Agence Française de Développement

AFD Regional Initiative for Solid Waste Management in the Pacific Region, Feasibility Study (Phase II, Component 2)

Final Completion Report
Feasibility Study
(Phase II, Component 2: Scoping Studies)

April 2009

GHD

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ACRONYMS

AUD	Australian dollar
AusAID	Australian Agency for International Development
EPR	Extended Producer Responsibility
EUR	Euro
JICA	Japanese International Cooperation Agency
KPI	Key Performance Indicator
MOU	Memorandum of Understanding
PIC	Pacific Island Country
PICT	Pacific Island Country and Territory
POPs	Persistent Organic Pollutants
PNG	Papua New Guinea
PPE	Personal Protective Equipment
SPREP	Secretariat of the Pacific Regional Environment Programme

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Mr Dominique Rojat	Agence Française de Développement	1	Electronic

GHD Pty Ltd ABN 39 008 488 373

Head Office Address

180 Lonsdale Street, Melbourne 3000
Victoria, Australia

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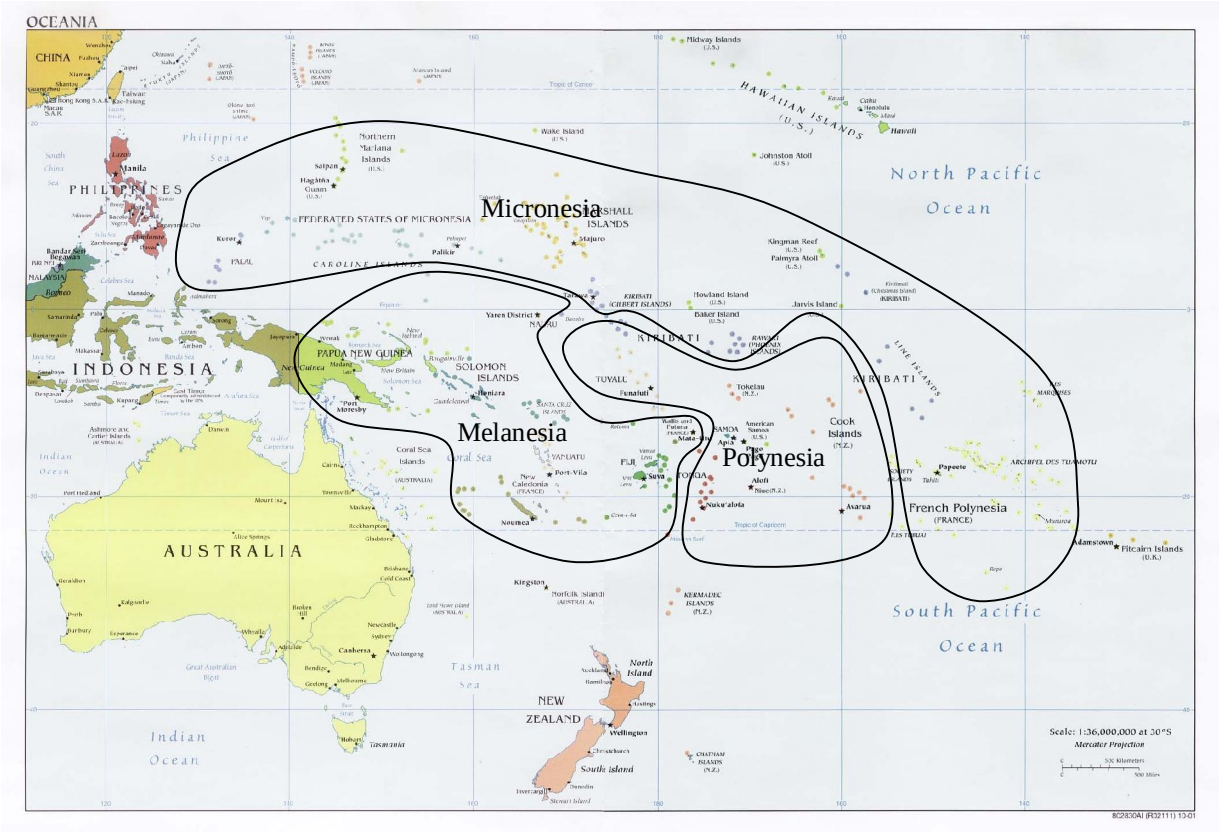
FOREWORD

The authors express their sincere thanks to all Pacific Island Country and Territory (PICT) governments, nongovernmental (NGO) representatives and other interested stakeholders for their continued support, enthusiasm and commitment to the outcomes of this study.

1 MAP

The following Map of the study area shows the Pacific Island Countries and Territories included under the study in three broad subregions: Micronesia, Melanesia and Polynesia.



2 EXECUTIVE SUMMARY

The following report contains the results of the scoping studies for three subregional activities investigated under the AFD Regional Initiative for Solid Waste Management in the Pacific Region, Feasibility Study (Component 2, Phase II). The scoping studies included: a school chemicals and disused pesticides/POPs activity in Melanesia; a scrap metal activity in Micronesia; and an oil reuse activity in Polynesia and Melanesia. Each scoping study includes a detailed activity design, cost estimate and proposed methodology and schedule for implementation.

The estimated cost of the school chemicals and disused pesticides/POPs activity is AUD532,530 (EUR278,988), over an implementation period of 12 months. The estimated cost of the waste oil reuse activity is AUD794,200 (EUR416,075) over an implementation period of 24 months. The estimated cost of the scrap metal recycling activity is AUD1,397,200 (EUR731,982) over 36 months.

Each of the scoped activities addresses legacy issues. The waste oil and scrap metal activities also have design measures built in to provide long term self-funding options. However, it is likely some PICTs will require further assistance in specific areas. As such, it is proposed that the fund designed under Component 3, will serve the needs of PICTs to address these issues in the future.

Strong synergies and potential opportunities for co-finance have been identified with AusAID, under Global Environment Facility-Pacific Alliance for Sustainability (GEF-PAS), and under the Xth European Development Fund (EDF). It is therefore recommended that AFD share the scoped activities and this report with donors and potential partners as soon as possible, in an effort to identify co-financing opportunities. It is also recommended that this report be shared with other donors active in the Pacific region including JICA, NZAID and the Asian Development Bank.

To continue the momentum developed over this 5-month study, it is proposed that work begin on at least one of the proposed activities in 2009.

The waste oil reuse activity would serve to address an urgent and ubiquitous hazardous waste challenge, is comparatively low cost, and has the potential to showcase the AFD commitment widely through the Melanesian and Polynesian PICTs. Further, it can be easily extended to interested PICTs in Micronesia. It is therefore recommended that this activity be implemented in 2009.

The school chemicals/POPs project is also ready for implementation, and is cost-effective. This activity may attract co-financing through the GEF-PAS funding, and given the tight timeframe for GEF-PAS approval, this needs to be progressed as a matter of urgency. Further AusAID have also expressed interest in building on the outcomes of the POPs in PICs Project and therefore it is recommended that AFD approach AusAID formally to establish the agencies interest in co-financing this activity. Also, the Xth EDF has earmarked some funds for waste management in the French territories and synergies with this funding opportunity should be explored.

The financial feasibility scrap metal/bulky waste activity has been significantly impacted by the 2008 commodity price collapse. It is expected that the value of scrap steel will rise again to 2007 levels, but this may take several years. It is therefore recommended that this activity be scheduled later (i.e. 2010 or 2011) to allow scrap prices to recover as much as possible.

This would also allow the politics of the global recession to pass, making it politically feasible for PICTs to introduce import taxes on new vehicles.

In light of budget made available by AFD in 2009, it is recommended that AFD share this study with interested regional donors and development partners in an effort to identify co-finance opportunities. While it is recommended that the scrap metal activity be postponed for one-two years, to allow commodity prices to recover, the waste oil reuse and school chemicals and disused pesticides/POPs activities, represent important and cost effective activities and should therefore be implemented as early as possible.

3 INTRODUCTION

This report contains the results of the scoping studies for three subregional activities investigated under the AFD Regional Initiative for Solid Waste Management in the Pacific Region, Feasibility Study (Component 2, Phase II). The scoping studies included:

- A school chemicals and disused pesticides/Persistent Organic Pollutants (POPs) activity in Melanesia;
- A scrap metal activity in Micronesia; and
- An oil reuse activity in Polynesia and Melanesia.

Each scoping study includes a detailed activity design, cost estimate and proposed methodology and schedule for implementation. Cost estimates for each proposed activity are estimated in Australian dollars (AUD). The total cost of each activity has also been provided in Euros (EUR), using an exchange rate of 0.523892EUR for each 1.0AUD (XE.Com, 9 January, 2009). The scoping studies are followed by an analysis of potential funding sources, an assessment of the economic and environmental dimension of strategic approaches, and recommendations.

4 SCHOOL CHEMICALS AND DISUSED PESTICIDES/POPS SCOPING STUDY

4.1 Activity Preparation Steps

4.1.1 Activity Origin

The issues of disused pesticides / POPs and school laboratory chemicals were prioritised by Melanesia in Phase I of this feasibility study. As the methodologies to address pesticides and school laboratory chemicals are similar and in some areas duplicative, they have been considered together, under a single proposed subregional approach.

Disused pesticides were collected from the Solomon Islands, Vanuatu and Fiji in the POPs in Pacific Island Countries Project from 2003-2008. Nauru was included in the POPs in PICs Project, however, the identified PCBs were not collected, as the transformers were sold to a Chinese scrap metal recycler, prior to the arrival of the Clean Up Team. New Caledonia, Wallis and Futuna, French Polynesia and Papua New Guinea (PNG) were not included in this project and are understood to have significant volumes of disused stockpiled chemicals. During the implementation of the POPs in PICs Project, the need to dispose of disused school laboratory chemicals was raised as an ongoing challenge by most PICs. In several PICs metal-based pesticides were identified, but not collected due to the limitations of the nominated treatment facility.

POPs are being phased out under the Stockholm Convention on POPs. There are no appropriate disposal methods of POPs or other intractable pesticides in PICTs. They require export and destruction at appropriate facilities. Whilst not regulated under specific international conventions for phase out, school chemicals are often hazardous and transport of waste school chemicals is regulated under the Basel and Waigani Conventions. Whilst some of them can be neutralised, stabilised and landfilled, many of them cannot be stabilised and therefore require further treatment, or export.

A Melanesian subregional initiative on pesticides and school chemicals could replicate the methodology of POPs in PICs project and incorporate the lessons learned during that project.

The methodology has six broad stages. The first involves visiting Pacific Island Countries and Territories (PICTs), consulting governments and making inventories of disused pesticides and school chemicals, as well as neutralising, stabilising and disposing of used chemicals. This has been piloted in Kiribati (Ashton and McRae-Williams, 2008). In the second stage, inventories are analysed, along with logistical matters, and clean up repackaging needs. Required clean up and repackaging equipment is subsequently shipped to PICTs. The third stage involves clean up and repackaging of disused pesticides and school chemicals requiring export, and stabilisation of other school chemicals. The fourth stage involves permitting under the Basel or Waigani Conventions. The fifth stage involves shipping to an appropriate destruction or treatment facility, and the sixth is the treatment and destruction stage. A seventh stage could also be incorporated to set up secure and safe storage for future waste chemicals.

