

Environmental and Social Monitoring Report

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July, 2017

Samoa: Power Sector Expansion Project

Prepared by Electric Power Corporation for the Government of Samoa and the Asian Development Bank

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Semi Annual Safeguard Monitoring Report

Period: January 1st 2017 - June 30th 2017

Samoa: Power Sector Expansion Project

July 2017

This continual six months safeguard report is prepared by the Project Management Unit of the Electric Power Corporation for the Government of Samoa and the Asian Development Bank.

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ACRONYMS

ADB	-	Asian Development Bank
ADF	-	Asian Development Fund
BESS	-	Battery Energy Storage System
EPC	-	Electric Power Corporation
ESU	-	Environment and Social Unit
IEE	-	Initial Environmental Examination
JBIC	-	Japan Bank for International Cooperation
MNRE	-	Ministry of Natural Resources and Environment
PMU	-	Project Management Unit
PSEP	-	Power Sector Expansion Project
PSRP	-	Power Sector Rehabilitation Project
PUMA	-	Planning and Urban Management Agency
RED	-	Renewable Energy Development
SCADA	-	Supervisory Control and Data Acquisition

EXECUTIVE SUMMARY

- a. This Safeguard Report is limited to projects funded under Power Sector Expansion Project (PSEP). It does not cover other projects undertaken by the Electric Power Corporation (EPC) such as; Renewable Energy Development and Power Sector Rehabilitation Project (RED&PSRP), Renewable Energy systems funded by Independent Power Producers, and other major projects funded by EPC. Safeguard report for RED&PSRP is covered under a separate report.
- b. Development of solar, hydro, wind, biomass, biogas, and other renewable energy systems is part of Government's Goal for electricity generation in Samoa to be 100% generated from Renewable Energy sources at the end 2020 in order to reduce dependency on use of diesel fuel in order to reduce emission.
- c. During this bi annual report period, from January 1, 2017 to June 30, 2017, there are 6 ongoing subprojects under the PSEP. They are Battery Energy Storage Systems in Upolu and Savaii, installing an additional 3rd 2MW generator at Taelefaga hydro station, upgrade of 33kv tieline from Lalomauga hydro station to Tanugamanono diesel station, installation of AMI Smart Meters and AMI solution and replacement of vending system for prepayment meters, Fiaga Water Pumping System, and installation of metering current transformers for smart meters. The Rehabilitation of Lalomauga hydro station, and Vaipu hydro pump system subprojects are put on hold due to insufficient funds.
- d. Feasibility Studies with Initial Environmental Examinations (IEE) for Taelefaga Hydro Station 3rd Generator and upgrade of 33kv tieline, and Battery Energy Storage System (BESS) for construction of the first large scale grid connected Battery Energy Storage Systems in Upolu and Savaii in Samoa to mitigate grid instability and energy transfer as result of high penetration of grid connected solar systems in both islands have been prepared and approved by ADB. The Battery Energy Storage System bid was advertised on November 9th and closed on December 21st 2016. Bid for the Taelefaga Hydro 3rd Generator and upgrade of 33kv tie was advertised and closed on 26th June 2017.
- e. Feasibility studies of two other subprojects; Vaipu pump system and Lalomauga Hydro rehabilitation are finalized by EPC and have been submitted to ADB, but two subprojects are put on hold.
- f. There were no Complaints, Health, Safety, Social, Land, Environmental Issues and reports of any injuries or near miss during this period.

INTRODUCTION

The Power Sector Expansion Project is for 8 year from 2008 to end of 2016, and now extended to November 2017, for the implementation of various improvements to the power system to improve the supply of electricity in Samoa and Electric Power Corporation's financial capacity.

System improvements include: replacing of 30,000 plus post paid electric meters to prepayment meters and installation of vending system, construction of a new 24MW diesel power station at a different location, to increase firm generating capacity to meet current growing demands now and future, relocation, upgrading and increasing capacity of transmission and distribution power lines, underground main transmission lines, rehabilitation of high voltage electrical switchgear in 2 hydro and 1 diesel power stations, rehabilitation of an old hydro, reduce line loss, improve reliability of power supply, improve efficiency of operation, build substation and national control center and implement a new Supervisory Control and Data Acquisition (SCADA) System and telecommunication network to closely monitor and remotely control generators and other equipment, underground back bone of transmission and distribution power lines, conversion to prepayment meters from induction/readable meters, and installation of remote induction meters to remote read customer usages of non domestic commercial customers and installation of smart post paid meters in all commercial customers to read them remotely.

