

Lessons and Experiences learnt from the Vanuatu study tour on RE Best Practices

A Home-Base Workshop Report

1. Background

The Solomon Islands Government (SIG) is one of the participating PICs in the PIGGAREP and one of the activities in its 2009 Work Plan and Budget is a – Bio-fuel Development and Expansion project.

The SIG through the Energy Division of the Ministry of Mines, Energy and Rural Electrification, in its Policy statement has outlined that it would venture into developing and expanding the bio-fuel sector as an alternative to providing electricity to the population of the Solomon Islands.

Coconut Oil (CNO) is the bio-fuel that would be dealt with in this activity. The goal of the project is to establish that CNO is technically and economically viable to be used for power generation in the Solomon Islands (both in rural and urban areas). As such PIGGAREP and SIG (Energy Division) would jointly outsource a task to do a feasibility study on the sustainability of a supply chain of copra both at Nangu and Lata, on Santa Cruz Island, in one of the remote provinces in the eastern Solomons – Temotu Province.

It is the SIG's Government's plan to look for alternative, cheaper and environmentally friendly form of fuel to be use as partial substitute for imported fossil fuel.

Alongside other activities in this project, there is a need to build the capacity of the Energy Division and other energy stakeholders to be equipped with the technical and socio-economic experiences and similar settings in other nearby Pacific Island Countries like Vanuatu, to be able to initiate, develop and expand on bio-fuel and other RET like wind power, in the Solomon Islands. As such one (1) Energy Officers and two(2) Bio-fuel Taskforce members (CEMA and SIEA) made a study tour to Vanuatu to see the UNELCO set up in Port Vila, a community operated B100 fuelled generator at Port Olry (Santo), Sarakata Hydropower Plant (Santo) and UNELCO's Wind Farm at Devil's point near Port Vila.

2. Introduction

As part of the reporting approach, it is a requirement that experiences and lessons learnt from the study tour must be share with the energy stakeholders in the Solomon Islands. This approach is to make sure that whatever experiences and lesson learnt from the study tour are relayed to the relevant stakeholders so that the drafting of the SI-Bio-fuel Policies

and Strategies can be drafted in such a way that whatever lessons learnt from this study tour can be incorporated taking into account the Solomon Islands settings. Other RET such as the wind farm and the hydropower plant experiences and lesson learnt can have some bearing on the planned action plans on the medium and long term strategies of the energy sector.

A one day workshop was held at the Energy Division Conference room on the 8th of September 2009. This workshop is mainly to share experience and lessons learnt from the study tour. The one day workshop was attended by the following stakeholders and some senior energy officers:

	Participant Name	Institution	Designation
1.	John Korinihona	Energy Division	Director of Energy
2.	Martin Sam	Solomon Islands Electricity Authority (SIEA)	General Manager (Sup)
3.	John Kofela	Solomon Islands Electricity Authority (SIEA)	Outstation Engineer
4.	Dadily Posala	Solomon Islands Electricity Authority (SIEA)	Generation Engineer
5	John Vollrath	Solomon Tropical Products Limited (STPL)	Managing Director
6	Colin Dyer	Kokonut Pacific (SI) Ltd	Managing Director
7	Barnabas Bago	Ministry of Development Planning and Aid Coordination	Senior Planning Officer
8	Charles Maclean	Ministry of Mines, Energy and Rural Electrification (MMERE)	Human Resources Manager (MMERE)
9	Clement Wale	Ministry of Mines, Energy and Rural Electrification (MMERE)	Chief Accountant (MMERE)
10	Gabriel Aimaea	Ministry of Mines, Energy and Rural Electrification (MMERE)	Principal Energy Officer (Renewable)
11	Toswell Kaua	Ministry of Mines, Energy and Rural Electrification (MMERE)	Principal Energy Officer (Economics)
12	Ms. Rosemary Apa	Environment Division, Ministry of Environment, Conservation and meteorology (MECM)	Senior Environment Officer
13	Richard Bapo	Ministry of Mines, Energy and Rural Electrification (MMERE)	Senior Energy Officer (Mechanical – Biofuel Unit)
14	Fred Conning	Pidgin Holdings Limited	Project Officer

