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***First Progress
Report (Contract No.
3000067788)***
UNIDO–CTCN: Technical
Assistance to Solomon
Water for Energy
Efficiency and Self-
Generation Plan

October 2019

Final

*Strictly Private and
Confidential*





October 2019

To,

Ms. Jaime Revenaz-Webbe
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UN City, Marmorvej 51,
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Dear Ma'am,

Subject: First Progress Report (Deliverable 2) for “**Technical Assistance to Solomon Water for Energy Efficiency and Self-Generation Plan**” (Ref - UNIDO Contract No. 3000067788)

We sincerely thank you for giving us an opportunity to undertake the assignment on “Technical Assistance to Solomon Water for Energy Efficiency and Self-Generation Plan”.

As per the scope of the assignment outlined in the Terms of Reference, we are pleased to submit the First Progress Report. The First Progress includes the details of the services undertaken within Section 3 - Deliverable 2 of the Terms of Reference and covers: (a) Presentation to Solomon Water and other stakeholders on the key findings, (b) 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.

We eagerly look forward to your inputs on this. Further, we would be happy to provide any clarifications or additional information necessary. We can be reached on the mentioned contact details or on my email id (amit2.kumar@pwc.com).

Yours sincerely,



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Abbreviations

CTCN	Climate Technology Centre & Network
EE	Energy Efficiency
JICA	Japan International Cooperation Agency
NDE	National Designated Entity
RE	Renewable Energy
SGO	Self-generation Option
SIWA	Solomon Island Water Authority
SPV	Solar Photovoltaic
SW	Solomon Water (Short form of SIWA)
TA	Technical Assistance
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization

1. Introduction and progress status

1.1. Background

Solomon Islands comprise hundreds of islands; of these, the main islands include Honiara (capital of Solomon Islands) and provincial urban centers 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 wastewater 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 centers. The municipal wastewater services are provided to about 30,000 people in Honiara.¹ The Solomon Waters body reports to Minister of Mines, Energy and Rural Electrification and to the Minister of Finance of Solomon Islands.

The water pumping facilities of Solomon Island Water Authority comprise of the following:

- Borehole pumps (Honiara and Auki)
- Raw water supply and pumping stations (in all four islands)
- Waste water collection facilities (Honiara)

Typical view of pump stations located in Honiara is presented in **Figure 1**.