EPC was in need of improving its collection performance of customers' arrears; remove transmission obstacles to improve reliability and quality of electricity supply; and capacity requirements to meet growing electricity demands. The long term objective is to reduce Samoa's reliance on imported fuel by promoting clean and renewable energy using hydro, sun, wind, biogas, waste to energy generation, etc.

Project is funded by grants and loans from the Asian Development Fund (ADF), Asian Development Bank (ADB) loan, Japan Bank for International Cooperation (JBIC) loan; grant from Government of Australia, Samoa Government and EPC.

PMU was established for the management and implementation of the Power Sector Expansion Project. This includes project planning, design, construction, project and construction management, monitoring, reporting, procurement, evaluation, cost and quality control and preparation of feasibility studies. The Environment and Social Unit (ESU) under the Project Management Unit (PMU) is responsible for managing land acquisition, social, safety, health and environmental impacts.

BATTERY ENERGY STORAGE SYSTEM

Feasibility Study with IEE for Samoa's Energy Storage System was approved by ADB. The proposed development includes the construction and installation of battery energy storage system systems in the two main islands (Savaii and Upolu), batteries and transformers installed outdoor, and switchgear and controls installed in containerized facilities. Also included with battery systems is installation of micro grid controller to integrate all generating plants so they are operated automatically. The Energy Storage Systems will grid operational support, maintain good power quality and reliability, and allow higher percentage of integration from intermittent renewable energy sources. Battery systems will also store and transfer energy generated during sunlight hours of day for use at night or in non sunlight hours.

Included with BESS is supply and installation of a computer program to integrate new BESS with existing diesel, hydro, wind generators and solar systems so that all generators and BESS are automatically controlled to avoid any instability of grid frequency, voltage and reactive power.

BESS systems will be built and installed in Fiaga and Salelologa power stations and connected directly to the main medium voltage switchgear inside power stations. Areas surrounding the **Fiaga** (Upolu) site have been mainly used for plantations and cattle farms and there is no settlement inside and in the vicinity of the 97 acres land where power station is built. **Salelologa** (Savaii) power station site where BESS will be built is registered under EPC. No households will need to be resettled for both sites.

No compensation will be required for this project and there are no other significant cultural sites or conservation areas that will be affected by the development.

Mitigation measures have been proposed to address and avoid any interference with neighboring properties, environmental pollutions, and to ensure that all constructions are carried out using best practices.

Latest update - Bid closed on December 21st 2016. Tender evaluation committee reviewed and submitted evaluation report and recommendation to ADB, EPC Board, Tenders Board, and Cabinet for approval. ADB approved recommendation of contract award and issued No Objection Letter. EPC, Tender Board and Cabinet approved award of contract to Solar City Corporation for the amount of USD\$8.844million. PUMA of MNRE reviewed and approved the Development Consent. Contractor has started design and manufacture of batteries and all equipment.

TAELEFAGA HYDRO STATION 3rd GENERATOR

Feasibility Study with the IEE for installation of the “3rd 2MW generator at Taelefaga Hydro Station” was approved by ADB. The Taelefaga hydro power station is located near the coast and discharges water to Fagaloa bay. Water to generate power at Taelefaga hydro station is fed from Afulilo Dam, with 10 million cubic meters capacity and dam elevation at 317 meters above sea level. The 4MW hydro station was commissioned in 1992. EPC included in construction of power station a spare turbine bay, space, tailrace and penstock connection for a third generator. EPC is planning to install a third 2MW generator at the spare bay to increase station capacity to 6MW; thus fully utilize spill water during the wet season/heavy rain. This will minimize spilling of water from dam if full from heavy rain and flooding from surrounding areas.

Areas surrounding the Afulilo Dam site have been mainly used for plantations and cattle farms. There is no settlement in the vicinity of the Afulilo reservoir and no households will need to be resettled. Areas near the Taelefaga hydro station are mixed use (plantations, residential buildings, cattle farm and a Primary school). There are no other significant cultural sites or conservation areas that will be affected by the development. Other mitigation measures have been proposed to avoid any interference with neighboring properties and to ensure that all constructions are carried out using best practices.



Space, penstock and other utilities for the 3rd generator at Taelefaga power station.

Latest update - Bid re-advertised and closed on 26th June 2017. Evaluation Committee will assess all bids submitted and will advise Samoa Tenders Board of its decision.