This study focuses on a design to implement the first stage of the initiative, and to develop a project design for the following six stages. Due to the low level of available data in PICTs on these issues, it is proposed that the stage be completed as an independent activity, followed by the following six stages, as the second activity. This report outlines the first activity and includes provision for a project design for the six subsequent activities.

4.1.2 Study team and method

This activity was undertaken by Melanie Ashton, Team Leader and POPs and Institutional Specialist. Mark Ricketts provided technical review.

The methodology for further scoping of a Melanesian disused pesticides and school laboratories chemicals project included the following:

- consultation with PICTs on initial inventories of POPs and school laboratory chemicals;
- consultation with the Australian Government and with POPs in PICs stakeholders on their preparedness to continue applying the “good neighbour” policy towards PICTs;
- identification of stakeholders;
- a visit to New Caledonia to further scope the issues of school chemicals and disused pesticides from 4-8 November, 2008; and
- a preliminary cost estimate for the proposed activity.

4.2 Analysis

4.2.1 Development context

The countries and territories classified as “Melanesia” for the purposes of this feasibility study (PNG; Solomon Islands; Vanuatu; Fiji; New Caledonia; Wallis and Futuna; and Nauru) face varying development contexts and include PICTs ethnically Melanesian, Polynesian and Micronesian. The group includes both countries and French territories, who are primarily Anglophone and Francophone, respectively. Development levels vary from low levels in PNG, to emerging industrial nations like Fiji, and New Caledonia with its high level of development in Noumea, but low level in rural areas.

Fiji is a subregional transport hub, has a large population and has an emerging industrial base. PNG, while being the dominant landmass and population centre, has had difficulty establishing a coherent national waste structure and most initiatives remain at the local government level. The Solomon Islands has suffered from several episodes of tension. In

Vanuatu the outer islands also have very little development and many exist subsistently. The main island, Efate, is developed, but the Environment Department is struggling to address solid and hazardous waste management, due to lack of funding to employ staff. In Nauru waste management programmes are implemented by the Nauru Rehabilitation Corporation but have been challenged by ongoing economic issues.

New Caledonia and Wallis and Futuna have different development histories to the other PICTs with high levels of development in the population centres. Many rural areas however, have low levels of development. New Caledonia and Wallis and Futuna are accustomed to grant funding, and unaccustomed to being including in regional or sub-regional assistance activities, involving PICTs.

PICTs were grouped into this region by transport and shipping routes. PNG, Solomon Islands, Vanuatu, Fiji, New Caledonia, Wallis and Futuna are linked by services to and from Australia. PNG, Solomon Islands, Vanuatu, New Caledonia and Wallis and Futuna are also connected to New Zealand. Vanuatu, Fiji, PNG, New Caledonia are also connected by services running to and from Taiwan, Korea and Japan. Wallis and Futuna was included in Melanesia due to its direct connection to New Caledonia.

4.2.2 Situation analysis

This activity deals with two issues, disused pesticides and school laboratory chemicals as the methodologies to deal with these are similar.

Disused Pesticides and POPs: Regarding pesticides, the POPs in PICs Project collected disused pesticides from PICs including the Solomon Islands, Vanuatu, Fiji and Nauru in from 2004-2006 and shipped these chemicals to Australia for destruction. Since 2006, minor amounts of further disused chemicals have been identified, during the process of inventory-making as part of the development of National Implementation Plans under the Stockholm Convention. In some PICs metal-based pesticides were also identified during POPs in PICs, however due to the limitations of the Australian destruction facility, BCD Technologies, these were not collected. Therefore small volumes remain in some PICs.

PNG has completed a partial inventory. PNG was not included in the POPs in PICs Project, however anecdotal evidence indicates there are significant stockpiles of DDT. According to discussions with PNG Department of Environment staff, at least 60 tonnes of PCB and 40 tonne of DDT have been identified. Consultations with the Australian Agency for International Development (AusAID) indicate that AusAID are funding a study to develop a cost estimate for a full inventory of POPs, and an eventual clean up. It would therefore be duplicative, and is not considered necessary to address disused pesticides and POPs chemicals in PNG.

New Caledonia indicated in the Phase I hazardous and waste of commercial value survey, that development of disused pesticides inventories is underway. However, upon visiting New Caledonia, it was made evident that an inventory has not been developed, but that an individual has been employed through the Chambre d'Agriculture to undertake this task, and was soon to commence work. Very little information was available on volumes or types of disused chemicals in New Caledonia. Representatives from the Chambre d'Agriculture explained that endosulfan continues to be used, mainly by poor farmers in rural areas, because it is highly effective. Anecdotal evidence from interviews with various stakeholders in New Caledonia indicated a very low level of awareness of the Stockholm Convention, and the European Union ban on endosulfan. The representative of the Chambre d'Agriculture indicated that community awareness of the dangers of chemicals was increasing in urban

centres and that there was at least one nongovernmental organisation (NGO) lobbying the government and industry on chemicals issues.

Similarly in Wallis and Futuna, environment department staff indicated they had some information on disused pesticides, however at the time of publication, this information had not been provided.

School laboratory chemicals: School chemicals were considered by Melanesian PICTs as a high priority for assistance, but there is scarce information on the volumes and types of chemicals. Unlike POPs and disused pesticides, inventories have not been completed by any PICTs.

Awareness of school laboratory chemicals as an environmental issue has been raised by education departments concerned about disposal options. In PNG, Fiji, Vanuatu and the Solomon Islands the education department has requested assistance from the environment department.

In New Caledonia, although it was indicated on the Phase I survey that an inventory of school laboratory chemicals was underway, further information received on the field visit indicated that the inventory will be undertaken in 2009. Wallis and Futuna have some records of school chemicals, but are attempting to gather further data. At the date of publication these had not been provided to the study team.

The field visit to New Caledonia, email consultation with participating PICTs and review of relevant reports on similar studies (Ashton and McRae-Williams, 2008) indicated that as well school laboratory chemicals, PICTs often have other amounts of waste chemicals in the veterinary department and hospitals. Ashton and McRae-Williams (2008) indicate that these waste laboratory chemicals are similar composition to school laboratory chemicals and therefore pose a comparable risk to island ecosystems.

4.3 Strategy selection

Further scoping of disused pesticides and POPs chemicals in the Melanesian region, indicated that significant work remains to be completed on the development of inventories. While Nauru, Vanuatu and Fiji have inventories, or partial inventories, developed under the Stockholm Convention, these PICTs also benefited from the POPs in PICs Project and therefore have few remaining chemicals. The Solomon Islands also benefited from the POPs in PICs Project, however, since this time no work has been completed on POPs, as it is yet to commence work on its NIP.

Although it is estimated there are large volumes of disused pesticides in New Caledonia and Wallis and Futuna, there is insufficient information on volume or type of chemicals, to build a full project design for disposal and destruction and an associated cost estimate.

In light of the above it is necessary to complete an inventory of disused pesticides and POPs. The proposed activity includes training of PICT environment staff in the assessment of chemicals stores, the use of personal protective equipment (PPE), safe storage of chemicals, and the development of chemical inventories.

In New Caledonia, this should include work in the three provinces (North, South and the Loyalty Islands). In Wallis and Futuna this would include work on both islands. In the Solomon Islands, Vanuatu and Fiji, work will concentrate on making an inventory of any chemicals identified since the completion of POPs in PICs. Further consultation will be undertaken with governments of the presence of chemicals on the outer islands. Specific

attention will be paid to those outer islands and island groups not visited on POPs in PICs, to ensure any outstanding chemicals are included on in an inventory.

Regarding school chemicals, while all PICTs in the region rated this as a high priority for assistance, there is little quantitative information on volumes, or characterisation of waste chemicals.

Therefore an activity to develop inventories of those school laboratory chemicals not suitable for on-island disposal is proposed. This would also include training for teachers and laboratory technicians, as well as environment staff, in the process of neutralisation, stabilisation and disposal of chemicals suitable for disposal on-island, as well as neutralisation, stabilisation and disposal of chemicals in one nominated urban centre. This would likely include Port Vila (Vanuatu), Port Moresby (PNG), Honiara (Solomon Islands), Noumea (New Caledonia), Mata-Utu (Wallis and Futuna) and Nauru, but will be confirmed during consultation with partner governments. Disused school chemicals have also been reported in outer islands. To ensure that these chemicals are also addressed, consultation with PICTs will involve consultation with environment and education staff on outer islands, with requests for staff to list disused school chemicals. The project team will review this list, and if the chemicals are low in volume and safe to transport, will provide containers, and request the chemicals be brought to the nominated urban centre for disposal or storage. Provision is also proposed for funding of travel for environment and/or education staff from outer islands to attend the neutralisation, stabilisation, and disposal training.

It is proposed that the aforementioned activities on disused pesticides/POPs chemicals and school laboratory chemicals be undertaken together as a joint activity. The proposed activity would include a short field visit by a representative of the project team to each PICT to consult PICTs on the activity and assist in informing the wider community. The activity would also include a second more extensive field trip by the project team to PICTs to: develop chemical inventories; neutralise, stabilise and dispose of chemicals; train staff in neutralisation, stabilisation and disposal of chemicals, safe storage of chemicals, development of chemical inventories and the use of PPE.

Finally, the activity would include a detailed project design and cost estimate for the collection, repackaging, transport and disposal/destruction of POPs and school chemicals. Due to geographical proximity, it is envisaged that the project team would investigate disposal options in Australia, including, but not limited to, BCD Technologies based in Brisbane, Australia, and the disposer of the chemicals collected under POPs in PICs. Some school chemicals, including non-volatile base metals, mixed with organics, will require alternative disposal options and the design should also take these into account. Options include Geocycle and Chemsal, both organisations treat non-volatile base metals mixed with organics using Dolocrete in a system where volatile metal complexes are heavily diluted with other stabilised material and disposed of to controlled landfills.

An alternative implementation method would be to bring partner PICT representatives to one PICT for group training. While this would likely be cost effective, it would not provide an opportunity to complete inventories of each PICT, nor to dispose of school chemicals in each PICT. It would also significantly diminish the number of PICT representatives participating, therefore decreasing effectiveness of the activity. As such, this alternative implementation method is not considered suitable.

4.3.1 AFD potential to contribute

The proposed activity includes a strong training component, placed in an action-learning context. This complements Component 1 of the AFD Solid Waste Management Initiative, which focuses on building PICT capacity in policy development.

AFD can also add significant value to this subregional activity, through the inclusion of New Caledonia and Wallis and Futuna. These territories are excluded from funding from other donors. However, challenges faced by these territories in the issue of chemicals management are shared by PICs, especially in the rural areas and therefore AFD's support of a subregional programme including the French territories is significant.

