for CTCN Network membership before the last date of the bid closure and the same is acknowledged by the CTCN. Furthermore, the contract award – should your bid be selected – is conditional to your network membership application having been successfully approved by the Director of CTCN. The requirement to join the CTCN network is only relevant to the main bidder and no sub-contractors.

The maximum estimated budget for this contract is USD 189,225 and subject to a competitive bidding.

2 PROJECT CONTEXT

Solomon Islands comprise hundreds of islands; of these, the main islands include Honiara (capital of Solomon Islands) and provincial urban centres of Auki, Noro and Tulagi. Solomon Islands Water Authority (SW), a state-owned enterprise, is mandated to operate as the provider of municipal water and waste water services in Solomon Islands under the SIWA Act and State-Owned Enterprise Act. SW supplies and manages water only in these four main islands. It provides water services to an estimated population of about 100,000 in Honiara and over 8,000 in the provincial centres. The municipal wastewater services are provided to about 30,000 people in Honiara only. The water pumping facilities of SW comprises the following: (1) Borehole pumps (in Honiara and Auki), (2) Raw water supply and pumping stations (in all the four islands) and (3) Waste water collection facilities (in Honiara only).



United Nations Industrial Development Organization

About 95% of total installed capacity of electricity generation in Solomon Islands is based on fossil fuels, and the balance 5% is through renewable energy sources. The electricity tariff of Solomon Islands is one of the highest in the Pacific, since a major share of electricity in the Islands is met through fossil fuels. Solomon Water is using diesel-based electricity generators to meet its electricity requirements in its various facilities. Moreover, most of the equipment and system installed in various facilities of SW have not incorporated energy efficiency options.

Thus, installing energy efficient equipment as well as shifting from fossil-fuel-based electricity generation to self-generation options using renewable energy sources (e.g. Solar Photovoltaic (SPV) or other options of generating renewable energy) that are feasible and suitable for the operational requirements of the Solomon Water would help in providing water services at competitive rates, while at the same time helping the Island in reducing overall GHG emissions.

3 AIM OF THE CONTRACT

The technical assistance is requested to support the planning and implementation of Energy Efficiency (EE) measures and Self-Generation Options (SGO) through renewable energy to reduce the reliance of Solomon Water on fossil fuel for energy requirements. The assistance would lead to preparation of detailed feasibility reports covering the technical and economic feasibility for EE and SGO options as well as support for the selection of equipment and system by preparing tender specifications for procurement of energy efficient equipment/systems/suppliers and implementation by Solomon Water.

The proposed CTCN Assistance would help Solomon Water in undertaking the following activities: (1) Conducting detailed energy audits for identifying options for energy efficiency and (2) Assessing SGO options, mainly Solar Photo Voltaic (SPVs) and any other options if applicable to off-set electricity generation through fossil fuels (or reducing the reliance on fossil fuels). The TA will also support the development of the on job training modules and operational manuals which will enable the efficient operation and monitoring of the energy efficiency measures and self-generation of energy through renewable sources.

Within the framework of this Contract, which shall be concluded within 12 months, the Contractor will produce the following five main outputs:

- Output 1: Implementation plan and communication documents for the projects
- Output 2: Assessment of EE and renewable energy options
- Output 3: Detail assessments of shortlisted EE and SGO options for Solomon Water
- Output 4: Capacity building through on-job training of Solomon Waters on the EE and renewable energy measures implemented
- Output 5: Monitoring of impacts

To get a better understanding of the objectives of the request for technical assistance, the work elaborated beforehand by CTCN, as well as the necessary collaboration with the request proponent and



United Nations Industrial Development Organization

National Designated Entity, it is recommended that the bidder refer to the complete Response Plan (Reference no. **2017000039**) attached to this tender although it should be noted that the tender differs slightly from the signed response plan as the response plan is an indicator of the deliverables which are detailed out in this ToR. As such, the bidder should also review any documents or literature relevant to this project.

The tender includes the following Outputs, Activities and Deliverables:

Output 1: Development of implementation plan and communication documents

The implementer must undertake the following activities at the beginning and at the end of the CTCN technical assistance.

Activity 1.1. A work plan detailing stepwise activities, respective deliverables, outputs, timelines and responsible persons/organisations and detailed budget to implement the Response Plan, meeting the requirements of the Response Plan.