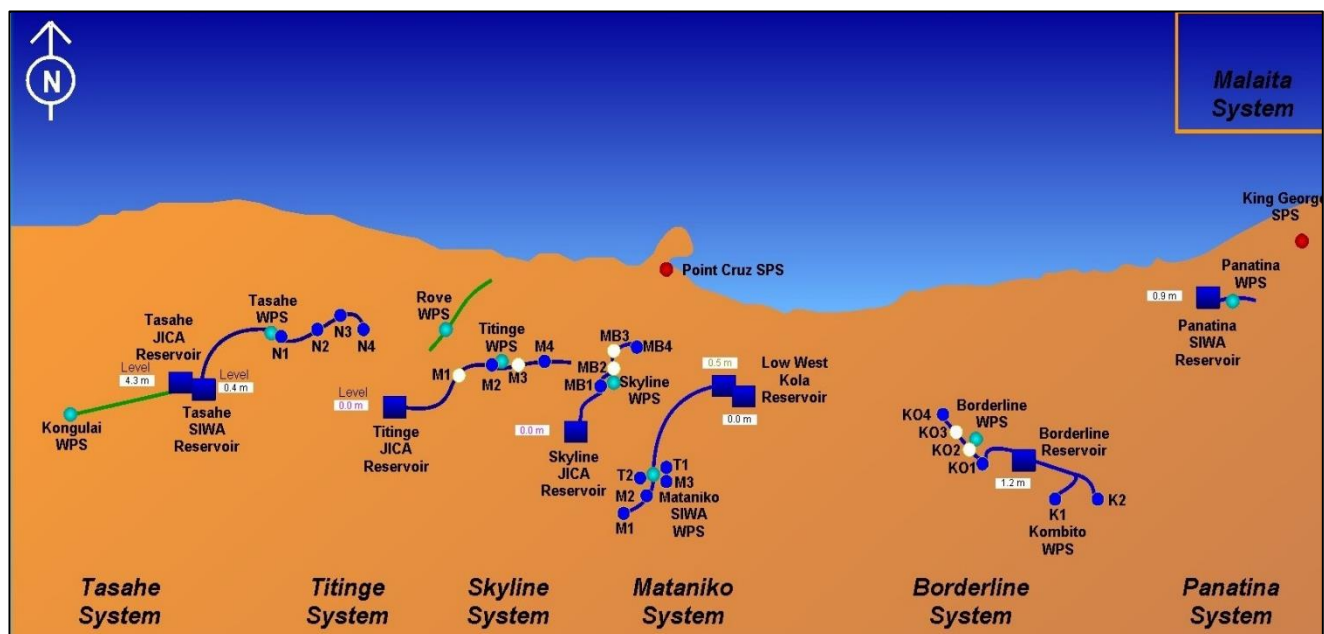


Figure 1 Pump stations in Honiara

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 (and the World), since a major share of electricity in the Islands is met through fossil fuels (diesel generators).

Solomon Water is using diesel-based electricity generators to meet its electricity requirements in its various facilities. In addition, most of the equipment and system installed in various facilities of SW have not incorporated energy efficiency options.¹

¹ Terms of Reference, CTCN request ref: 2017000039

1.2. Problem Statement

The expense towards energy consumption were more than 35% in year 2013-14 for Solomon Water. The total energy consumption of Solomon Water is almost 10% of total energy consumption of Solomon Islands. The energy consumption is further expected to increase to cater the projected escalation of demand pertaining to the increasing population and to reach out to un-serviced population. The main source of electricity generation in the island is fossil fuel and the increase in fuel cost would directly affect the operation cost and GHG footprint of Solomon Water. This in turn put upward pressure and wrongly influence the expansion plans of its services. In addition, low importance is provided to efficiency in selection of equipment related to water services. Therefore, it is vital for Solomon Water to explore sustainable energy solutions that would help reducing energy consumption and contribute towards national GHG emission reduction targets.²

1.3. Objectives of the Technical Assistance

The objective of the technical assistance is 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. **Figure 2** presents the objectives of technical assistance:

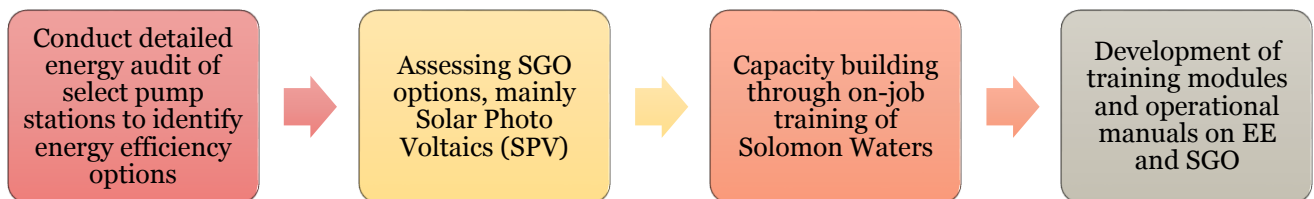


Figure 2 Objectives of the technical assistance

The assistance would lead to preparation of detailed feasibility reports covering technical and economic feasibility for EE and SGO options as well as support for selection of equipment and system by preparing tender specifications for procurement of energy efficient equipment/systems and implementation by Solomon Water.