4.3.2 Lessons Learned

Lessons learned from the POPs in PICs Project include the need to develop an approximate inventory in order to accurately cost chemicals collection programme. In the POPs in PICs Project, this was undertaken by the development of an initial inventory by an individual consultant who travelled to each of the participating countries. Lessons learned from the assistance provided to the Government of Kiribati on school chemicals (Ashton and McRae-Williams, 2008), indicated that over 60% of school chemicals stored in PICT laboratory stores can be stabilised and/or neutralised and/or stabilised on-island. In many cases school chemicals were found to be unlabelled and therefore require sampling, or further field testing, to identify their composition.

4.4 The school chemicals and disused pesticides/POPs activity

The proposed subregional activity builds on the successful POPs in PICs model, shown to be cost-effective when implemented regionally, or subregionally. It addresses the urgent situation of disused pesticides that are at risk of leaching into the environment, as well as adding to the work of POPs in PICs by expanding the scope into school laboratory chemicals, some of which can be treated in-country and others which require disposal outside of the Pacific.

4.4.1 Goal and purpose

The goal of the activity is to contribute to the sound management of chemicals in the Melanesian subregion.

The purpose of the activity is to stabilise, neutralise and dispose of school chemicals and to safely store and inventorise those school laboratory chemicals and pesticides and POPs chemicals that cannot be disposed of on-island, to enable disposal under subsequent activities.

The activity involves a single component. The component includes extensive consultation with PICT governments and a visit by a representative of the project team to each participating PICT to explain the activity, raise the profile and to help ensure information is disseminated to the wider community through local media. The component also includes visiting each of the Melanesian PICTs and working with environment departments and education departments and completing an inventory of disused pesticides and school laboratory chemicals. Training will be undertaken with chemistry teachers, laboratory technicians and environment department staff on the neutralisation and stabilisation of school chemicals. Those school laboratory chemicals that can be neutralised and/or stabilised will be treated and disposed of. The project team will also review waste chemicals in hospitals and veterinary departments and add these to inventory and, where possible, neutralise, stabilise and dispose of them. The component also involves estimating the cost

and designing a POPs in PICs style chemical repackaging, collection, shipping and treatment.

4.4.2 Component structure

The objective of the activity component is to stabilise, neutralise and dispose of school chemicals and to safely store and inventorise those school laboratory chemicals and pesticides and POPs chemicals that cannot be disposed of on-island, and to design a programme for and estimate the costs of a disposal activity.

In each of the PICTs the activity will deliver the following outputs:

1. Consultation with PICTs on the location, type and volume of school laboratory chemicals and disused pesticides/POPs;
2. An inventory of disused pesticides/POPs chemicals;
3. Training of environment staff in inventory development;
4. Training of environment staff in the safe storage and management of chemicals;
5. An inventory of waste school laboratory chemicals (from nominated urban centre) and similar laboratory chemicals in hospital and veterinary laboratories;
6. Training for environment staff, laboratory technicians and science teachers in the stabilisation and neutralisation of school chemicals (from nominated urban centre) and safe arrangement of laboratory stores;
7. Stabilisation, neutralisation and disposal of school chemicals (from nominated urban centre);
8. Provision of personal protective equipment (PPE) training and kits to environment and education departments, ensuring personnel are equipped to safely deal with future spills or accidents;
9. Design and estimated cost of subregional repackaging, collection, shipping and disposal activity for POPs and school chemicals; and
10. Review of PICT school science chemistry program and associated required chemicals. Advice on those chemicals which can be neutralised, stabilised and disposed of on-island, and those which require an off-island solution.

4.4.3 Responsibilities for outputs

It is envisaged that the project team would be responsible for the delivery of Outputs 1-10. PICT governments environment and education departments will be involved in the delivery of Outputs 1-5, therefore it is recommended the AFD agree memoranda of understanding or letters of agreement with participating PICs, and suitable equivalent with territories.

4.4.4 Resources and Costs

The following provides a summary of the estimated activity costs and resources:

- **Cost estimates for delivery of outputs 1 – 10:** AUD331,500. This is based on a two-expert team travelling together to each of the PICTs for an average of 11 days per PICT, inclusive of travel days. This is inclusive of per diem and accommodation costs.
- **Project Management Reporting:** AUD52,800. This is based on the proposed reporting load of three mission reports.

- **Reimbursable costs:** AUD100,000. This includes car hire costs, airfares and procurement of minor field equipment including cement for stabilisation, and procurement of PPE kits of environment and education departments in each PICT.

A contingency of 10% has been allowed and the total estimated cost for the delivery of the activity is AUD532,530. Based on the exchange rate as of 11 January 2009, this is €278,988. The proposed resources and costs are fully elaborated in Annex A.

4.4.5 Suggested Timing

The activity is designed to be implemented over a 12 month period. During the first three months of the activity project team will focus on consultation with the six participating PICTs. During the consultation period one team member will visit each participating PICT to promote the activity, assist PICTs in preparing and assist in promoting the activity to the wider community through local media. The field missions will be undertaken in the following four months and the project design undertaken over the final four months. The project design will be submitted in month 11, allowing one month for AFD review, and then the final submission at the end of month 12. This is elaborated in the implementation schedule included as Annex A.

4.5 Monitoring and management strategies

4.5.1 Measurement of Performance

Performance monitoring will primarily be the responsibility of the project team, and ultimately AFD.

The activity goal is to contribute to the sound management of chemicals in the Melanesian subregion. This will be measured by the project team after each of the three field visits and reported in the mission report. Verification of this assessment will be AFD upon review of the mission report.

The activity purpose is to stabilise, neutralise and dispose of school chemicals and to safely store and make an inventory of those school laboratory chemicals and pesticides and POPs chemicals that cannot be disposed of on-island, to enable disposal under subsequent activities. This will be measured by the project team after each of the three field visits and reported in the mission report. Verification of this assessment will be made by AFD upon review of the mission report.

Regarding the individual outputs, these will also be measured by the project team. Input will be sought from PICT representatives through a training evaluation survey to be completed by all PICT representatives that receive training. The project team will report on these responses in their mission report and propose response measures to improve performance where necessary.

A logframe analysis is included as Annex A.

4.5.2 Reporting Requirements for the Activity

The following reports are proposed for the project team:

- **Consultation report:** This report will reflect the first three months work of the project team including consultation with PICT representatives, planning and scheduling of field missions.

- **Mission reports:** Three mission reports are proposed, one after each of the three field visits. These reports will outline the training, chemicals management and chemical storage activities completed in each PICT. The reports will also summarise the PICT evaluations and propose any improvements to the implementation of subsequent missions.
- **Project design document:** This document will lay out the proposed design and cost estimate for a repackaging, collection, shipping and disposal activity for POPs in the Melanesian subregion, as well as consultation with PICTs.
- **Activity completion report:** This report will be completed as the final task of the activity. It will summarise the activity outcomes and lessons learned.

Reporting responsibilities have not been allocated to PICT governments. However, PICTs will be invited to comment on the project team's reports.

4.5.3 Risk Management

The risk analysis was informed by interviews with stakeholders in New Caledonia, by consultation via email with other Melanesian PICTs, and the lessons learned from the POPs in PICs Project.

The following risks have been identified, as well as recommended strategies to mitigate them:

- **Insufficient PICT support and PICT governments not prepared for Activity Team visit:** To counter this, the Activity Team will spend significant time at the beginning of the activity establishing contact with PICT representatives and consulting them on the aims and process of the project. To increase the effectiveness of this, it is proposed that a member of the activity team (with strong experience in communications and consultation), visit each participating PICT to explain the nature of the activity and to assist in the publication of the activity to the wider community through local media.

  Further, to ensure the activity doesn't place undue strain on scarce PICT resources, the Activity Team will hire their own vehicles for transport to activity sites.

  Adequate time has also been built into the activity design to ensure that the Activity Team has flexibility to rearrange its work to fit in with PICT personnel availability. For example training in school chemicals is scheduled for one day, but five days has been allowed for work on stabilisation and neutralisation of school chemicals, meaning training can also be undertaken on those days.
- **Partner government cannot identify a disposal area for stabilised chemicals:** To mitigate this risk, the project team will address this issue, during the consultation period at the beginning of the activity. PICTs will be required to identify a landfill (outside of the inter-tidal zone) or alternative burial area for school chemicals stabilised in cement. Details of the designated area will be sent by PICTs to the project team prior to mobilisation.
- **Partner government cannot facilitate access to chemical stores:** To mitigate this risk, the project team will address this issue, during the consultation period at the beginning of the activity. PICTs will be required to identify chemicals stores, visit stores and attain access, and advise the project team of site details, prior to mobilisation of the field visit.

4.5.4 Sustainability and Sustainability Management

This activity is essentially a chemical disposal and data collecting exercise in order to develop a future subregional activity to repackage, collect, ship and destroy disused pesticides/POPs and school laboratory chemicals. To ensure the future subregional activity is sustainable, training of environment and education department staff, as well as advice on ordering only school laboratory chemicals that can be disposed of on-island, will be provided. Key sustainability elements of the design are:

- Training of environment and education department staff in school chemicals neutralisation stabilisation and disposal, meaning future disposal activities can be undertaken by PICTs.
- A review of school chemical programs will be undertaken and advice provided to the environment and education department on ordering chemicals for the school chemistry program that can be stabilised and neutralised on-island, and avoiding ordering chemicals that require off-island disposal.
- For pesticides, training will be provided in the development of inventories, meaning environment staff will have the capacity to maintain accurate records of disused chemicals and of storing chemicals securely.

4.5.5 Management Arrangements

The project team will be responsible for the following:

- Consultation with PICTs and identifying key individuals and agencies;
- Planning, scheduling and mobilising on three field missions over four countries and two territories;
- Reporting to AFD on activity progress and lessons learned;
- Training PICT representatives in the development of inventories, school laboratory storeroom management and stabilisation, neutralisation and disposal of school chemicals;
- Provision of PPE kit and training in the use of the kit;
- Neutralisation, stabilisation and disposal of waste chemicals in urban centre of the six PICTs; and
- Securing any unsafely stored chemicals.

PICT governments will be responsible for the following:

- Provision of access to school laboratory chemical and pesticide stores;
- Identifying suitable landfills for secure disposal of stabilised chemicals; and
- Making staff available for training.

4.5.6 Skills Required

Technical advisors working with the project team require the following skills:

- Experience working in PICTs;
- Expertise in dealing with POPs and other disused pesticides;
- Expertise in repackaging of chemicals;

- Expertise in undertaking consultation with PICTs;
- Strong communication skills and experience in interacting with PICTs media outlets;
- French and English language capabilities;
- Expertise in managing (ie neutralising, stabilising and disposing) of school laboratory chemicals;
- Expertise in identifying chemicals disposal options and existing relationships with disposal facility operators;
- Expertise in project design, scoping and costing; and
- Expertise in undertaking field training.

4.6 Feasibility, impacts and sustainability

The following section summarises the feasibility, likely benefits and the expected sustainability of the benefits.

4.6.1 Manageability of the Activity

The activity is designed to be undertaken over a twelve month period, with three field missions, each covering two or three PICTs. Each field mission has been allocated 20-30 days, based on an estimated requirement of 10 days per country. This is indicative only and more time may be required in some PICTs and less in others. Determination of this will be by the project team once consultation with participating PICTs has been completed.

There is a very low level of commercial risk to the project team in this activity as there is minimal procurement.

