

## **ACSE Concept Note #1**

**Country:** Solomon Islands

**Location within the country:** Selwyn College National Secondary School, West Guadalcanal, Guadalcanal Province and Su'u National Secondary School, West Kwaio, Malaita Province

**Project type:** Type 2

**Total requested budget:** 800,000 Euro

**Duration of project:** 3.5 years, May 2015 - November 2018

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**Project title:** DEPLACEMENT OF DIESEL-POWERED GENERATION WITH LOW VOLTAGE SOLAR GRID SMART SYSTEM IN LARGE BOARDING SCHOOLS IN SOLOMON ISLANDS

### **Background and rationale (max ¼ page)**

Most boarding schools in Solomon Islands are located in rural areas where they do not have access to the national electricity utility grid. The focus sites of this project are boarding schools with existing stand-alone electricity grids that are located in the rural areas of Solomon Islands. Selwyn College and Su'u are two of the biggest boarding schools in the rural Solomon Islands with stand-alone electricity grids that are selected as pilot schools for this project. Both schools promote co-education, accommodating approximately 950 students (60% males and 40% females) and 70 staff all together. For the last few decades they have been relying on diesel as their main source of fuel for electricity. Electricity is distributed throughout their compounds using stand-alone grids. Currently Selwyn College and Su'u use refurbished 62 KVA and 65 KVA diesel generators respectively. There are about 70 houses (staff houses, student dormitories, offices, clinics and others) at Selwyn College, while Su'u has around 50 houses that are electrified by these gensets. Both schools also rely on these gensets to pump fresh water for their daily use. Selwyn College uses approximately 38,400 litres of diesel each year. The cost of that amount of fuel equates to around 20% of the annual school budget. Su'u School, on the other hand, spends around 10% of its annual budget on diesel. However, of the total cost for diesel, approximately 33% (SBD \$128,470.00) is paid directly from school fees. Daily supply of electricity and fresh water to both schools is rationed to certain hours during the day. This is mainly because of very high cost of running the gensets compared to the limited budgets they have.

Note: They are selected as a pilot not only because of their closeness to the project PMU in Honiara but also because they have been encountering problems with their current power systems in the last few years until now. Replications (with lessons learnt) are expected to be done in similar boarding schools in the future.

### **Objective (s) (max ¼ page)**

The objectives of this project are:

- to drastically reduce the amount of diesel fuel usage for electricity by more than 60 % and reduce costs on fuel while at the same time increasing the availability of electricity and fresh water to staff and students of both schools. This will be done by installing a 70 kW Solar-Diesel Hybrid system in each school.

- to promote clean and environmentally friendly energy technology. Emissions into the atmosphere will be reduced by approximately 0.6 tCO<sub>2</sub> equivalent per annum from this project.

At the national level, the project aligns with Objectives 4 and 7 of the National Development Strategy 2011-2020, which is the overarching development framework for the Solomon Islands. It also relates to the objective of the National Climate Change Policy 2012-2017 to “guide and ensure the country benefits from clean and renewable energy, energy efficiency and mitigation technologies that improves people’s livelihoods and the national economy, is environmentally sustainable and contributes to global efforts to reduce GHG emissions and global warming”, as well as the National Energy Policy 2014, which aims to “(i) increase access to electricity in rural households to 35% by 2020, and ii) increase the use of renewable energy sources for power generation in urban and rural areas to 50% by 2020”.

#### **Expected project outcomes (max ½ page)**

The expected outcomes of the project are:

- i) An efficient Solar-Diesel hybrid system is developed for Selwyn College and Su’u school;
- ii) Electricity and fresh water are supplied sustainably and regularly in both schools;
- iii) Financial resources usually spent on diesel fuel for electricity generation could now be saved or spent on other necessities for the schools;
- iv) Each school’s carbon footprint and noise pollution are lowered;
- v) Electrical appliances within staff houses, administration office, labs, classrooms, etc, are fully utilised;
- vi) Students’ academic performance and staff output are improved;
- vii) The schools’ electricians will gain technical capacity in solar energy production and maintenance of equipment.

#### **Targeted outputs (max ½ page)**

The outcomes will be achieved through the following outputs and activities:

- i) Formal introduction of the project to the management/authority of both schools and MOU signed;
- ii) Detailed survey of the existing energy needs of both schools and Environment Impact Assessment of project sites completed;
- iii) Options for technical design of the most efficient solar-diesel hybrid system for each of the schools developed. Note: A big battery storage is expected to be installed.
- iv) Installation of a Solar-Diesel hybrid system in each school;
- v) Successful electrification of all residential buildings, student dormitories, class rooms, offices, clinics and other necessary buildings in both schools;
- vi) Water pumps in both schools are successfully operated by the hybrid system;
- vii) Maintenance and repair of the existing stand-alone grids are carried out;
- viii) Training of electricians on operational and maintain aspects of the solar system conducted at both schools;
- ix) Awareness about energy conservation conducted;
- x) Awareness on benefits of the system to surrounding communities conducted.
- xi) End user manual for the solar system developed;
- xii) Tariff scheme for operational and maintenance costs for the solar system established in each school.
- xiii) Annual financial contributions from both schools administrations towards O&M costs are agreed on.
- xiv) Annual funding for O&M of school solar systems is accommodated in the MMERE or Ministry of Education’s MECDM’s annual development budget as of 2016.

### Target group (max ¼ page)

The direct beneficiaries of this project are students and staff of both schools. Other beneficiaries include the schools' authorities, parents of students, neighbouring communities and the country as a whole. Students' academic performance and health shall be improved; sick persons from nearby communities can have access to safely stored vaccines from the schools' clinics and financial contributions from school authorities and parents can be used for other important school needs.