FIAGA WATER PUMPING SYSTEM

System under gone testing and commissioning. System is complete and operational. There are 4 booster pumping station each with water tank, pump, pipework, and electrical control panel. Land is leased from Samoa Land Corporation to site the 4 pump stations. Lease agreement is already finalized and signed.

SMART METER

Smart meter subproject will eliminate human errors in manual reading of meters, and replace the old Vending System and commercial meters. Bills will read remotely at the end of the month and disburse electronically. The subproject will also assist EPC in implementing improvements on power supply to consumers.

Latest update - Bid was advertised and closed on 16th May 2017. Evaluation Report has been submitted ADB for review and approval before it submitted to EPC Board, Tender Board and Cabinet for final approval.

VAIPŪ HYDRO PUMP SYSTEM

Being the backbone of hydro stations in the country, the Afulilo dam/reservoir needs extra water to increase generation and increase power generated from Taelefaga hydro, in order to minimize using of fossil fuels and increases its production from renewable energy sources. This is why EPC is planning to pump from Vaipū Catchment, Afulilo downstream channels and over flow from the dam back to the reservoir.

Latest update - EPC is finalizing the Feasibility study with IEE of the proposed project and will submit to ADB for comments and approval.

LALOMAUGA HYDRO REHABILITATION

This 3.75MW hydro station was damaged during the Cyclone Evan in 2012. EPC carried out minor repairs of plant and penstock in 2013 in order to get the plant back in operation and was producing up to 30% of its normal capacity. Permanent repair has not been done; Rehabilitation project will repair all damages to facilities of the plant. Fixing of the 2 head race, head pond, screens, generator control system, valves, and the 3km penstock is next on the rehabilitation.

Latest update - EPC is finalizing the Feasibility study with IEE of Lalomauga and will submit to ADB for comments and approval.

SAFETY, SOCIAL and RE-SETTLEMENT

There were no issues affecting the Environment, Safety, Health, Land and the Community.

GRIEVANCE REDNESS MECHANISM

EPC have enquiry boxes at each office centre and outlet where the public can submit complains or suggestions. There is also the assistance from the customer complaint center which opens 24 hours whereby the public is advised to contact if ever complaints arising regarding any aspect of electricity services and projects especially during afterhours and busy business hours. The call center numbers 65500, 65502 and 65503 have also been advertised on media and EPC website for public awareness.

PMU has a Grievance Redress Mechanism to address complaints regarding PSEP projects as well as EPC Projects. All records of complaints and responses are kept and will be documented continually for future reference especially with regards to lawsuit cases. The mechanism is equipped with a step-by-step procedure to receive, register and track all grievances concerning environment and social issues. A grievance form has been created and will be used to address complaints for each PMU projects. Complaints can be filed in person, via email or via a letter to EPC.

The Communication and Public Relations Team with the Social and Land Acquisition Officer are responsible for receiving complaints, facilitating, tracking and reporting on grievances and their resolutions.

CONCLUSIONS

POWER SECTOR EXPANSION PROJECT SIX (6) MONTHLY SAFEGUARD REPORT January 1 to June 30, 2017		
No	Subproject	Issues
1	Battery Energy Storage System	ADB reviewed and approved the Feasibility Study with the IEE. Bid advertised and closed in December 2016. Evaluation committee assessed all bids submitted and advised Samoa Tenders Board. Solar City Corporation won with a total amount of USD\$8.844million. PUMA of MNRE are reviewing the Development Consent, and PUMA Board will issue its decision for the development
2	Smart Meters	Bid advertised and closed on 01 st May 2017. Evaluation committee is assessing all bids submitted and will advise Samoa Tenders Board.
3	Fiaga Water Pumping System	System under gone testing and commissioning. System is complete and operational. Land lease agreement is already finalized and signed between EPC and Samoa Land Corporation.
4	Taelefaga 3 rd hydro generator and upgrade of 33kv tieline	Bid re-advertised and closed on 26 th June 2017. Evaluation Committee will assess all bids submitted and will advise Samoa Tenders Board.
5	Vaipu Hydro Pump System	EPC finalized the Feasibility study and submitted to ADB. Subproject is on hold due to insufficient funds.
6	Lalomauga Hydro Rehabilitation	EPC finalized the Feasibility study and submitted to ADB. Subproject is on hold due to insufficient funds.

ESU concludes that **NO** Health, Safety, Social and Environmental Issue has been witnessed or occurred during this period.

PMU will continue to oversee and highly prioritize safeguard issues on all PSEP projects and ensure fully compliance with all National and environmental laws.



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