4.6.2 Technical Feasibility

This activity represents a preparation study, project design, and capacity building activity, for an extensive disused pesticides and school laboratory chemicals collection programme, as well as a chemical disposal program for school chemicals. Undertaking this activity over a short time frame (12 months) and with a streamlined team makes the activity more feasible in the following regards.

Firstly, the gathering of information to develop accurate inventories of disused chemicals and school laboratory chemicals, allows an accurate cost estimate and robust project design to be developed.

Secondly, this activity includes training for environment staff, to ensure that staff have the technical capacity to develop chemical inventories.

Thirdly, the activity includes the neutralisation, stabilisation and disposal of school laboratory chemicals, thereby mitigating the risk the chemicals pose to delicate PICT ecosystems.

Fourthly, training will be provided for environment and education staff in the procedures for neutralising, stabilising and disposing of school laboratory chemicals. It is assumed that by managing the legacy load of school chemicals and providing training to staff, that staff will undertake the neutralisation, stabilisation and disposal of the waste school chemicals generated in the future.

Fifthly, advice will be provided to PICTs on the types of chemicals that can be disposed of on-island and those that require off-island solutions. Chemicals ordered as part of school

chemical programmes will be reviewed in light of this, and the education department advised to order only chemicals suitable for on-island disposal in the future.

4.6.3 Financial and Economic Feasibility

The estimated cost of the 12 month activity is AUD532,530. The activity will facilitate the development of a detailed design for collection and repackaging, shipping and disposal of disused pesticides and school chemicals. It will also dispose of an estimated 4 tonne of waste school chemicals that are currently at risk of leaching into the environment, and train staff in techniques to allow safe disposal of future waste school laboratory chemicals. Compared to the cost of environmental clean up in response to a pesticide or school chemical spill, likely to be in the order of millions of Euros, the cost of this activity is considered to be minor.

4.6.4 Institutional Feasibility

This activity has been designed to have the least possible impact on scarce PICT resources, but to provide the maximum opportunity for training. Institutional capacity among the subregion is highly variable. For example in New Caledonia's southern province, environment staff are very well qualified with a high level of technical and administrative competence. Their adsorptive capacity is high and it is likely that the skills learned in the training will be transferred to others and practically applied. Nauru however, sits at the other end of the development spectrum, with environment staff operating in an extremely challenging environment, most with too many responsibilities and not enough resources. In Nauru, the disposal of waste school chemicals will successfully mitigate environmental risks, it is however less likely, that the skills learned in the training provided will be utilised. This assessment is based on the known development constraints and high levels of poverty in Nauru, and the consequential low adsorptive capacity. Despite this it is considered that participation in subregional initiatives is important for Nauru.

4.6.5 Impact on Poverty

Poor people often rely heavily on ecosystem services for their livelihoods and are disproportionately impacted by environmental degradation. The activity as planned will mitigate the risk of disused pesticides/POPs and school laboratory chemicals to the receiving environment, and therefore the indirect risk to the lives of the poor.

4.6.6 Social and Cultural Impact and Gender Implications

The likely overall impact of the activity on communities in the activity areas is likely to be positive, as the activity involves mitigating a risk to human health and the environment. While consultation on this activity has been limited to PICT governments and regional-level NGOs, lessons learned from the POPs in PICs Project indicate that communities in the Pacific are often fearful of chemicals stored in their communities and are therefore very agreeable to activities that aim to address these chemicals. In some communities, people concerned with the impact of chemicals on human health requested compensation for historical injuries, or deaths perceived to be related to chemical exposure. These expectations require careful management and clear and open information exchange. The POPs in PICs Project adopted a strategy of explaining clearly to communities that the aim of the Project was to prevent future harm and not to undertake a forensic investigation, and communities were accepting of this explanation.

The project team will need to ensure that PICT governments understand that this activity must also serve to provide opportunities for women and that women should be included in

training. This is not foreseen as an issue as Melanesian environment and education departments are heavily staffed with women.

4.6.7 Environmental Impact

Positive anticipated direct environmental impacts of the activity include:

- Mitigation of the risk of pesticides to environment through safe and secure storage; and
- Mitigation of risk of school chemicals to environment through neutralisation, stabilisation, disposal of school chemicals and safe storage of those that cannot be stabilised.

No negative environmental impacts are anticipated.

4.6.8 Factors in the Design to Promote Sustainability

The following features in the activity promote sustainability:

- Training in inventory development;
- Training in safe storage of pesticides;
- Training in stabilisation, neutralisation and disposal of school laboratory chemicals; and
- Advice on chemicals in school chemical programme that can be disposed on-island and those that require off-island solutions, enabling the education department to cease ordering such chemicals.

5 SCRAP METAL RECYCLING SCOPING STUDY

This section provides a feasibility analysis for the development of sub-regional activities to address waste scrap metal issues in the Micronesian Sub-region. The Micronesian Sub-region as defined in the AFD Regional Initiative for Solid Waste Management in the Pacific Region, Feasibility Study (Phase I, Component 2) report, includes the following PICTs: Kiribati; Marshall Islands; FSM; Palau; Northern Marianna Islands; Guam; and French Polynesia.

5.1 Activity Preparation Steps

5.1.1 Activity Origin

This feasibility study was developed using the findings of the Phase 1, Component 2, which identified the following outcomes in respect to waste scrap metal in Micronesia:

- That assistance with scrap metal recycling was ranked as a high priority for assistance by Micronesian PICTs.
- Most Micronesian PICTs' have been involved in some opportunistic scrap collection undertaken by the private sector, however several barriers to achieving full collection of legacy wastes were identified, including: the preference of the private sector for heavy gauge scrap and the tendency to leave light gauge scrap; and the cost of centralisation of waste, when vehicles are no longer rolling.
- Scrap metal legacy wastes volumes in Micronesia were estimated to be in the order of 13,000 tonne, plus at least 5 tonne of copper.

- Opportunities exist to advance scrap metal collection in Micronesia (and the Pacific) from opportunistic collection and export, to a sustainable deposit and refund system.
- Kiribati has recently implemented a legacy wreck collection programme, with some Japanese International Cooperation Agency (JICA) and the Secretariat of the Pacific Regional Environment Programme (SPREP) assistance which represents an excellent case study. The second phase of this initiative was aborted due to a global reduction in JICA funds. It was identified that the initiative in Kiribati represents a potential flagship project for the entire region, with potential for replication in other PICTs.

5.1.2 Study Team and Method

The study team was led by the Waste Business and Policy Specialist, Mark Ricketts, with guidance from Team Leader, POPs and Institutional Specialist, Melanie Ashton, and the Recycling and NGO Specialist, Petra Campbell.

To further investigate the feasibility of a sub-regional initiative to address scrap metal, the following methodology was undertaken:

- Review of the SPREP/JICA-assisted Kiribati, Phase 1 legacy wrecks collection programme;
- Review of commercial shipping routes and charter shipping options for the sub-region capable of shipping legacy waste;
- Identification of relevant stakeholders including private sector, community groups, environment departments and other stakeholders and their respective roles;
- In principle agreement of stakeholder roles;
- Financial feasibility analysis including review of recycled steel price fluctuations, shipping costs and opportunities for private sector involvement; and
- Detailed design of proposed two phase bulky waste collection and pilot deposit legislation activity.

As part of the feasibility investigations, Mr Ricketts visited Kiribati to meet with Government of Kiribati and companies involved with the legacy wreck collection programme. The visit was undertaken from 4 to 11 November 2008. The meeting minutes and outcomes of the visit are summarised in Annex B.

The feasibility investigations targeted two activities:

- Phase 1: A one off clean up of scrap metal in Micronesia, including a barge or other cost effective shipping option, and in-country teams to gather, cut and consolidate the metals. It was identified that this initial one off cleanup is a necessary precursor to a sustainable system throughout Micronesian PICTs (other than Kiribati).
- Phase 2: The implementation of a pilot programme in Kiribati for an ongoing system of recovery and recycling utilising a deposit / refund scheme to minimise collection costs, and to provide some additional funds for subsidising the system when necessary. Once piloted this system could be adopted by other PICTs.

5.2 Analysis

5.2.1 Situation Analysis

The legacy of past practices, increasing development, and the costs of recycling from the Pacific islands have led to a volume of existing bulky wastes causing negative environmental consequences. Those consequences include financial impacts on the tourism industry, consumption of landfill airspace and health effects from vermin harbourage, and possible ciguatera poisoning exacerbation when steel is dumped into lagoons.

Levels of governance and capacity are highly variable among Micronesian PICTs, therefore there are significant risks that require mitigation, to ensure success of any activity related to bulky waste. This may involve greater involvement of an implementing agent/project team in some PICTs, than in others. In several PICTs the private sector is relatively developed and active in the area of waste management, compared to other parts of the Pacific.

Situational analysis of Kiribati: In 2007, Kiribati was approached by an NGO regarding the recycling of their fast-growing vehicular waste. The Government quote for collecting the wrecks was significantly beyond the allocated budget and the project lapsed. Coincidently, a Singapore-based scrap metal contractor was engaged to remove old World War 2 legacy scrap from Kiritimati Island, by the US government. Realising that there would be unused capacity on the transport barge, the operator engaged a private Tarawa company, Lagoon Motors, to deliver as many wrecks as they could mobilise when the barge passed through Tarawa port on its return journey. SPREP and JICA worked with the Ministry of Lands, Environment and Development to maximise the opportunity to remove these legacy volumes at little cost to Kiribati. All parties recognised the importance of eliminating legacy volumes before introducing a deposit refund system.

Because Lagoon Motors was having difficulty gaining access to the wrecks, they began to pay owners AUD10 per wreck. While this was effective at increasing access to wrecks, it was not financially sustainable with the terms of the Singapore contract. It should be remembered that similar car wrecks needing collection from rural sites in Australia at that time had a neutral value. To further encourage residents to allow their wrecks to be scavenged, JICA and SPREP funded a cash lottery that provided cash prizes to names selected at random from those who had given up their wrecks. This was coupled with media advertising and proved effective in gaining access to approximately 75% of the legacy scrap at less than half the cost quoted by the Government of Kiribati originally. However, anecdotal information from Lagoon Motors staff indicated that Lagoon Motors believe that simple cash payments represented the more effective of the strategies, and were planning to use that approach when the barge returned in 18 months time.

Subsequent contact by the study team with the metal recycler indicates that he is cancelling the planned return visit to Micronesia due to the extreme drop in commodity values.

Kiribati has already removed 1,600 tonnes of the legacy scrap and is currently looking to the second Phase (deposit/refund scheme), although approximately 400 tonnes of scrap remains on South Tarawa. Kiribati has passed the enabling legislation for this initiative by way of its broad Kaoke Maange deposit / refund law currently applied to lead acid batteries, aluminium cans and plastic bottles. Thus, it only needs to enact regulations to include cars and trucks in their existing deposit refund system, though additional bureaucratic systems would be necessary.