1.4. Scope of work

The scope of work is divided in four parts:

- 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 Water on EE and RE implementation and monitoring of impacts

The output 1 is mainly the CTCN communication documents such as monitoring & evaluation plan, impact description and closure & data collection reports. **Figure 3** presents the details of output 2 to 5. The study focused on seen pump stations, 6 in Honiara and one in Auki. The list of pump station is presented in **Table 1**.

Table 1 List of pump stations covered

Borderline pump station – Honiara	Tuvaruhu JICA pump station – Honiara
Skyline pump station – Honiara	Tuvaruhu SIWA pump station – Honiara
Tasahe pump station – Honiara	Kwaibala pump station - Auki
Titinge pump station – Honiara	

² Response Plan, CTCN request ID: 2017000039

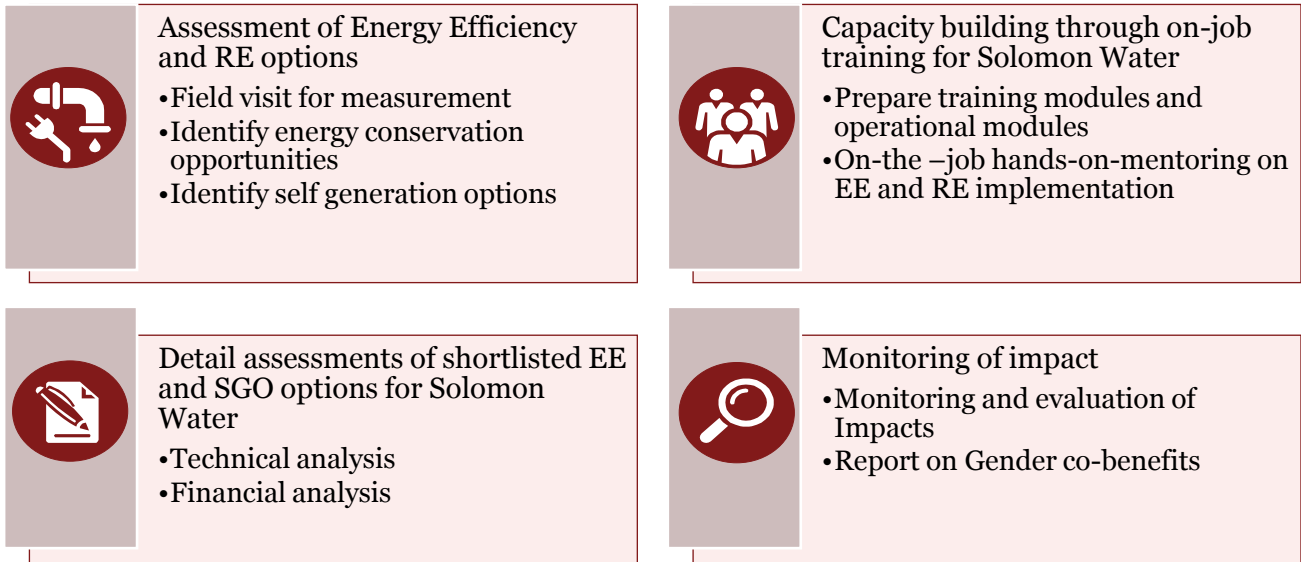


Figure 3 Details of output

1.5. Expected benefits

The proposed technical assistance is expected to expedite the uptake of energy efficiency and renewable energy by Solomon Water in Solomon Islands. **Figure 4** presents some of anticipated environmental, economic and social benefits of technical assistance.

Environmental Benefits	Economic Benefits	Social Benefits
<ul style="list-style-type: none"> • Enhanced energy efficiency • Improved energy security • Lower dependence on imported fuels • Contribution towards climate change mitigation 	<ul style="list-style-type: none"> • Reduced operating (energy) cost for Solomon Water • Increased investments in energy efficiency and renewable energy 	<ul style="list-style-type: none"> • Skill enhancement of Solomon Water professionals on EE and RE • Enhanced profitability leading to availability of funds for increasing water coverage to un-serviced areas

Figure 4 Expected benefits from the assignment

1.6. Progress status

The project is executed in four steps according to the work plan, the steps are defined as **Outputs** and each output is linked with a set of project deliverables. The overall outcomes of the TA are to reduce intensity of energy consumption in the 7 pump stations of Solomon Island Water Authority, identification of renewable energy options for self-generation and training of local technical staff to replicate interventions.

