



31/09/2014

IN KIRIBATI

Contemporary Used Oil Audits

Presented to:

Secretariat of the Pacific Regional Environment
Programme
(SPREP)

RAPPORT



Project Number: 147303001-006-R-revA

Distribution:

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Author's remarks

I want to especially thank Mr Farran Redfern and Ms Baraam Taomarie from the Ministry of Environment, Lands and Agriculture Development, Environment and Conservation Division.

They were very helpful and proactive by organizing meetings and appointments with all the stakeholders for this project. Kiribati is also a country where the environmental issues and especially waste management are very well communicated and accepted.

Executive Summary

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

- Kiribati comprises 33 widely-dispersed islands in three groups, the Gilbert Group, the Phoenix Group and the Line Islands. The atoll of Tarawa is the centre of government and the hub for air and sea transport.
- The estimated resident population of Kiribati is about 105,000 of whom 55% live on Tarawa.
- Climate change presents major challenges for Kiribati
- Total imports of lubricating oil are estimated to 14,000 L per year.
- 2 major stakeholders: Public Utilities Corporation who is the main consumer and KOIL Ltd who imports lubricating and hydraulic oil.
- The total volume of waste oil to be potentially collected should be 10 to 12,000 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 India is the cheaper option.
 - 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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PRÉLIMINAIRE



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 Kiribati.

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
- Document and summarize existing national used oil management instruments



1.3 Interviews/Consultation

The Ministry of Environment, Lands and Agriculture Development, Environment and Conservation Division 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 (29 June to 3rd July).

Table 1: Stakeholders interviewed / consulted (29 June to 3rd July 2014)

Organisation	Name
<i>Public institutions</i>	
Ministry of Environment, Lands and Agriculture Development	Farran Redfern (Director of Environment and Conservation Division) Baraam Taomarie
Ministry of Finance and Economic Development	Tekaie Ititaake (Controller of Customs) Etekia Betero (Customs Officer)
Kiribati Port Authority	Capt. Korua Tamuera, Port Master
<i>Power Authority</i>	
Public Utilities Corporation (PUB)	Malafu Lotolua
<i>Oil company</i>	
Kiribati Oil Company Limited	Kararaua Temarebu Supervisor Operations & Customer Services
Kiribati Oil Company Limited (Kiritimati Branch)	Teauoki Tonako (Branch Manager)
<i>Main garages</i>	
Eita Gas station	Airam
Neways	Taateraka Ieremia
Tarawa motors	Taabora
Betio Gas Station	Irata Mwakeran



1.4 General facts about Kiribati

Kiribati consists of three islands groups, the Gilbert Group, the phoenix Group and the Line Islands, spread over an ocean area of 4,200 km east to west and 2,000 km north to south. All of the islands are atolls or low-lying coral islands with the exception of Banaba.

Kiribati comprises 33 widely-dispersed islands. The atoll of Tarawa is the centre of government and the hub for air and sea transport.

The estimated resident population of Kiribati is about 105,000 of whom 55% live on Tarawa.