Kiribati is the proposed country for a deposit refund pilot programme, due to the past experiences of the legacy wrecks programme and the willingness of the Government of

Kiribati to support a pilot programme. Kiribati would require a robust public awareness campaign to explain to the community and business how the new system will work, as well as the benefits of, and necessity for it. An emerging issue is the political feasibility of raising the costs of purchasing a vehicle and other metal-based bulky goods when the Kiribati economy is impacted by global recession. Initial discussions, during the field visit, with Environment and Conservation Division indicated the matter was to be considered by the Minister of Environment, but at the time of publication of this report, no official notification had been received by the study team.

An appropriate private sector partner for the implementation phase, Lagoon Motors, has been identified, and is currently committed to the project. Lagoon Motors have the experience of managing the previous phase, and can also sell recovered car parts through their existing business. It is expected that the system will be tendered out after completion of the implementation phase in a similar manner to the container deposit process but that is a decision for Kiribati.

5.2.2 Situational analysis of Palau, FSM, Marshall Islands, Guam, the Northern Mariana Islands and French Polynesia

A questionnaire on scrap metal was sent to FSM, Palau, Guam, the Marshall Islands, the Northern Mariana Islands and French Polynesia. Both the Marshall Islands and FSM (Kosrae and Pohnpei) responded to the questionnaire in detail. Palau indicated that they have metal recycling already occurring and no responses were received from French Polynesia, Guam or the Northern Mariana Islands. Responses are summarised in Table 1, below.

Table 1: Summary of questionnaire results

Question	Marshall Islands	Kosrae (FSM)	Pohnpei (FSM)
Is Government able to provide vehicle to move scrap metal?	Yes	Yes but not fuel	Yes but have no fuel or cranes to lift scrap
Can the Government provide a central site?	Yes	Yes but not labour	Yes – have in past
Other Govt. Contributions?	Labour & some small equipment – lack an excavator but have a stockpile ready for better prices	Waive port fees in light of environmental benefits	In-kind help and waive port fees
Scrap Ownership?	Have been going 50/50 with landowners – some do not want money	Mostly people are glad for the clean-up.	Situation varies but if some were to get paid, all would want money
Synergy with existing scrap recyclers?	Some private yards ready to recycle if price is right	Doesn't see a problem	Chinese have just withdrawn so no problem
Will Govt. Charge a	Yes – it is planned	Yes (officer level),	Yes (officer level),

deposit on imported vehicles to fund recycling?	for 2009	no comment politically	no comment politically
Other information	Indian company offering $200+/tn		Have a D4 dozer that could assist

From these responses, it would appear that the scrap recycling occurring at pre-crash prices has either ceased under the opportunistic programs, or is only occurring under existing contracts. The lack of responses may indicate the disconnection that many Government officers have to what is happening in the private sector, or, in French Polynesia, a private/ public partnership. It is noteworthy that Guam, Palau and the Northern Mariana's didn't respond to the solid and hazardous waste management survey. The Northern Mariana's is capacity-constrained and have a US EPA-funded expert who is focussed on more basic issues such as ensuring appropriate landfill capacity. The private sector is left with the opportunity to recycle when it becomes financially viable.

Guam has carriage for the regional recycling initiative but is locked into a legal fracas involving the closure of the existing dump and has been unresponsive to this study. Guam has traditionally left recycling to the private sector and NGO's to facilitate, and the EPA has seen their environmental priorities placed elsewhere and simply regulates the environmental impact of recycling operators.

French Polynesia indicated that scrap vehicles are already being recycled and therefore they may not be interested in participating in a subregional assistance program.

FSM and the Marshall Islands both have a keen interest and have also made some considerable progress already. The Marshall Islands appear ready to move to the pilot phase next after Kiribati, once the legacy stockpiles have been removed.

Both PICTs have significant legacy tonnages from the World War 2 or military activities, expired mining or simply old automobile wrecks. However, both take an "unfettered market" approach to recycling, believing that it is not Government's role to interfere in a fluctuating market for recycled commodities. The opportunistic recycling that had grown in the light of the very high commodity prices is regarded as proof of the effectiveness of leaving recycling to the private sector.

FSM's constituent states function largely as quasi-independent entities on matters of waste management which means that there is a more complex constitutional situation for deposit / refund laws. Two states have recently begun a trial of a deposit refund system for packaging based on the Kiribati model, and are likely to be more advanced in adopting Phase 2 type initiatives than the others. However, discussions with a federal government official indicated that subsidies for recycling are unlikely to find favour.

The Marshall Islands have begun a private sector waste initiative which has already stockpiled some scrap vehicles for export, but the commodity prices have made this uneconomic at present. The Majuro Waste Company have seen previously promised Local Government waste fees re-directed to other areas of need, leaving waste and the new company somewhat bereft of operating funds. The situation appears quite fluid and the Marshall Islands may be capable of an efficient system if the funding can be assured to implementing body, likely the Majuro Waste Company.

Finally, the slump in commodity prices means that, without a major reversal of prices, subsidies or regulation, it is highly unlikely that any significant bulky waste recycling will occur in the next few years. It is possible that the commodity crash has changed perceptions and more than the core three Micronesian PICTs would participate in a bulky waste project.

5.3 Strategy Selection

The export of vehicles and other bulky appliances to PICTs remains a one way process with no manufacturers assuming responsibility for repatriating their products' waste. While this is a case of market failure, it is hardly surprising, given the plethora of companies involved. One company is unlikely to act unilaterally and suffer a cost disadvantage, therefore the situation requires government intervention, with the long term goal of getting manufacturers to internalise externalities.

Analysis of the Micronesian situation shows two distinct sub-groups of PICTs. Those who see a role for a government regulatory mechanism and who have expressed interest in participating in a subregional initiative to address this issue (FSM, RMI, Kiribati), and those who have not indicated interest in participating in such a program (French Polynesia, Guam, the Northern Mariana Islands, Palau). In some of these PICTs of the latter group, metal recycling lies solely with the private sector and Government officers show little inclination to become involved at the expense of their existing responsibilities.

Given the above information, the situation relating to scrap recycling in PICTs, and PICT preferences for subregional assistance, the following strategy has been developed.

In summary, the strategy proposes, that due to the high cost to collect, export and recycle light gauge steel of the household whitegoods, to exclude these from the activity. The proposed strategy focuses on the recoverable value from vehicular spare parts, whilst still accepting other scrap if presented.

The strategy also proposes, that by widening the catchment of PICTs after Micronesia has had the first opportunity, and then limiting the budget to "a first come first served" approach, PICTs in Melanesia or Polynesia could participate if sufficiently motivated.

The proposed strategy involves two phases, including a singular round of legacy scrap collection to recycle much of the legacy scrap (Phase 1), and a pilot self-funded recycling system on imported vehicles in Kiribati (Phase 2). These two proposed phases are described in detail in the following subsections.

5.3.1 Phase 1: A Singular Collection Round of Legacy Scrap (Phase 1)

Phase 1 involves a single round of legacy scrap collection. It requires the participating PICTs to designate a site for a holding yard for consolidation and sorting. The activity would pay a "bounty" for delivered and sorted scrap which would be used to fund the collection and sorting process. Once all PICTs have completed this element, a tender(s) would be let to crush and export the collected collective volumes to gain the sub-regional economies of scale. The project team would support this through provision of the bounty, implementation of training programs, and a public education and awareness campaign to maximise yield.

In-Country Collection: The collection round would involve PICTs facilitating the collection program, including the provision of a holding yard to contain the collected and sorted scrap. Assistance would be provided through the project team, in the form of: payments for tonnes of scrap sorted ready for export at a commencement value of AUD100 per tonne (or vehicle body); a training program for collecting and sorting; and a public engagement campaign to alert the public to the need to report the location of scrap. It is

quite conceivable that a number of private operators may capitalise on the payment for scrap approach and deliver to the collection yard independently of any Government contracts. This would be a useful precursor of Phase 2 if it were to occur. It is also possible that the AUD100 may not attract enough scrap and that a later increase may be necessary.

The collection process to a central site or sites, has issues of access, ownership and logistics which varies in each PICT. There are widely varying capabilities in PICTs as well. A simple subsidy paid on the basis of delivered tonnes of metal would allow for each PICT to mobilise whatever resources that they can utilise. Such an approach avoids the AFD or its agent from becoming embroiled in ownership or other unresolvable complications, and instead provides an appropriate incentive for scrap delivery. It also provides the most equitable system for involving existing metal recyclers in the collection system. While this will, to an extent, recover the easiest and most accessible scrap, the proposed subsidy will avoid resources being wasted on the remote or expensive to retrieve metals. It will also prompt those who may be prohibiting access in the hope of a better price for "their" scrap vehicles to deal with the reality and either allow access or not participate.

Consolidation and Shipping: When all PICTs have either exhausted the allocated payments, or reached the completion of the collection and sorting phase, a tender would be let to take the scrap from PICTs, to the point to sale. A 20% price preference is proposed for PIC-based metal recyclers to encourage local recycling development. The contractor would send a crusher / baler to the island to consolidate the metal ready for loading if the volumes are sufficient. The contractor would arrange export and on-sale with all proceeds for the metal sale returning to the contractor, of which an estimated net return is thus included in the tendered price.

To achieve the sub-regional efficiencies, the tender would include all participating PICTs, and the tenderer would arrange a sequential series of crushing and export operations in the selected PICTs.

Assumptions relating to cost were based on experiences from other PICTs. For example, the Marshall Islands were quoted an unsubsidised price of AUD250/tn for consolidated (but not crushed or baled) scrap at Majuro by an Indian buyer when the commodity price was around AUD500/tn. This suggests a cost plus profit total of around AUD250/ tonne to sort, bale and export through conventional commercial containerised shipping (not the somewhat cheaper opportunistic large barge that removed Tarawa's scrap).

The aforementioned activities and prices suggest that at least a AUD250 margin over the costs of retrieval and consolidation is needed to fund private sector scrap export from PICTs without subsidy.

While this was a singular offer in the Marshalls, the fact that the then price for scrap was continuing to skyrocket and no one expected the crash suggest that this was the beginning of a new phase of private sector unsubsidised scrap retrieval, at least of the accessible or more valuable scrap.

Regarding costs of retrieval, using the figures from Kiribati's program on the South Tarawa atoll, the costs of retrieval plus profit were AUD125/tonne (AUD250,000 for 2000 tonnes). However, some costs were born by the Government of Kiribati (the storage yard and some port charges).

This suggests that a scrap steel price of AUD250+/tonne will cover baling and export and a AUD150 subsidy for collection will begin the process of retrieval of the more accessible or valuable scrap. While this appears to be on the low side, there are a number of factors that suggest that this is an appropriate level of subsidy.

A financial model using the above costs, revenue and assumptions is included as Annex B.

Public Awareness: Each PICT will require a tailored program of community engagement to ensure that the public understands the necessity to capitalise on the current opportunity to rid their island of unhealthy scrap. The campaign will also have to convince the islanders that the value of scrap is negative and unlikely to be valuable to them in the future if they are to willingly notify and allow the recovery of scrap on their properties.