Activity 1.2. Monitoring and evaluation plan with specific, measurable, achievable, relevant, and time-bound indicators used for timeliness and appropriateness of the implementation. The plan should apply selected indicators from the Closure and Data Collection report template and enable the implementer to complete the CTCN Closure and Data collection report at the end of the assignment (refer to the activity 1.4 below and section 14 in the Response Plan).

Activity 1.3. A two-page CTCN Impact Description formulated in the beginning of the technical assistance and update/revised once the technical assistance is fully delivered based on the template provided by CTCN. The template will be provided by CTCN.

Activity 1.4. A Closure and Data Collection report completed at the end of the technical assistance as indicated to be completed and delivered in the end of the project. The template will be provided by CTCN in the beginning of the activity.

Activity 1.5. Need based technical backup support, as and when required during the TA to Solomon Water in selection of EE and RE equipment and system for the pumping stations

Deliverables 1:	Delivery date
D 1.1: Detailed work plan	1 month after signing contract
D 1.2: Monitoring and evaluation plan	1 month after signing contract
D 1.3: CTCN impact description	1 month after signing contract
D 1.4: Closure and data collection report	12 months after signing contract (end of the project)



United Nations Industrial Development Organization

Deliverables 1:	Delivery date
D 1.5: Summary of technical support (backstopping) provided during CTCN TA, if any.	On-going during the project tenure

Output 2: Assessment of energy efficiency and renewable energy options

Activity 2.1. Collection of historical data (at least for three normal years) on the energy usages vis-à-vis water services, understanding system configurations focussing on the energy consumption points and information from selected pumping stations as discussed and agreed with Solomon Islands and CTCN.

Activity 2.2. Conducting energy audit of pumping stations and any other relevant energy consumption points, if found from 2.1 and assessing demand management options.

Activity 2.3. Broad assessment of the feasibility of various energy efficiency and renewable energy (Self generating options with renewable energy- SGO) options for selected pumping stations/ any other energy intensive points identified in 2.1 and 2.2. The assessment will also cover the energy requirements pertaining to the expansion projected in coming five years for SW.

Activity 2.4. Meeting with key stakeholders to verify data and findings and develop a short list of EE and renewable energy (SGO) options

Activity 2.5. Presentation of key findings to Solomon Water and other stakeholders

Deliverables 2:	Delivery date
D 2.1: Presentation to Solomon Water and other stakeholders on the key findings	Within 5 months after signing contract
D 2.2: Report on the list of EE and renewable energy (SGO) options identified with potential energy savings and GHG reductions detailing the underlying data collected, energy audit and assessment conducted for EE and RE options. The report should also incorporate the feedback received from D 2.1.	6 months after signing contract

Output 3: Shortlist and conduct detail assessments of EE and SGO options for Solomon Water

At this stage, there will be a detailed assessment conducted on the shortlisted EE and SGO options. The detailed study will clearly indicate the feasibility of the implementation of the EE and SGO options for Solomon Water in technical and financial perspectives. The financial analysis conducted will indicate the funds required for the respective EE and SGO options and the potential source of tapping these funds for SW. The implementer will support SW in developing tender documents including the technical specifications, procurement modalities and other relevant information for bidding.

Activity 3.1: Detailed feasibility report on short-listed EE and renewable energy (SGO) options



United Nations Industrial Development Organization

Activity 3.2: Report on funding requirements and financing options

Activity 3.3: Preparation of tender documents for EE and RE options

Deliverables 3:	Delivery date
D 3.1: A detailed feasibility report with technical and financial analysis and funding options of EE and renewable energy options recommended for Solomon Water	8 months after signing contract
D 3.2: Tender documents for EE and renewable energy options	9 months after signing contract

Output 4: Facilitate capacity building through on-job training support for Solomon Waters on the EE and Renewable Energy measures implemented

Activity 4.1. Development of training modules to facilitate the training and exchange of information and monitoring & evaluation templates to capture data for performance assessment.

The training modules will cover the EE and renewable energy technologies recommended for Solomon Water ranging from basics to relevant advanced information. The training modules will be in form of a curriculum. The period of the curriculum, targeted beneficiaries and the modalities of the training will be decided in discussion with Solomon Water, CTCN and other relevant stakeholders during the project.

Activity 4.2. Operational Manuals for EE and renewable energy maintenance and templates of transaction documents to cater to the expansion needs of Solomon Water.

The training materials will be further developed into a brief, user friendly, stepwise operational manual that will facilitate the best practices to operate the EE and RE measures implemented for Solomon Water.