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

PRÉLIMINAIRE



CONTEMPORARY USED OIL AUDIT IN KIRIBATI

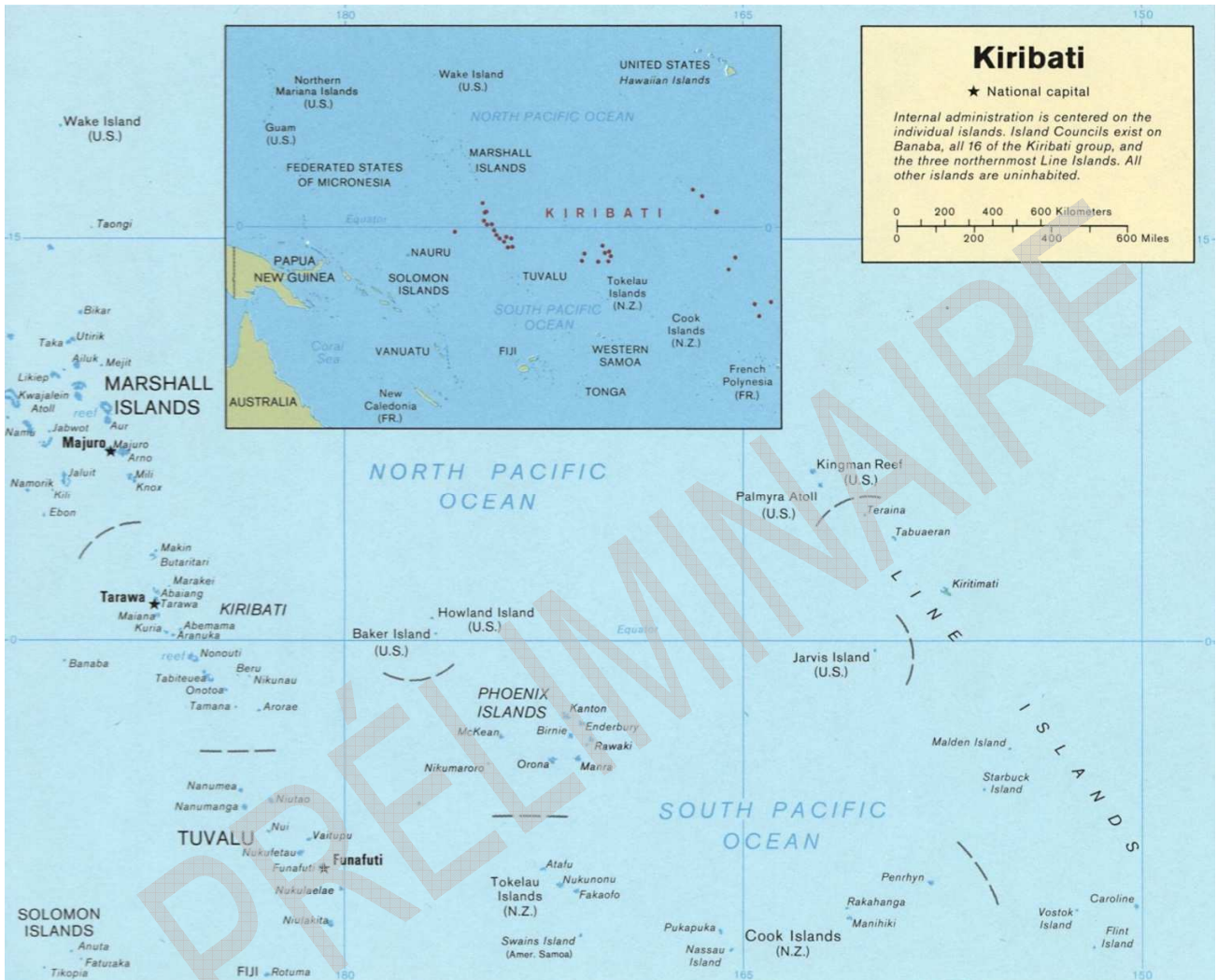


Figure 1: Kiribati Map

The main sources of income are fisheries licensing, export of fish and crustaceans, oil seeds and vegetable fats and oils that generate around 70 per cent of merchandise export revenues.

2.0 KIRIBATI LUBE OIL IMPORTS

2.1 National Statistics

Import data was obtained from the South Pacific Commission (Statistics Division) and Ministry of Finance and Economic Development.

The customs “code 27101190” has been used to find the total amount of imports.



CONTEMPORARY USED OIL AUDIT IN KIRIBATI

Table 2: Kiribati Import of “code 27101190” – 2011 to 2013 (SPC)

Year	Quantity (Liters)
2011	175 030
2012	185 855
2013 (Jan to Sep)	139 238

The annual average import of oils, based on these figures over three years is around 180,000 liters, which seems too large to represent the real quantity of lube oil.

Note that these figures also integrate annual import of 2 stroke motor oil, mainly using by motorboats and motorcycles in Kiribati (2 stroke motor oil is recommended for use in premix application carbureted engines such as outboards). But 2 stroke motor oil is fully burnt in the combustion process.

Data below have been directly collected at Kiribati Customs office:

Table 3: Kiribati Import of Lubricating oil – 2011 to 2013 (Kiribati Customs data)

Year	Quantity (Liters)
2009	16 697
2010	16 638
2011	9 523
2012	5 787
2013 (Jan to Sep)	15 220

The annual average import of lube oils, based on these customs imports over Five years is around 14 000 liters / year and over the last three years 12 000 liters.

These quantities seem to be too low regarding the population. It will be conservative to increase these figures per 50%.

We will consider a volume of 18 to 21 000 liters per year.



2.2 Main Import Stakeholders

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

2.2.1 Public Utilities Corporation (PUB)

PUB is a 100% state-owned body responsible for provision of power, water supply and sewage services for South Tarawa.

The annual production is 17.5 GWh with two power stations in Tarawa: 4.2 MW Power station in Bekenibeu and 1.25 MW Power station in Betio.

The current usage of lube oil at the old Betio power station is around 600 L per month. The annual average is around 7,200 L.



Figure 2: PUB Betio Power Station (generator)



Figure 3: PUB Betio Power Station (Storage of Lube oil)

2.2.2 Kiribati Oil Company Limited (Koil)

The Kiribati Oil Company Limited, known as KOIL, was established in 1986 under the Company's Ordinance Cap 10A and incorporated as Company No.21.