5.3.2 Phase 2: Pilot Self-funded Recycling System

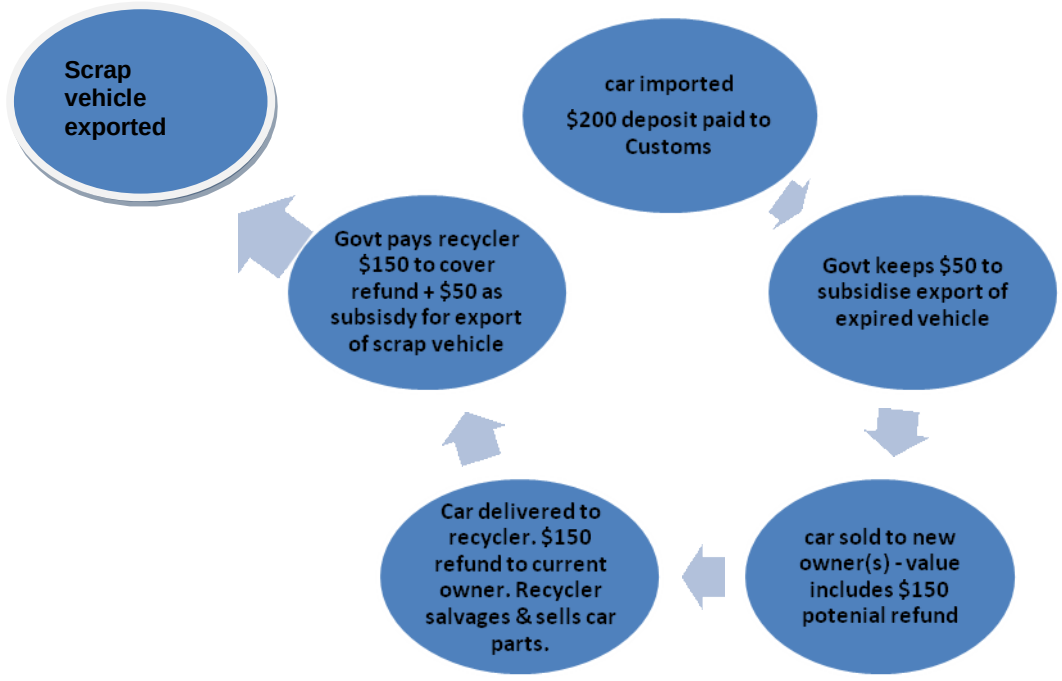
Phase 2 involves the establishment of an on-going private sector operated activity in Kiribati, that:

- Receives vehicles and other bulky wastes if included in deposit refund scheme;
- Dismantles, recovers and re-sells any usable parts; and
- Exports the remaining metal not suitable for direct recycling in-country, for recycling overseas.

The deposit / refund scheme will be trialled in Kiribati as Kiribati has already: removed most of their legacy scrap; enacted a successful deposit/refund law and system; and expressed support (at officer level) for extending this to imported vehicles.

The process is described graphically in Figure 1. The key elements of the proposed system include an appropriate private sector partner and legislation for an appropriate economic instrument. These are described below.

Figure 1: Proposed process of a self-funded recycling program



Private Sector Partner: Initially, the proposed system would be operated by Lagoon Motors as a partner in the activity who have both experience and the appropriate skills and business. Furthermore, Lagoon Motors have a track record of successful partnership with the

Government Kiribati. Once the data from two years of operation has been gained and all the bugs worked out of the system, it may be appropriate for the Government of Kiribati to tender out the on-going role. This will ensure that the best price and operator is secured for Kiribati.

Economic Instrument and Enabling Legislation: To implement Phase 2, a "deposit on import" economic instrument will be employed, and be managed to allow a refund on delivery of the end of life vehicle to a central dismantling yard. The activity will seek to avoid the high costs and unpredictability of collecting vehicles that are no longer rolling, by providing an appropriate incentive for wreck delivery. It is important to keep the deposit total as low as possible and the refund high. The low deposit will reduce the political hurdle PICT Government's will face in imposing the new import tax.

Based on current (December 2008) scrap prices of AUD250/tn, this feasibility study indicates that this Phase requires three key income sources to be viable:

1. The recovery of spare parts;
2. Sale of scrap; and
3. A "top up" subsidy.

All three of the above need to total around AUD350 per tonne of metal exported.

On current figures, a subsidy to be paid by the government, to Lagoon Motors of approximately AUD50 per car or tonne would be sufficient for the export of cars and other vehicles, but not for scrap metal and certainly not for light gauge appliances such as washing machines, due to the lack of spare parts value.

The Kiribati experiences to date suggests that a refund of AUD150 to the vehicle owner will be sufficient to encourage a majority of vehicles to be returned, although many will have spare parts already stripped out for private use or re-sale. The AUD150 refund value would simply accompany the vehicle as it passed through any owners until it was redeemed. Coupled with the AUD50 subsidy to make export viable and fund administration, a minimum deposit of AUD200 on import will be required. This is described graphically in Figure 1 (above). If the scrap price recovers to 2007 levels, there will be a surplus that may be used to cross subsidise the light gauge scrap or any other recycling initiatives that the PICT Government wishes to pursue.

For the purpose of the study, it was assumed that the average scrap weight of an expired vehicle is 1 tonne (between 25% and 30% vehicles are buses or trucks and some legacy scrap is the very old heavy gauge machinery).

Preliminary estimates show there is significant value in old cars for spare parts. Recycling the spare parts has the added value of keeping other vehicles running for longer, thereby further reducing the rate of scrap generation. Capturing the spare parts value has been identified as critical for financial sustainability so this must be a key criterion in the choice of private sector tenderer.

The value of spare parts and scrap was estimated on the basis of a feasibility study performed in Tarawa in 2004. The spare parts gross wholesale value from one 10 year old vehicle with some damaged panels, after costs, was AUD500. Assuming removal of the higher value accessible parts before delivery for the refund, the estimated spare parts value is around AUD250.

The labour costs are AUD100 per vehicle leaving a net residual income from spare parts at AUD150 per vehicle. The scrap value varies with commodity price and is currently AUD200

/ tonne with the now stripped car @ 0.5 tonnes giving a net value of $100. The total value (scrap and spare parts) is then AUD250.

Cost of delivery to the port is approximated at AUD50/tonne. Using the previous methodology (outline in Phase 1), the costs of crushing and export are AUD250 /tonne making a total cost of AUD300.

An AUD50/ vehicle subsidy will be required to be paid from the deposit system as an advanced recycling fee. Couple this with the incentive to self-deliver for the refund at AUD150 and you get a AUD200 deposit on the imported vehicle which is probably around the highest level that a PICT government would be willing to levy politically in this economic climate.

A financial model, including the aforementioned costs and revenue streams is included in Annex B.

It is proposed that Phase 2 will be developed by implementing a Pilot Programme in Kiribati. Kiribati has been selected due to its past experience with this type of programme. The pilot would use their existing legislation to include vehicles in their successful deposit refund recycling scheme. Upon gaining formal commitment from the Kiribati Government to levy the import deposit, a public awareness campaign would be developed to ensure that the public understood the system and the need to impose the new import duty.

Activity assistance to Kiribati would involve legal drafting for the amended regulations and a contract with the Phase 2 recycler, Lagoon Motors, funding of the administrative costs of setting up the system to gather the AUD200 deposit into a trust account and pay the refund of AUD150 through the recycler, to the person delivering the vehicle for recycling. There will also be some costs borne by the activity for vehicles that have not been taxed the deposit, but will be eligible for a refund. The existing rolling stock are potentially unfunded but there will always be a “float” in the refund system generated by vehicles that have been imported but not yet reached the end of their life. However, these should be minimal due to the successful previous recovery project in Tarawa. A sum of AUD100,000 has been estimated to ensure that there is “float” in the system to cover the vehicles brought in that have not been caught in the deposit system. This may be excessive but is conservative as not catering for this potential liability could destroy the entire pilot.

The Ministry of Environment, Lands and Development will need to ensure that there is space near the Tarawa port facilities to enable efficient export. The likely scenario would involve periodic visits from a mobile crusher when volumes in the holding yard reached a threshold. A semi-regular containerised export is considered more sustainable than waiting for very occasional passing scrap barges. There may also be the opportunity for companion loading with scrap steel cans from Kaoke Maange.

It should be noted that the current extreme commodity and currency fluctuations mean that all costings should be regarded as indicative and will need to be revisited at the actual time of implementation.

5.3.3 AFD Potential to contribute

The viability of recycling of scrap metal in the Pacific varies with the commodity price. Except for the historically high prices just prior to the economic crash, those prices have not been sufficient to establish a sustainable system of export. The proposed activity seeks to redress this but it involves a number of complexities that are unlikely to be resolved without external assistance. Once the two key issues of legacy scrap and a functioning example of

sustainable recycling are addressed, it is expected that the Pacific will have the capacity to be able to handle this issue without external assistance.

The AFD is well placed to add value to this process. The provision of funds for the initial collection and human resources for training and more complex policy issues meshes well with the AFD's commitment to the Pacific Regional Solid Waste Management Strategy, which highlighted the use of economic instruments, capacity building and a focus on bulky wastes as key areas. The design of the activity also fits with the AFD's preference to create a sustainable system not requiring constant external subsidies to continue.

5.4 The Activity

5.4.1 Goal and Purpose

The goal of the activity is to reduce the negative impacts of bulky wastes in the participating Micronesian PICTs. To achieve this goal, the activity's purpose is to facilitate an activity for sustainable recycling of scrap vehicles within the Pacific through a one off collection of legacy scrap, and to pilot a self-funded recycling scheme in Kiribati, using economic instruments to reduce costs related to export, and provide ongoing revenue to fund any shortfalls.

5.4.2 Component structure

This Component has two phases. Phase 1 involves removing and recycling the legacy scrap metal that has accumulated on PICTs over the past few decades. This is a necessary pre-condition for Phase 2 which involves establishing an ongoing system of gaining a deposit or advanced recycling fee on every vehicle imported into a PICT. The deposit is then partially refunded on return of the vehicle to a central collection point. The difference between deposit and refund is used to fund the administration and subsidise the export of the waste vehicle.

In each participating PICT, the following outputs will be delivered, under Phase 1:

1. A Briefing Paper to provide PICT's with the information necessary to decide on participation, and a memorandum of understanding (MOU) reflecting the agreement between PICTs and the AFD on the terms of the activity;
2. Consultation with each PICT on participation and meeting pre-conditions;
3. A scrap collection system with appropriate training and infrastructure package;
4. An awareness program to inform the public of the activity and their role;
5. An appropriate training program in cutting, sorting and storing scrap metal;
6. A tender and contract to export and recycle the consolidated stockpiles of scrap (one contract for collection from all PICTs);

The following outputs will be delivered under Phase 2:

1. An implementation program and timetable in consultation with the Government of Kiribati;
2. A legal and administrative system of collecting deposits on imported vehicles, including regulations, customs procedures, and initial contractor;
3. Drafting Instructions for deposit refund legislation to enable Phase 1 participants to move to Phase 2.

5.4.3 Responsibilities for outputs

The project team will be primarily responsible for the delivery of the outputs. However, there are clear responsibilities for PICTs and the delivery organisation project team.