The project team developed the deliverables in Output 1 and 2, same are submitted to CTCN / UNIDO for review. Deliverables in output 1 were submitted back to CTCN incorporating the suggestions/comments. The same was accepted by CTCN.

The details of completed deliverables are shown in **Table 2**.

Table 2 Completed deliverables

Output 1: Implementation plan and communication documents	Output 2: Assessment of EE and renewable energy options
<ol style="list-style-type: none"> Detailed work plan Monitoring and evaluation plan CTCN impact description Closure and data collection report 	<ol style="list-style-type: none"> Presentation to Solomon Water and other stakeholders on the key findings 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 field visits for Output 2 and 3 were covered in the month of September 2019. Detailed feasibility report including energy efficiency and renewable energy potential assessment has been prepared and shared with CTCN, UNIDO, NDE and SIWA and is attached along with this progress report. The deliverables in Output 3 are linked with Output 2 and are under preparation. Team has initiated activities under deliverables of Output 4. The detailed work progress is presented in **Figure 5**.

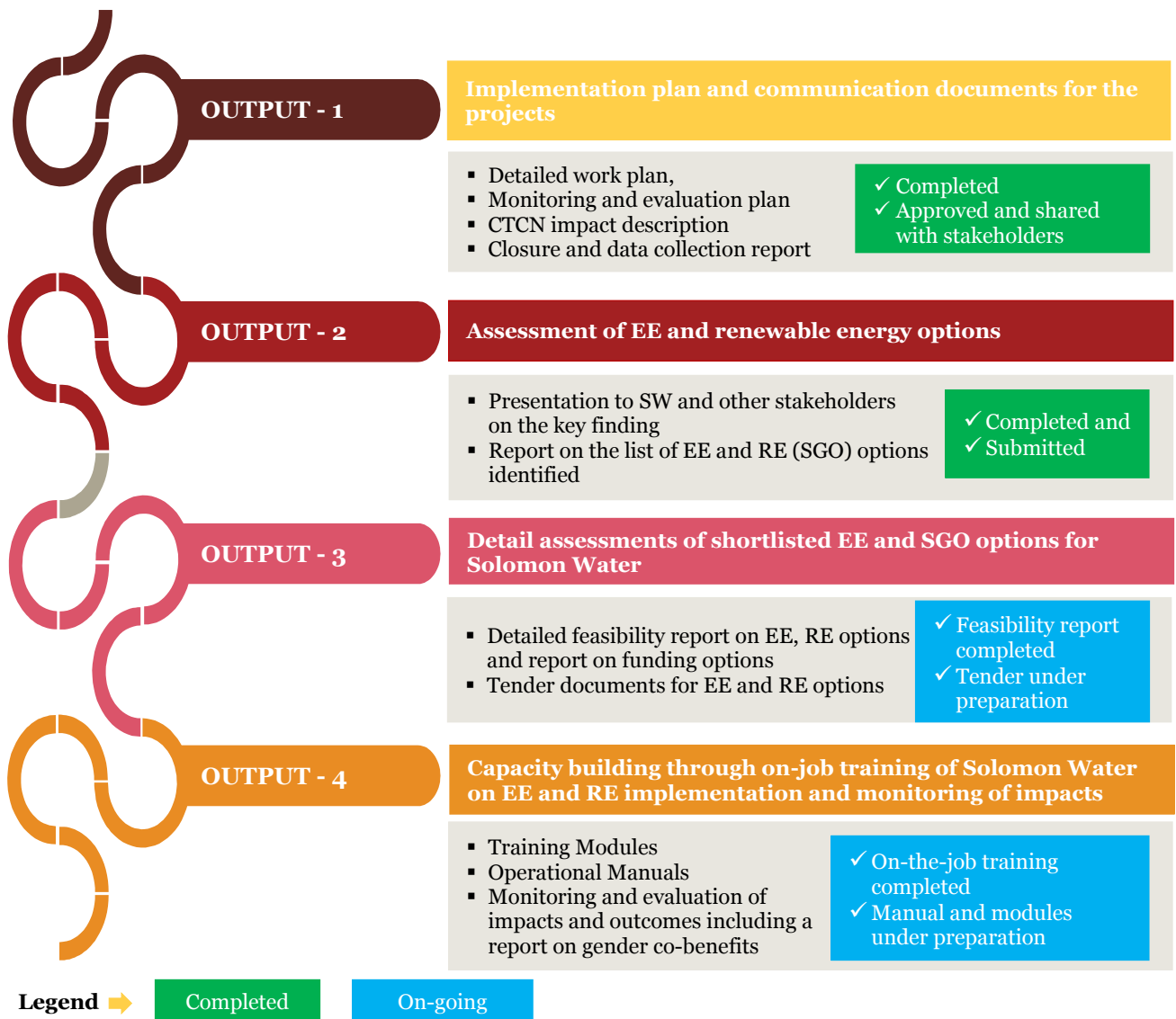


Figure 5 Work progress

2. Deliverables 2

2.1. Background

The technical assistance to support the planning and implementation of Energy Efficiency (EE) measures and Self-Generation Options (SGO) through renewable energy has led to preparation of detailed feasibility reports covering the technical and financial feasibility for EE and SGO options across 7 pump stations of Solomon Waters. The list of pump stations along with their location is presented in **Table 3**.

Table 3 List of demonstration companies

Sr. No.	Pump Station	Location
1	Tasahe Station	Tasahe, Honiara, Guadalcanal province
2	Titinge Station	Honiara, Guadalcanal province
3	Skyline Station	Mbokonavera, Honiara, Guadalcanal province
4	Tuvaruhu SIWA pump station	Mataniko, Honiara, Guadalcanal province