Both schools and their authorities are expected to establish a project team that will assist during the implementation of the project, as well as during the utilization phase. They are expected to provide manpower when needed during the implementation.

Other key stakeholders for the project include: Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM); Ministry of Mines, Energy and Rural Electrification (MMERE); Ministry of Development Planning and Aid Coordination (MDPAC which hosts the NAO) and Ministry of Education and Human Resources (MEHR); as well as potential private contractors who could carry out the actual design and installation of the solar systems.

Note:

- Both schools enrol boys and girls each year from all over Solomon Islands. Hence, the benefit is quite broad.
- Consultations were done with the Energy and Rural Electrification Division, the Ministry of Education, Solomon Islands National University and both schools' administration. Further consultations will be done with other relevant stakeholders during the PDD phase.

### Indicative budget (max ½ page)

The table below outlines the indicative budget for the project.

Item	Indicative budget (Euro)
Project management costs	100,000
Contracts for surveys, design and installation of the solar system	285000
Procurement of materials and logistics	385000
Training and workshops, including training materials and manuals	20,000
Contingency	10,000
<b>TOTAL</b>	<b>800,000</b>

### Project management (max ½ page)

The project will be co-implemented by (MECDM), and (MMERE). The national focal point for this project is the Permanent Secretary (PS) of MECDM. A project management unit (PMU) will be established and sits within MECDM. This is an agreement between MMERE and MECDM to strengthen ongoing collaboration on climate mitigation work. A project coordinator and a finance officer will be recruited to manage the project. The project coordinator will manage the day-to-day activities of the project and will be supported by the finance officer.

A technical committee will be established expressly for this project, chaired by PS MECDM and co-chaired by PS MMERE, and composing of PS Education, Director Energy Division, Director Climate Change Division, two other technical officers from these two divisions and Director Strategic Planning from Ministry of Development Planning and Aid Coordination.

The project coordinator will be answerable to the chair of this committee. The technical committee will oversee the project operation during the project lifetime beginning from the concept note stage.

A separate project account will be identified with the assistance of the Ministry of Finance. Solomon Islands Government procurement and financial reporting systems will be used.

The MECDM has various other externally-funded projects with similar management, institutional and financial arrangements and is comfortable with this setup.

Concept notes, PDDs, and quarterly progress/financial reports are expected to be screened by the steering committee and signed off by PS MECDM before they are submitted to GIZ by the NAO (Minister of Development Planning and Aid Coordination).

#### **Implementing partner(s) (max two sentences)**

This project will be co-implemented by the Climate Change Division of MECDM and Energy and Rural Electrification Division of MMERE. A private entity with relevant experience in solar energy systems will be contracted to carry out the actual design and installation.

#### **Complementarity and replicability (max ¼ page)**

This solar project is complementary to the following existing and planned solar projects in Solomon Islands:

- i) Turkey-funded Rural Electrification for Clinics and Schools (7.58 kW),
- ii) Italy-funded Rural Electrification for Boarding Schools (200kW) and other national rural solar projects.
- iii) Ongoing Solomon Islands Govt. Constituency Renewable Energy Program – Solar Home Systems, and Solomon Islands Renewable Energy Development Program- Solar electrification for rural schools component.

The above solar projects/programs only targeted schools that have no existing electricity grids and no electricity at all. The schools were smaller ones compared to Su'u and Selwyn College. Also the installations done were smaller stand-alone solar systems on individual buildings. Both private entities and officers within MMERE were and still continue to involve in the implementation of these projects/programs.

The planned solar systems for Selwyn and Su'u schools will be the biggest by far for boarding schools in Solomon Islands. Hence, if this project is successful, similar solar systems can be replicated in other boarding schools with existing stand-alone electricity grids in rural areas of Solomon Islands.

#### **Sustainability and risks (max ¼ page)**

The solar systems in both schools will be maintained and sustained through:

- i) The technical capacity needs provided to both schools' electricians during the training and installation phase of the project; and
- ii) Schools' tariff system where every staff will have to pay a reasonable monthly fee towards O&M of the systems, plus annual budget allocations from both schools administrations and their education authorities. Details of the tariff system and the contributions will be set at the beginning of the project. Also, the government through MMERE or the Ministry of Education and Human Resources or MECDM will ensure that funds for maintenance of school solar systems are featured in their annual development budgets. These funds can be used to secure a contractor or solar energy experts who are familiar with such systems should they have any faults that are beyond the capacity of the schools' electricians to fix.
- iii) The already secured schools compounds with support from nearby communities should ensure that solar panels are not tampered or stolen.

In the case of a major fault that prevents power from being supplied for a long period, the standby gensets could be used as backup. On the other hand, if the schools' tariff system does not work,

then the school administration will have to save portions of the usual annual cost of diesel to fund the upkeep of the system. This should be specified within the MOU designed and agreed upon at the start of the project.

**Timeline for planned measures (max ¼ page)**

Item	May-Dec 2015	Jan-June 2016	Jul-Dec. 2016	Jan-June 2017	Jul- Dec. 2017	Jan-June 2018	Jul-Nov. 2018
Project inception and establishment of PMU							
Contracts							
Procurement of materials and installation							
Training							
Evaluation							

**Support for PDD development**

A tender notice (funded by the government as in-kind) will be made during the Concept Note phase to ensure that the best external consultant or contractor is secured to assist in the development of the PDD. It is envisaged that the same contractor/consultant will continue with the design and installation of the solar systems. This will ensure smooth implementation of the project.