In Phase 1, the project delivery agency will have primary responsibility for each output. PICTs will be responsible for implementation such as conducting the awareness programme, managing the collection system and deciding on adopting the deposit refund system.

Similarly, in Phase 2, the project team will deliver the outputs but with very close involvement and dependence on the participation of the Government of Kiribati.

5.4.4 Resources and costs

A detailed activity budget is available in Annex B.

The Outputs for Phase 1 and 2 is estimated to cost AUD158,400 with the largest cost item being the visits to PICTs to arrange the collection systems. The costs have been minimised by sending a single technical expert only.

Management and reporting is AUD28,800 and the reimbursable costs are approximately AUD1,110,000. The majority of this is the subsidies to be paid for recovered scrap metal at AUD100,000 per PICT. At AUD150 per tonne, this is an estimated 3500 tonnes of scrap exported for recycling.

The total estimated cost for the activity is AUD1,397,200, approximately EUR731,981.

5.4.5 Suggested Timing

The detailed proposed implementation schedule is contained in Annex B. For Phase 1, the process of gaining commitment through negotiation and the MOU through to establishing a site and administration systems and sourcing appropriate staff will take at least 12 months.

The public education component will begin in month 12. Once the public are educated about the project and collection commences, it is expected that the volumes of scrap collected will rise quickly to a peak of easily recovered materials. After 6 months, the volumes will decrease as the harder and more expensive to access scrap is targeted. A full 12 months (months 12-24) is recommended for this process to gather as much as possible. Once the volumes and quality are established, it will be relatively simple to then engage a recycler to handle the next stage over a period of a further 6 months (months 24-30).

Phase 2 involves a 4 month period of establishing appropriate administrative and legal systems for imports, and arranging the refund and export system. Following that, the pilot will commence in month 5, and its progress monitored over the subsequent 18 months (months 5-23). Preparing the Drafting Instructions, and liaising with the Phase 1 participants will then continue for another four months (months 24-28) until the completion of the activity.

The Phase 2 trial in Kiribati is proposed to commence concurrently with Phase 1 in other PICT's so that the Phase 2 lessons learned will be available to the PICTs that wish to pursue the deposit-refund system. It is possible that some other PICTs, specifically the Marshall Islands may be ready to commence Phase 2 relatively quickly, depending on the legacy scrap liabilities for a refund scheme.

The collapse in commodity prices, a key factor in Phase 1 viability, suggest that a later timing for the export Phase to allow for some probable recovery has financial advantages to the activity. Similarly, the complicated logistics of Phase 1 scrap recovery is best handled

slowly to allow sufficient time to overcome the inevitable complications of access and process.

5.5 Management and monitoring strategies

5.5.1 Measurement of Performance

The individual outputs of both phases will be measured by the project team and the Performance Indicators are contained in the Logframe in Annex B. The reports from the project team will be provided to the AFD as per the recommended schedule in Annex B.

For Phase 1, the aim is to remove the legacy scrap. This will be measured by tonnes of scrap delivered and sorted at the central site(s) per month. The overall target would be to recover and export 75% of legacy scrap.

For Phase 2, the aim is to establish a financially viable and sustainable system of expired vehicle recycling in Kiribati. Thus, the tonnages exported for recycling, the profits generated and the tax collected on imported vehicles, are the key issues to track.

For both Phases, there will be key milestones in the implementation in each particular PICT. These will be monitored and reported on by the project delivery agency.

5.5.2 Reporting requirements for the activity

The implementation risks involved in this project are considerable. Thus, reporting frequency should also be sufficient to ensure any unforeseen complications are identified early and remedial action taken or funding paused. The schedule is contained in the timetable in Annex B.

There will be a joint Phase 1 and 2 consultation report following the responses from PICTs on participation.

Mission Reports will be produced after visits to PICTs. The first will cover the detailed project plans for each participating PICT. It is expected that, as the implementation timetable and progress will vary in each PICT, lessons learned during the implementation will be shared between PICTs, through an activity newsletter published by the project team.

Finally, there will be Annual Reports summarising the year's progress which lead into a final activity completion assessment and report.

Each PICT will be required to report on their key responsibilities and on any funds granted for their expenditure. These will be incorporated in to the regular reporting by the delivery agency.

5.5.3 Risk Management

Analysis of risks was informed by interviews with stakeholders in Kiribati, by consultation via email with other Micronesian PICTs. The primary risks to this project lie with the significant uncertainties pertinent to each participating PICT and the global economic situation.

The following specific risks have been identified, as well as recommended strategies to mitigate them:

Governance risk: Some Micronesian PICTs have strong governance and some have, in the past, consumed excessive donor funds in administration and unrelated activities. It is proposed that these governance risks be mitigated through the specific agreements tailored to

the current situation at the time of signing. More rigorous, independent and frequent reporting will be necessary for PICTs considered by the project team to be higher risk.

Budget risk: To mitigate budget risk, the costs of collection would be limited by only paying upon receipt of scrap at the central yard. This limits AFD's and the project team's exposure to equipment breakdown, access and ownership issues, corruption and mal-administration and uncertainty of available volume.

By waiting until all scrap is ready and waiting at the consolidation sites, the competitive tender for removal will be as cost-effective as is possible. The tenderers will have access to the metal stockpile for assessing costs and value and how best to consolidate and export. They will also have the opportunity to capture some economies of scale as was originally expected in the design of the project. This approach will also minimise any expensive delays in loading.

Commodity risk: The commodity risk is borne entirely by the contractor so AFD is not exposed to variations in commodity price. While this will slightly increase the tenderers' bids, this certainty is preferable from a budgeting perspective. Also, by delaying the export Phase as long as possible, the scrap price is expected to recover from its current nadir.

The risks to private contractors, in charge of paying vehicle owners the "bounty," from government non-payment of pre-agreed funding can be minimised by requiring the project team sending tranches of funds to the PICT government (thereby making cash available) and requiring receipts for payment to contractors. Governments would only receive the next tranche of funds, once the previous one was adequately acquitted. The project team will also maintain direct contact with the private contractors, to ensure the arrangements are satisfactory and payments are received as agreed.

Insufficient funds: The key risk to the PICT Governments is that the funds allocated are insufficient to cover the scope of works envisaged on signing. It is suggested that the AFD consider a higher than normal contingency fund in recognition of the considerable uncertainties contained in this project. The close monitoring of the project would ensure a comprehensive knowledge base with which to judge any requests for further funding. A contingency budget of 15% is proposed and has been included in the cost estimate.

Phase 2 caries less risk than Phase 1, as it is primarily self-funded and the pre-requisite issues of legislation and partner selection will ensure key risks like Government commitment are explored and resolved early in the project.

5.5.4 Sustainability and Sustainability Management

Phase 1 is clearly neither sustainable nor economically viable unless repeated occasional collection programmes occur. This would be predicated on continual benevolence of the donor countries. The only other way would be an Extended Producer Responsibility program from car manufacturers. The Japanese manufacturers were sensitive to this a few years ago but the plethora of manufacturers now make any program very difficult without international regulation. Phase 1 is therefore not intended to be sustainable, but to contribute to the sustainability of Phase 2 of the activity, by reducing a long standing impact and removing a barrier to the sustainability of Phase 2.

Key sustainability elements of the design of Phase 2 are:

- The involvement of the private sector;
- The deposit refund system will minimise on-going costs and also provide a funding source to pay for administration and a subsidy to the system; and

- The sale of spare parts is fundamental to commercial viability. By recovering vehicles much earlier after the end of their life, the spare parts recovery is likely to be much more lucrative for the recycler.

5.5.5 Management and Coordination Strategies

The project team will be responsible for the following in Phase 1:

- Provision of all deliverables and documents within the listed outputs;
- Consultation with the PICTs;
- Negotiation of PICT-specific project implementation plans;
- Training PICTs;
- Dispersing funds as agreed;
- Monitoring progress and reporting to AFD; and
- Tendering and letting the contract with recycler.

PICTs will be responsible for the following in Phase 1:

- Appointing a project manager, Technical Advisory Group and securing and paying for a consolidation site;
- Implementing the awareness program;
- Maintaining and supplying sufficient records to enable any auditing or reporting needs of the AFD or delivery agency; and
- Providing a report on the activity on completion and a cabinet level decision on whether to proceed to Phase 2.

The project team will be responsible for the following in Phase 2:

- Consultation and negotiation with Kiribati on implementation program;
- Provision of all deliverables and documents;

Kiribati will be responsible for the following in Phase 2:

- Securing Cabinet level commitment to enacting regulations to enforce the deposit refund system on imported vehicles;
- Implementing a public awareness program;
- Maintaining and supplying sufficient records to enable any auditing or reporting needs of the AFD or delivery agency; and
- Providing a report on the activity on completion.

To implement Phase 1 and 2, it is recommended that the AFD engage a suitably qualified and cost-effective project team to:

- Develop a generic MOU to present to PICTs, outlining the generic requirements of all parties, the proposed timetable, budget requirements, monitoring and reporting requirements and governance arrangements;
- Negotiate a specific MOU and project plan between each participating Micronesian PICT and the AFD that accommodates any particular issues;
- Develop a mutually agreed monitoring process and reporting schedule;

- Implement the activity as described above and be primarily responsible for the specified outputs; and
- Report quarterly initially then six monthly to AFD on key performance indicators (KPIs) and project implementation.

The project team will be the AFD representative for all but the most significant decisions such as project threatening issues. The AFD may also wish to employ an independent monitor/auditor to report back to the AFD, particularly on any emerging governance, audit or budget issues.

The PICT Government will need to nominate a Technical Advisory Group involving both private and public sector with key agencies such as Customs, Treasury and the line agency represented. The PICT government will also need to appoint a responsible project department with a Project Manager dedicated solely to the Activity for at least the first 6 months of implementation. The Project Manager is proposed to be at PICT expense as their co-financing contribution and will report directly to their existing departmental management who are responsible for all significant project implementation decisions such as budget, reporting and governance. The project team will consult PICT on the feasibility of this co-financing contribution and for some PICTs, this may need to be revised with the activity providing salary funds of AUD15,000 for 6 months full time salary.

The Project Manager will report in parallel to the Technical Advisory Group who function as a coordinating and value-adding body to the project implementing department and their Minister.

The initial requirement will be to establish the system in those PICTs that express interest and are prepared to meet the prerequisites of designating a collection yard, identifying a preferred contractor and allocating the project to an appropriate Government agency to administer. While it would be preferable that participating PICTs also committed to Phase 2, that is politically unrealistic until the data from the trial in Kiribati is documented. It is recommended that Micronesian PICTs be given the first opportunity to participate. But, if only a few chose to do so, then the activity should be opened to the rest of the PICTs, on a first come first served basis.

5.6 Feasibility, Impacts and Sustainability

The following section summarises the feasibility, likely benefits and the expected sustainability of the benefits.

5.6.1 Management Feasibility

The relatively high level of uncertainties will require a higher investment in management and monitoring than the other subregional activities. The proposal for a slow rate of implementation shall lessen the risks and make management simpler. The current experience with some Micronesian PICTs is that electronic communication is often ignored and key staff are often out of the office on duty travel within or outside the country. This depletes capacity even more than it already is. The requirement for a dedicated Project Manager and a Technical Advisory Group will reduce the impact of this.