KOIL is a government-owned corporation involved in the distribution of petroleum products throughout Kiribati.

KOIL imports petroleum fuels to its two main terminals, one is situated in Betio and the other is in Kiritimati Island with an annual import volume of around 23 million liters. Supply to the outer islands is in 200 L and 50L drums.

Prices have been given by KOIL for the following items:

- Diesel for Power Generator – AUD \$1.27 a liter
- And for Lube oil :
 - 200L – AUD \$1532.25
 - 20L – AUD \$132.60
 - 5L – AUD \$ 35.00
 - 4L – AUD \$22.75
 - 1L – AUD \$7.50



Figure 4: KOIL Ltd Betio Storage for Lube Oil



3.0 KIRIBATI WASTE OIL RECOVERY

It is generally recognised that only about 50% of the oil sold will end up as waste. Considering the non-consistency of the national import figures, a figure of 21 000 L has been chosen. So the total volume of waste oil to be collected should be about 11 500 L per year.

However, these figures are quite consistent with the data provided by KOIL.

In the last few years, KOIL registered the waste oil generated by its customers. Customers take back their waste oil at Betio KOIL storage.

3.1 Power Station PUB

The major source of used oil is the power generation.

The table below shows the waste oil generated by PUB (all power stations).

Table 4: Waste oil from PUB to KOIL storage – 2010 to Jan 2013 (KOIL data)

Date of recovery	Customer	Litres	Total
29/04/2010	PUB	10x200	2000
14/10/2010	PUB	6x200	1200
31/01/2011	PUB	14x200	2800
13/05/2011	PUB	8x200	1600
12/08/2012	PUB	10x200	2000
19/01/2013	PUB	11x200	2200

During three years (2010 to Jan 2013) well registered at KOIL Ltd, PUB has generated around 4 000 L of waste oil per year.



3.2 Motor Vehicles

Main motor vehicle workshops for servicing, repairs and maintenance have been visited in Tarawa. The management indicated that all the waste oil is well collected and take back to KOIL Betio storage area.

- Neways



Figure 5: Neways Service station



CONTEMPORARY USED OIL AUDIT IN KIRIBATI

Neways is one of the large service station in Tarawa. Neways has sent 6x200 L of waste oil back to Koil in 2012. They have now 3 drums filled with waste oil. They have been advised to not mix different products with waste oil and to avoid water coming in the drums. A proper storage area will be dedicated for waste oil drums.

➤ Betio



Figure 6: Betio Service station



Betio service station has a good storage for waste oil. They also said that they used to ship wet cell batteries and waste oils to Australia through Te Kaoki Maange Recycling Facility and Kiribati Oil Company, but the cost was high for private service station.

Other service stations as Eita station have been also visited. All the managers said that Lube oil is already expensive so a new tax to cover the cost of waste oil management (collection and storage) will be not acceptable.

3.3 KOIL Ltd

Kiribati Oil Company is the only company which accepts to store and export the waste oil from their own customers.

The KOIL management team was very helpful and gave the data per customer since 2011. (Appendix 1)

- At the end of 2010, they received 17 400 L of waste oil from their customers.
- At the end of 2011, 22 060 L of waste oil
- At the end of 2012, 6 800 L of waste oil
- At the end of 2013, 4 900 L of waste oil
- At the end of June 2014, 7 200 L of waste oil have been brought at KOIL.

As we can see at the list of customers (Appendix 1), maritime companies are important generators of waste oil.

Until 2011, KOIL exported the Waste Oil to East Wind Ltd, Suva, Fiji. The total cost involved for a container of 80 drums (16,000L) was AUD\$14,000 including the freight (\$2,500), handling, Kiribati and Fijian taxes, etc all paid by KOIL Ltd.

In 2012 and 2013, KOIL decided to investigate a new option to INDIA, Kolkata. Koil is responsible to pay the freight while the buyer is buying the waste oil (AUD \$ 3,000 per container which contains 80 drums x 200L) so the final expense paid by KOIL Ltd is \$3,500 per container.

KOIL has exported to Fiji (East wind) 16,000 L on 25/08/2011.

KOIL has exported to India 16,000 L on 21/10/2012 and 32,000L on 20/07/2013.

In July 2014, there was around 8,000 L of waste oil, well stored at KOIL site.



CONTEMPORARY USED OIL AUDIT IN KIRIBATI



Figure 7: Waste Oil Management at Betio KOIL Ltd Site



3.4 Waste Landfill

The landfill is not designed for hazardous wastes.

