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IN TUVALU

Contemporary Used Oil Audits

Presented to:

Secretariat of the Pacific Regional Environment
Programme
(SPREP)

RAPPORT



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Executive Summary

This report presents the findings of a contemporary used oil audit in Tuvalu. In-country visits, interviews and data collection that support this report were conducted by Golder in July 2014.

The key findings of this report are:

- TUVALU comprises 9 widely-dispersed islands, located 1,100 km from Fiji. The estimated resident population is 10,000 of whom 50% live on Funafuti.
- Climate change presents major challenges for Tuvalu
- Total imports of lubricating and hydraulic oil are estimated to 6,500 L per year.
- 2 major stakeholders: Tuvalu Electricity Corporation who is the main consumer and Pacific Energy SWP Ltd companies who imports lubricating and hydraulic oil.
- The total volume of waste oil to be potentially collected should be 3,500 L per year.
- Waste Oil Management strategy could be a mix of the following options :
 - Collecting, and storing the waste oil in an appropriate site is the first priority.
 - Exporting the waste oil out of the country seems to be not economically viable, but negotiation with shipping companies has to be done.
 - Evaluate the feasibility of having only one recycling company for shipping all different wastes (Scrap, glass, batteries, waste oil, etc). It should be economic if the contract is signed with a sole company.
 - Evaluate the feasibility of using some appropriate technologies (to filter and recycle the waste oil) in the country.



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1.0 INTRODUCTION

1.1 Purpose

The Secretariat of the Pacific Regional Environment Programme (SPREP) retained Golder Associates New Caledonia Sarl (Golder) to perform contemporary used oil audits in Cook Islands, Kiribati, Nauru, Solomon Islands, Tonga, and Tuvalu to establish volumes of lubricating, hydraulic and transmissions oils imported into each country and the volume of used oil produced, and stored or otherwise disposed of.

The major sources of used oil are power generation and motor vehicles. Used oil contains high levels of heavy metals and some amounts of more toxic chemicals.

Oil spilled on the ground contaminates the soil and leaches into the water system, polluting water courses, groundwater, lagoons and the ocean.

This report presents the findings of a contemporary used oil audit in Tuvalu.

In-country visits, interviews and data collection that support this report were conducted by Golder in July 2014.

1.2 Scope of Services

The scope of services for this consisted of the following tasks:

- Establish and document national oil import/generation volumes and rates for the last 3 years ideally 2011, 2012 and 2013;
- Establish national used oil production rates for the last 3 years ideally 2011, 2012 and 2013;
- Oil Audit Balance for the last 3 years ideally 2011, 2012 and 2013;
- Document and summarize existing national used oil management procedures; and
- Document and summarize existing national used oil management instruments.



1.3 Interviews/Consultation

The Solid Waste Authority of Tuvalu (SWAT) was the primary point of contact and they suggested the most appropriate people to talk to. The Table 1 lists the people interviewed or consulted visited, during the in-Country Visit (19 to 22 July).

Table 1: Stakeholders interviewed / consulted (July 2014)

Organisation	Name
<u>Public institutions</u>	
Ministry of Foreign Affairs, Trade, Tourism, Environment and Labour	Mataio Tekinene (Director of Environment) <ul style="list-style-type: none">• Susana Telekau (SWAT)• Miriam Uluiviti (SWAT)
Ministry of Finance and Economic Planning	Semu Malona (Central Statistics Division) Tuilagi Teii (Customs Department)
<u>Power Authority</u>	
Tuvalu Electricity Corporation (TEC)	Malafu Lotolua
<u>Oil company</u>	
Pacific Energy South West Pacific LTd (PESWP Ltd)	Leota Sio Patiale (Manager)
<u>Main garage</u>	
	Denis Safoka (Deputy Manager)



1.4 General facts about Tuvalu

Tuvalu comprises 9 widely-dispersed islands, located 1,100 km from Fiji. The atoll of Funafuti is the centre of government and the hub for air and sea transport.

The estimated resident population of Tuvalu in 2012 was 9,860 of whom 48% live on Funafuti (4,500), followed by Vaitupu (1,591).

Climate change presents major challenges for Tuvalu since low-lying areas of land will be rapidly lost as sea levels rise.



Figure 1: Tuvalu Map

The main sources of income are: fisheries licensing; Licensing the “.tv” internet domain name; and international Aid.



2.0 TUVALU LUBE OIL IMPORTS

2.1 National Statistics

Import data was obtained from the Ministry of Finances and Economic Planning, Statistics & Customs.

Table 2: Tuvalu Import of Lubricating oil – 2009 to Sep. 2013

Year	Description	Quantity (Liters)
2010	Lubricating oils	13 953
2011	Lubricating oils	8 189
2012	Lubricating oils	6 363
2013	Lubricating oils	5 048

The annual average import of lubricating oils, based on the total imports over four years should be 8,400 liters.

Over the last three years, the annual average import is reduced to 6,500 liters.

2.2 Main Import Stakeholders

There are one major consumer (Power Station) and only one oil company in charge of fuel products import, operating in Tuvalu.

2.2.1 Tuvalu Electricity Corporation (TEC)

The TEC is a 100% state-owned commercial utility in charge of providing a cost-effective and reliable electricity to all the islands of Tuvalu.

The generation capacity of TEC is about 2.4 MW of capacity on the capital Funafuti, 260 kW of capacity on Vaitapu and from 160-180 kW on the other islands. Niulakita has only solar power.