Activity 4.3. Identification of gender co-benefits of the project

Activity 4.4. Monitoring and evaluation of the outcomes and impacts

The indicators and guidelines in the CTCN templates should be followed to perform the activities 4.3 and 4.4.

Deliverables 4:	Delivery date
D 4.1: Training Modules	10 months after signing contract
D 4.2: Operational Manuals	10 months after signing contract
D 4.3: Monitoring and evaluation of Impacts and Outcomes including a report on gender co-benefits	12 months after signing contract



United Nations Industrial Development Organization

4 GENERAL TIME SCHEDULE

The activities under this contract should follow the timeline presented for each deliverable and must be completed within a period of twelve (12) months from signing of the contract.

5 PERSONNEL IN THE FIELD (PROFESSIONAL EXPERIENCE AND QUALIFICATIONS)

The bidder shall as a minimum present the following qualifications of the team. Please note the requirement to have national experts in the team or additional qualifications and experts may be added to the proposal.

Experts required	Brief description of required profile
Energy efficiency expert	<p>The Energy Efficiency Expert (Expert-EE) shall have the following expertise and experience:</p> <ul style="list-style-type: none"> • He shall have an engineering qualification with at least 10 years work experience in energy efficiency related projects for water pumping installations. • Experts with mechanical/ electrical engineering academic qualifications • He shall have good analytical skills in assessing the performance of water pumping systems, associated auxiliaries. • He shall have experience of implementing energy efficiency measures in the related field and good understanding of economics of the same. • He shall also possess suitable portable instruments such as power analyser, ultrasonic flow meter, etc. and must be able to handle the instruments in taking measurements suitable for the proposed study. • The EE Expert shall have proficiency in reading, writing and speaking English and must be able to communicate with stakeholders effectively.
Renewable energy expert	<p>The Renewable Energy Experts shall have the following expertise and experience:</p> <ul style="list-style-type: none"> • The Expert shall have an engineering qualification with at least 5 years work experience in renewable energy related projects. • Expert with mechanical/ electrical engineering academic qualifications. • He shall have good expertise in assessing of suitable locations for setting up RE facilities. • He shall have demonstrated experience of assessing solar photovoltaic based systems. Experience of standalone SPV with batteries will be added advantage. • They must be able to assess the potential for power generation using RE technologies and must be able to prepare techno-economic feasibility of identified options along with preliminary



United Nations Industrial Development Organization

Experts required	Brief description of required profile
	<p>technical specifications.</p> <ul style="list-style-type: none"> The RE Expert shall have proficiency in reading, writing and speaking English and must be able to communicate with stakeholders effectively.
Gender Expert	<p>The Gender Experts shall have the following expertise and experience:</p> <ul style="list-style-type: none"> Understanding of gender considerations with regards to access to water The Gender Expert shall have proficiency in reading, writing and speaking English and must be able to communicate with stakeholders effectively.

The CVs of the respective experts assigned to this project by the Contractor must be provided.

6 LANGUAGE REQUIREMENTS

The working language for the purposes of this project is English, thus an excellent command of English is required of the proposed personnel. The final deliverables must be submitted in English. The technical and financial proposal under this tender must also be submitted in English.

All delivered documents must be of such a quality that no further editing will be required.

7 DELIVERABLES SCHEDULE

The table below details the indicative schedule for this assistance.

Deliverables	Delivery date
D 1.1: Detailed work plan	1 month after signing contract
D 1.2: Monitoring and evaluation plan	1 month after signing contract
D 1.3: CTCN impact description	1 month after signing contract
D 1.4: Closure and data collection report	12 months after signing contract (end of the project)
D 1.5: Summary of technical support (backstopping) provided during CTCN TA, if any.	On-going during the project tenure
D 2.1: Presentation to Solomon Water and other stakeholders on the key findings	Within 5 months after signing contract
D 2.2: Report on the list of EE and RE (SGO) options identified with potential energy savings and GHG reductions detailing the underlying data collected, energy audit and assessment conducted for EE and RE options. The report should also incorporate the feedback received from D 2.1.	6 months after signing contract



United Nations Industrial Development Organization

Deliverables	Delivery date
D 3.1: A detailed feasibility report with technical and financial analysis and funding options of EE and RE options recommended for Solomon Water	8 months after signing contract
D 3.2: Tender documents for EE and RE options	9 months after signing contract
D 4.1: Training Modules	10 months after signing contract
D 4.2: Operational Manuals	10 months after signing contract
D 4.3: Monitoring and evaluation of Impacts and Outcomes including a report on gender co-benefits	12 months after signing contract