3.5 Kiribati options for using waste oil

- A centralized and well-managed location has to be identified for waste oil and why not other hazardous wastes. Or the system at KOIL site should be upgraded to receive all the waste oil generated in the country and not only their own customers.
- INDIA option is the most cost effective as they pay for the waste oil.
- As Kiribati is isolated in the Pacific, the collection of “economic” wastes as scrap metals, packaging, plastic, glass, batteries and transformers, etc and waste oil by a sole recycling company should be more rentable.
- There were and there are a number of national initiatives or project over the last few years focused on improving waste management particularly on South Tarawa. The Kaoki Maange has been a great success. This recycling system provides for the return of certain materials for money/ Aluminium cans—20c for 5 cans; Lead-acid battery—\$5 per battery.

It will be easier to use this existing system to collect waste oil.

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 **Kiribati Environment Act** 1999 has been reviewed and amended in 2007. The amended Environment Act provides a framework on environmental protection including from waste and pollution however it does not address the management of hazardous waste.

The Environment and Conservation Division should be the focal point that will take the responsibility to coordinate the waste oil management programme.

Kiribati has also ratified two **International hazardous waste conventions**: Basel and Waigani.

- There are some obligations for the countries, members of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal :
 - Minimise generation of hazardous waste;
 - Ensure adequate disposal facilities are available;



- Control and reduce international movements of hazardous waste;
 - Ensure environmentally sound management of wastes; and
 - Prevent and punish illegal traffic.
- 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 around 10 to 12,000 L of waste oil generated per year in Kiribati.
- Collecting, and storing the waste oil in an appropriate site is the first priority, by upgrading the KOIL site of building a new storage area.
- Exporting the waste oil out of the country seems to be cheaper to India.
- 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 Kiribati.



Page signatures

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ANNEXE A

Listing of KOIL customers (Waste oil)

PRÉLIMINAIRE



CONTEMPORARY USED OIL AUDIT IN KIRIBATI

Waste Oil					
Date	Customers	Ltrs			
24/03/2010	Police Maritime	4x200	800		
27/4/2010	Utirerei	2x200	400		
29/04/2010	PUB	10x200	2000		
06/03/2010	Wishing Star	1x200	200		
06/08/2010	Nei Naa	2x200	400		
06/11/2010	CPPL Moamoa	14x200	2800		
08/04/2010	FMRD Tetiakawa	3x200	600		
27/08/2010	CPPL Moamoa	36x200	7200		
14/10/2010	PUB	6x200	1200		
17/11/2010	CPPL Moamoa	9x200	1800	2010	17400
31/01/2011	PUB	14x200	2800		
02/02/2011	CPPL Moamoa	7x200	1400		
03/10/2011	CPPL Moamoa	11x200	2200		
03/11/2011	CPPL Moamoa	4x200	800		
18/04/2011	Takoronga Gas	2x200	400		
11/05/2011	Bereteiti	5x200	1000		
11/05/2011	Bereteiti	13x20	260		
13/05/2011	PUB	8x200	1600		
17/05/2011	Police Maritime	6x200	1200		
21/05/2011	Bureeti	14x200	2800		
06/01/2011	Domino	17x200	3400		
06/02/2011	Domino	7x200	1400		
08/04/2011	Neways	6x200	1200		
23/12/2011	CPPL Moamoa	8x200	1600	2011	22060
20/01/2012	MV Tekeraoi	1x200	200		
16/02/2012	Copra Mill	2x200	400		
27/02/2012	MV Tekeraoi	1x200	200		
03/02/2012	MV Nakoraoi	1x200	200		
03/05/2012	Utirerei	2x200	400		
03/08/2012	Utirerei	2x200	400		
11/07/2012	LMTA	1x200	200		
12/08/2012	PUB	10x200	2000		
12/10/2012	Utirerei	4x200	800		
19/12/2012	KSSL	6x200	1200		
24/12/2012	Tiaon	4x200	800	2012	6800
19/01/2013	PUB	11x200	2200		
24/04/2013	Bwetua	3x200	600		
26/05/2013	PVU	5x200	1000		
18/12/2013	Cenpac Marine	1x200	200		
20/12/2013	KPA	2x200	400		
25/12/2013	TTT	2x50	100		
30/12/2013	Dan	2x200	400	2013	4900
28/02/2014	Utirerei	2x200	400		
20/03/2014	CPPL	12x200	2400		
20/03/2014	Police Maritime	12x200	2400		
19/06/2014	Kaekeman Ship	8x200	1600		
20/06/2014	MV Nakoraoi	1x200	200		
21/06/2014	Toromita Str	1x200	200	2014	7200

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