Workshop Program

Activities	Resources Person/Chair	Time	Notes
Workshop Opening	Director of Energy	9:00 am	
Session One: UNELCO CNO Plant - Tagabe	Nixon Kua	9:15 am – 9:00 am	Power point Presentation
Morning Tea Break			
Session Two: Port Olry Experiences in Rural Community Electrification	Nixon Kua	10:30 am – 11:00 am	Power point Presentation
Plenary Session 1: Discussion on the Session 1 & 2 Presentation	Nixon Kua	11:00 am – 12:00 noon	Discussion
Lunch Break			
Session 3: Sarakata Hydropower and UNELCO Wind Farm	Nixon Kua	1:00 pm – 2:00 pm	Power point Presentation
Session 4: Other RET (Gasifier and Biogas)	Nixon Kua	2:00 pm – 3:00 pm	Power point Presentation
Afternoon Tea Break			
Plenary Session 2: Discussion on Lessons Learnt from the Presentation	Nixon Kua	3:30 pm – 4:30 pm	Get each participant to give what was learnt from the presentation with particular attention to the UNELCO Plant in Vila and the Port Olry Set up
Workshop Closure 4:30 pm			

3. Sessions

Most of the Workshop participant arrived at around 8:45 am and a few arrive 10 - 15 minutes after the opening by the Director.

The Director welcomed all participants and reiterated the need for working together amongst all energy stakeholders to achieve the goal of the action plan of the government in term of facilitating safe, affordable, reliable and environmentally sustainable energy for all in the Solomon Islands.

The Deputy Director spelt out the objective of the workshop in relation to the recent Vanuatu study tour. The objectives as given in the workshop are:

- Share experiences learnt from Vanuatu
- To see where we are in term of RE and what are the lessons learnt from this study tour and ways forward in addressing Energy security and Climate Change mitigation

3.1. UNELCO – Tagabe CNO Mill and Powerhouse

Session one started around 9:15 am, with the introduction of the topic to be presented, which is the UNELCO CNO Mill and the powerhouse. Refer to Annex 1 for the power point presentation for that session.

The central focus on the presentation was the supply chain of copra and the processing of the CNO at Tagabe CNO Plant. Other aspects such as the power generation using B30 were presented and discussed in brief.

During the Plenary Session, lessons learnt and some aspects of the CNO mill that were discussed are as follows:

- Dosing pump used to blend the CNO and Diesel before injection into the CC, since UNELCO is unsuccessful with the blend (mixing)
- Pre-heating the CNO to 40 degrees Celsius before injection. (In Lata – SIEA trial in 2004, it was 70°C)
- UNELCO Gensets have the similar capacity as the ones at SIEA’s Lungga Powerhouse. Whatever the trial test and overhauling of the 2 sets at Tagabe would be a good lesson for SIEA for its 4.2 MW Wartsilas generators at Lungga Power house
- Overhaul needed in the engine at Tagabe so that we can learn more of any problems that might arise.

- Need standard testing equipments for quality Biofuel (for H₂O content, not > 3% FFA)
- Private Public Partnership is important for a successful Bio-fuel program
- Quality controls/checks are important along the supply chain of copra to CNO consumption
- IPP connected to the grid should be encouraged with required appropriate regulations and policy.
- The socio-economics of the operation in the Solomon Islands of any RE project (especially bio-fuel, need to be looked at very well for sustainability)
- Diversification of energy sources is required. Coconut is readily available in SI and 50% of the coconuts in the islands are not picked.
- Interesting to note that UNELCO had some control over the suppliers of copra to its CNO plant
- Bio-fuel is a promising RE for power generation, as an alternative to diesel.

3.2. Port Olry Community Power Generation Set up

This session started about 10:37 am, with an introduction of the presentation. Participants were urged to take note of the following:

- The supply chain of copra for the operation of the generator
- The institutional set-up
- Relate the set-up to Solomon Communities in various rural areas in the country to see if such approach can work or not. What modifications can be done from the lesson learnt from the Port Olry set-up

Major stakeholders like SIEA and the business sectors were present, and the discussion centered around the above points with the main focus on the Independent Power Producer (IPP) and the sustainability of the Port Olry set-up. The IPP has a bearing from the Electricity Act of the Solomon Islands. In the Electricity Act, SIEA is the only public entity that can produce and sell power to the public.