The current usage of Lube Oil at Fongafale power station is around 200 L per month. The annual average should be 2,400 L.



Figure 2: Fogafale Power Station

In 2012, the Government launched the “Enetise Tutumau”, a master plan for Renewable Electricity and Energy Efficiency in Tuvalu. The plan aims to generate electricity with 100% renewable energy by 2020.

2.2.2 Pacific Energy South West Pacific Ltd (PESW Ltd)

Fuel products are currently imported by PESW Ltd (subsidiary of Pacific Petroleum Company).

They import lube oil using shipping containers, with the oil in drums and retail containers. There is no obligation to collect or export any waste oil.

The total volume given by the Management is consistent with the national figures.

So far in 2014 (Jan to June), the total import is 4,000 L.

The price of lube oil (15W40) is AUD \$5.00/L



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Figure 3: Pacific Energy Storage

The official annual average imports of lubricating oils, based on the total imports over the last years is about 6,500 liters. TEC (power generation) is using 37% of this volume.

Pacific Energy SW Ltd is the sole importer in Tuvalu.



3.0 TUVALU WASTE OIL RECOVERY

It is generally recognised that only about 50% of the oil sold will end up as waste. Considering the consistency of the national import figures, the total volume of waste oil to be collected should be about 3,500 L per year.

3.1 Power Station

The major source of used oil is the power generation. TEC generates (8 x 200 L drums) 1,600 L of waste oil per year for Fongafale. The waste oil is stored on site in a 5,000 L tank prior to being transferred to drums.

It has been indicated that other islands should generate 1 to 2 drums/year.

Until late in 2012, TEC had an incinerator on site and burnt the waste oil. Now the incinerator is over and TEC indicated that the Tank is half full of waste oil. So TEC would have a stockpile of 2,500 L accumulated in the tank.



Figure 4: TEC Power Station: Waste Oil Tank –and Incinerator

TEC is waiting a solution or opportunity to export its waste oil out of their site and out of the country.



3.2 Pacific Energy SWP Ltd

In 2014, the new manager started collecting the waste oil stored on site (currently 60 drums) and sent to Fiji when their PE's ship is empty). The last trip, PE SWP sent 20 drums of 200L and they expect to send 2 more lots with the same quantity in October and December.



Figure 5: Waste Oil Management at PE SWP Ltd Site



3.3 Motor Vehicles

During the interviews, the quick and large increase in road vehicles, especially in motorbikes on Funafuti has been indicated.



Figure 6: Lot of motorbikes on Funafuti sealed road

We visited the main motor vehicle workshop for servicing, repairs and maintenance in Funafuti. The management indicated that all the waste oil is well collected in small package but it is commonly used for lubricating the chain of motorbikes. So there is no stockpile and no needs to take back to Pacific Energy.



Figure 7: One of the main motor vehicle workshop on Funafuti



Lube oil is expensive so a new tax to cover the cost of waste oil management (collection and storage) will be not acceptable.



Figure 8: Collection and packaging to be distributed

3.4 Government Workshop

We have also visited the main workshop for servicing, repairs and maintenance of government vehicles in Funafuti.



Figure 9: Public services workshop



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In this workshop, there were some special containers for waste oil.

But different hazardous wastes: batteries, and old transformers were mixed with equipment.

It is not an appropriate way to manage the waste.



Figure 10: Public Services Workshop and Hazardous Waste

3.5 Waste Landfill

The landfill is currently unusable, as it is too small and not designed for hazardous wastes associated with vehicle disposal.



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Figure 11: Waste Landfill on Funafuti

So there is no available public site to store waste oil.



3.6 Transport services

The shipping costs to Fiji, is approximately US \$5,500 for a 20 Feet Container.

Two ships are regularly transiting from Suva: the *MV Nei Matangare* and the *MV Southern Moana*, supplying several countries: Tuvalu, Kiribati, PNG, Wallis and Futuna, New Caledonia , from Fiji.

A negotiation should start with importers and PE SWP Ltd to organise a return freight using empty containers, within a regional solution.

3.7 Tuvalu options for using waste oil

- A centralized and well-managed location has to be identified for waste oil and why not other hazardous waste.
- It will not possible to cover 100% of the cost of shipping the waste oil.
- Considering the isolation of Tuvalu in the Pacific, the collection of “economic” waste such as scrap metals, packaging, plastic, glass, batteries and transformers, etc. and waste oil by a recycling company would be a more rentable option.

4.0 REGULATION DRIVERS

There is no specific legislation on waste oil management but a real need for coordination in implementing or reinforcing a waste oil management programme.

The **Solid** Waste Authority of Tuvalu (SWAT) should be the focal point that will take the responsibility along with the Energy Office developing energy policy.

The “**Enetise Tutumau**” **2012-2020** should be one of the main drivers. The plan aims to generate electricity with 100% renewable energy by 2020.

Tuvalu has also ratified the Waigani **International hazardous waste convention**.

- The Waigani Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region.



5.0 DISCUSSION

- There is at least 3,500 L per year of potentially recoverable Oil in Tuvalu.
- Collecting, and storing the waste oil in an appropriate site is the first priority.
- Exporting the waste oil out of the country seems to be not economically viable, but negotiations with shipping companies need to start.
- Exporting all the “economic” wastes by a sole recycling company could be interesting.

Some appropriate technologies (to filter and recycle the waste oil) whose feasibility has been demonstrated in equivalent conditions should be evaluated for Tuvalu.

Considering its vulnerability to international fuel products increases, that could develop Tuvalu’s autonomy.



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