5	Borderline Station	Green Valley, Honiara, Guadalcanal province
6	Tuvaruhu JICA pump station	Mataniko, Honiara, Guadalcanal province
7	Kwaibala System	Auki, Malaita Province

The data collation and field visits at the 7 pump stations were conducted in phase manner in the month of September 2019. For each of the 7 pump stations, historical data and measured data was analyzed. A long list of energy efficiency and SGO options were identified and same were discussed with Solomon Water during the field visit mission. The deliberations with SW were with reference to suitability of recommendations, feasibility and ease of implementation. Based on these discussions with SW, the list of possible measures for energy efficiency and self-generation was prepared for detailed techno-financial analysis for the 7 pump stations. A consolidated feasibility report was prepared for each of the pump station. The report included following:

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2.2. Deliverable 2

Deliverable 2 is primarily based on findings from the field visit. It involves understanding the system configurations of the 7 pump stations, focussing on the energy consumption points and conducting detailed energy audits to give recommendations on energy efficiency and renewable energy potential assessment. **Table 4** shows the reports in which the deliverable is covered.

Table 4 Deliverable 2 coverage in audit report

Deliverable 2	Details
1. Presentation to Solomon Water and other stakeholders on the key findings	Key findings were presented to Solomon Water on 13 th September 2019 and subsequently shared with other stakeholders i.e. NDE and CTCN.
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	Separate detailed assessment report of each of the 7 pump stations was prepared and shared with Solomon Water, NDE and CTCN.

Note: *The key findings presentations and individual detailed energy audit report for the 7 pump stations are attached separately along with this progress report.*

Appendix

Photos taken during field visit



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