During the Plenary session, discussion by participants on the points stated above went on and the following point and lesson learnt from the Port Olry set-up were noted by the participants:

- 45 kVA is suitable for 200 - 300 household community set-ups
- No spin-offs to generate the economic sustainability of the community set-up apart from the Butchery, fisheries and a cooperative store
- The set-up is being spear-headed by the priest (Community Champion). How can we adopt this set-up to work in our local communities in the SI, seeing that some of the communities seem not to have respect for chiefs, elder and church leaders?
- Would the tariff applied be able to sustain the operation of the power generation in the community?
- Management of funds for the operation of the set-up? How would this be managed?
- Sustainability of the operation needs good management. Good control over the operation of the plants.
- In any community set-up a commercial arm must be set-up to keep the operation of the set-up going
- Distribution of electricity would be cheaper (in terms of the reticulation costs) in large communities with high concentration of houses.
- Vanuatu was acknowledged to be well ahead of SI in RE (especially in bio-fuel development).
- What would be the required parameters that we need to use to determine the price of CNO?
- Environmental issues must be observed when producing and consuming CNO
- Food Security issues must be addressed.
- Re-establishment of coconut plantation since most of the fruit-bearing trees are now reaching their unproductive stage
- Overhaul needed in the engine at Port Olry engine so that we can learn more of any problems that might arise.
- To further investigate any problems that might arise, the engine at Port Olry need to run for 24 hour for at least a month

It was noted from the participant that they learnt something from the presentation and made some suggestions, and pose some questions that needs to be further investigated.

3.3. Sarakata Hydropower and UNELCO Wind Farm

The general set up of the Sarakata Hydropower scheme was presented. The presentation lasted for only 12 minutes, followed by a 10 minutes discussion on its sustainability and operation.

It was presented that the hydropower was built by the Japanese Government. The first phase was the construction of the dam, tail-race and 600 kW turbines which supplies most of Santo town. The second phase is the up grading of the tail-race and the installation of another 600 kW turbine.

The UNELCO Wind Farm set up was also presented and discussed. The discussion was centered around the viability, affordability and reliability of any medium and large set ups in the country. It was noted that the participants are keen to see such development be put as priority in the government's policy.

The following points were raised with regards to the Hydropower and the Wind Farm:

- The Government through the Energy Division needs to seriously look at developing more mini-hydropower and in the rural areas to address the need for the “bottom up” policy of the government. This to boost the development of rural economic centers in the countries. This can curb urban crimes and other anti-social behaviors associated with urban migration of unemployed youths.
- Likewise, more studies should be done by the Division in collaboration with other stakeholder ministries, to look seriously at settling up wind farms in appropriate location in the country that is accessible to users (urban or rural)

3.4. Other RET (Gasifier and Biogas)

Onesua is one of the government high schools in Vanuatu, located on the northern cost of Efate island. The school use to get it's electricity from a gasifier installed in 2003.

The presentation lasted about 10 minutes and the participant note with interest the general principle in the operation of the gasifier. Also in the same presentation, the biogas at Epau village was presented. It was a brief presentation which lasted less than 10 minutes. The generation operation and set up was presented, which draw some interest from some participant who have been having ideas in making use of some of their family and community piggeries back in the rural areas.

A 10 minutes discussion followed with some questioning and answering.

The following points were raise during the short discussion:

- The Government through the Ministry of Agriculture and the Energy Division should look at piloting a project on using cattle and especially pig manure for producing gas, as a mean for cooking in the rural communities.
- There was one such set-up in one of the SDA secondary schools in Honiara (Betikama College), but it was not operational due to some technical problems and there were no record about the project to see what actually when wrong. It was never been re-visited
- Gasifier is never being tried in the Solomon. The participants were really keen to see any pilot project as such and requested if the Energy Division could work on initiating any pilot project

4. Summary

The one day workshop went on well, with the presentation and especially the discussions. It was interesting to note that the participant were very much interest in the RE development in Vanuatu, especially the use of coconut oil for power generation at UNELCO and moreover at Port Olry.

Some of the things that fascinated the participants were the general set up of the Port Olry community and the management. The church as a central pillar of the management was noted with interest from the participants and they try to reflect back to the rural communities in the Solomon Islands. It was discussed that such set up in Port Olry might work in certain communities in the Solomon Islands, where there is a strong community bond and leadership. Not only that but a community that give higher regard to the church, it's priests and pastors.

The gasifier and the biogas project at Efate Island drew some attention which the participants requested the Energy Division and other relevant stakeholder Ministries to look into doing a piloting project, using the piggery projects under the Rural Development Funds from the Ministry of Rural Development and the Ministry of Agriculture and Livestock.

Photo

These are a couple of photographs taken during the workshop:



Picture 1: John Vollrath of Solomon Tropical Products Ltd. making a point on how his company get their copra from the provinces, in comparison to UNELCO



Picture 2: Martin Sam (General Manager of SIEA), making a point on the Solomon Islands Electricity Act, relating to grid connection using RE