Close political involvement is a common issue in Micronesian projects. This can assist with coordination and commitment, but can also increase the need for transparency of decision making. The drafting of the MOU will need to be quite explicit as it is not unknown for governments to ignore previous undertakings that were proffered to gain access to external funding.

The project team will need to be quite active until systems are established and risks better quantified and minimised. The budget will reflect this necessarily increased role.

The AFD will need to be prepared to cancel activities in specific PICTs if the appropriate conditions are not being met.

5.6.2 Technical Feasibility

The processes involved are not technically difficult and the key issue is cost-effectiveness. The provision of cranes, for example, will facilitate better retrieval volumes than using winches but winches may be the most cost effective method. However, these issues are beyond the scope of this activity which is designed to incentivise vehicle owners to source their own transport in order to receive their "bounty."

Access to the scrap is often complicated in the Pacific. Historical scrap is "owned" by the traditional owners of the land on which it sits. Many of these owners believe they are in control of a "goldmine" and are reluctant to allow access or have unrealistic ideas of the value of the scrap. Access will be handled by each PICT in its own culturally sensitive manner. As mentioned previously, payment is only made on delivery.

In Niue, the Government passed a law requiring residents to release the wrecks that sat on blocks outside their houses as testament to their former glory or distant relative's generosity. In Kiribati, some Government Departments had to be ordered by the Cabinet to give up their wrecks as they were hoping for a later windfall. Lagoon Motors (Kiribati) ended up using a variety of incentives to encourage owners to give up their wrecks. At first, a simple lottery with a spectrum of cash prizes was used. To access more wrecks, a cash payment of AUD5 a car and AUD10 a truck was then deployed. As many of the dispersed car wrecks are now hemmed in by increasing population and dwellings, cost effective access is very difficult without the full support of the population.

The private sector is critical to cost efficient collection but Government facilitation is necessary for access, export requirements and also Phase 2 legislation. Without strong Government support, the Phase 1 will degrade to directing subsidies to existing metal recyclers to increase their volumes. This is unlikely to have significant impact on legacy volumes.

5.6.3 Financial and Economic Feasibility

The commodity collapse has significantly altered the proposed timetable but not the general analysis and recommendation for the proposed activity. The system still requires the removal of existing volumes, as a prerequisite to the establishment of a deposit refund funded system. The price collapse suggests that cost effectiveness is best served by delaying the export Phase until all metal has been amalgamated and consolidated through cutting or crushing. Maximising the value of that scrap through good sorting and packing will be crucial to obtaining a least cost solution. Once that activity is finished, more accurate data will be available on the value of the materials and the costs incurred in export. The removal of the stockpile will then allow the establishment of a sustainable system based on a deposit refund system to minimise collection costs.

While the economic feasibility of the ongoing Phase 2 of bulky waste removal pivots on the spare parts value being recovered, the overall costs of Phase 1 will hinge on the scrap steel commodity price. From this perspective, it would be prudent to give as much time as possible to allow the scrap price to recover from its current nadir.

Accordingly, the original thoughts of including all bulky wastes has fallen victim to the reduced commodity prices. While any scrap will be accepted in the Phase 1 cleanup, the deposit refund system would simply add far too much to the purchase price of a washing machine or refrigerator to be economically or politically viable. For this reason, Phase 2 will concentrate on expired vehicles and trust that, over time, a successful system and recovering commodity prices may make other bulky wastes feasible.

The Activity is economically feasible at current costings. As mentioned many times, better PICT-specific data will be essential to ensure that the funds budgeted are capable of removing the targeted 75% of legacy scrap.

5.6.4 Financial Viability

As many landfills in the Pacific region are donor-funded, their costs and value are not included in national accounting. Consequently the value of their airspace is consistently under-valued by PICT administrations. Even in developed countries, conventional economics devalues the airspace savings by the life of the landfill compounded by the discount rate (basically the rate of inflation). For a landfill with a 20 year life, the accounted savings will be halved. This issue, coupled with the lack of waste compactors in PICTs, and the habit of retaining old appliances and wrecks for spare parts or prestige, has meant the importance of airspace conservation, has not resonated strongly with Pacific waste managers.

However, the increasing reluctance of donors to fund yet another landfill and the difficulty of locating landfills is slowly trickling down to Pacific decision makers. As well as consuming airspace, these bulky goods are also proving to be an urban blight, harbour vermin and usually result in the re-usable parts being "lost" through the harsh Pacific environment.

The location of scrap is the other major impact on costs. The wrecks are often in difficult and expensive sites for retrieval and the easy to get metal has often been taken, reducing any chance of using it to cross subsidise the more difficult sites.

Finally, the value of the scrap metal has a major bearing on the viability of recycling metal. In the past year prices for scrap steel has gone from EUR277 per tonne in November 2007, to EUR546 in June 2008 at the height of the commodities boom, down to EUR150 per tonne in November 2008. Opportunistic recycling for the higher value scrap was occurring at the EUR225+ level and the recent boom prices were seeing private sector scavenging reaching the level of a roving barge in Micronesia. That particular Singaporean company's representative, Mr. Jason Lai Kim Yew, has shelved plans to revisit the region in the light of the recent price collapse.

Anecdotal reports from environment staff in the subregion indicate that most scrap recyclers are simply stockpiling in the belief that prices will improve enough in the near future to provide some level of profit, as the current prices will just cover the shipping costs, and other costs if the metal is containerised, with no profit or excess to cover in-country costs such as collection costs and port charges. At an average cost of AUD4000 to transport a 20 tonne net container and a value of scrap currently at just over AUD3000, moving scrap out of the islands will be at a substantial loss to private sector operators, and therefore will not occur without subsidy. A bulk open hold shipping vessel with magnetic lifting equipment may just break even. This ignores any other costs such as port fees in export and import, quarantine charges and loading and unloading costs. Well sorted scrap with some higher value metals such as copper and aluminium will help reduce this shortfall but not eliminate it. In the short to medium term, commercial bulky waste recycling will require a considerable subsidy until prices recover to at least the EUR225 / tonne level.

Ongoing sustainability has been jeopardised by the recent collapse in commodity prices across the world. Since the onset of the global recession, the existing private sector recycler in Kiribati is now even having trouble with getting buyers for comparatively high value metals such as aluminium. While this does not alter the projects validity, it does illustrate the difficulties that lie beyond local control. It also shows the need for Government intervention for the on going Phase 2 to ensure sufficient funds are available to subsidise in times of low commodity prices. The surplus funds available in more viable times will be available for any number of environmental projects.

It is hoped that, by implementation, the commodity price for scrap will have risen closer to its recent historical average value of around EUR225 / tonne. At anything over EUR150 per tonne, the consolidation and export Phase is likely to be cost neutral for well sorted scrap. This will not cover all collection costs but is likely to fund the easier scrap. However, it is sensible to budget some funds for the contingency that the metal price does not recover.

5.6.5 Impact on Poverty

The Activity will have positive impacts on poverty, particularly through Phase 2 as the recycling of used parts will enable the public to keep their vehicles running for longer as the price of new parts is prohibitive. Also, the employment implications of both Phases will have a trickle-down effect.

5.6.6 Social and Cultural Impact and Gender Implications

The social, cultural and gender implications are minimal. The removal of wrecks and the perceived increase in purchase price will need careful explaining to ensure no negative public opinion for the project or the government.

5.6.7 Institutional Feasibility

The critical issue of institutional feasibility involves the political implications of Phase 2. The current economic recession has impacted on all PICTs significantly. Most countries around the world are using what funds available to attempt to spend their economies out of the worst of the contraction. This also involves encouraging the public and private sector to spend more to complement this public sector expenditure. Thus, the imposition of a new tax through the deposit refund scheme is hardly likely to be popular both within and outside the Governments.

Notwithstanding that the tax is likely to be largely refunded, the political perception is likely to be one of decreasing private expenditure at a time when the opposite is being encouraged. As this is largely a political issue relating to democratic support, election timing, economic issues and other government initiatives, there is little that can be done to manage or mitigate this risk other than providing good public awareness materials, sound data and rationale for the project. There is no doubt that this remains a significant threat to the feasibility of Phase 2 and one that is impossible to discount until the issue is considered at the highest political levels of the current governments.

Other issues relate to the human capacity of the private and public sector agencies. As mentioned previously, all Micronesian PICTs have the capacity to implement this activity. The risk is that the project is relegated to a low priority for all concerned in the government. Given the other enormous challenges facing Micronesia, this would not be unexpected and bears out the low priority given to previous engagement with this AFD Regional Solid Waste Initiative and the record of some in donor-funded aid projects. The negotiation of the MOU will be critical in reducing this risk.

5.6.8 Environmental Impact

The environmental impacts are positive. The removal of sites for mosquito and other vectors will improve human health and the freeing up of space on the islands can only reduce pressure to clear vegetation. The recycling of used car parts and scrap has a wider resource efficiency benefit.

5.6.9 Factors in the Design to Promote Sustainability

The activity includes two phases. Phase 1 is not designed to be sustainable whereas Phase 2 is specifically conceived to establish a self-funded system run in partnership between the public and private sectors. The involvement of both sectors will increase the robustness over the medium to longer timeframes after the cessation of AFD involvement. The fact that the activity will provide a positive income to both sectors will also increase its longevity.

6 WASTE OIL REUSE SCOPING STUDY

This section provides a feasibility analysis for the development of a subregional activity to address waste oil issues in the Polynesian and Melanesian Subregions. The Polynesian and Melanesian Subregions were defined in the AFD Regional Initiative for Solid Waste Management in the Pacific Region, Feasibility Study (Phase I, Component 2) and include the following PICTs Samoa, Tokelau, Cook Islands, Tonga, Niue, Tuvalu, American Samoa, PNG, Solomon Islands, Vanuatu, Fiji, New Caledonia and Wallis and Futuna.

6.1 Activity Preparation Steps

6.1.1 Activity Origin

This feasibility study was developed using the findings of Phase 1, Component 2, which identified the following outcomes in respect to waste oil in Polynesia and Melanesia:

- A solid and hazardous waste survey completed by Polynesia and Melanesia PICTs highlighted that assistance with used oil was prioritised for assistance;
- Volumes of waste oil stockpiles continue to increase in many of the PICTs, with limited safe disposal or recycling options;
- Polynesian and Melanesian PICTs are at varied stages of management and storage of waste oil. Small PICTs, like Niue, have waste oil fairly well managed and stored in a centralised area. PICTs including PNG with large populations and landmasses are less advanced in centralised collection of waste oil and require support;
- The survey data indicated that Polynesian and Melanesian PICTs had over 20,000L of waste oil stockpiled, as of September 2008;
- Three facilities currently reusing waste oil were identified in the PICTs:
    - Fletcher Pacific Steel (Fiji) Limited (herein Fletcher Pacific Fiji), Fiji;
    - A nickel refinery (SLN) power plant in New Caledonia; and
    - A cannery in American Samoa.
- During initial consultation, Fletcher Pacific Fiji expressed interest in this sub-regional activity and willingness to finance shipping of waste oil from PICTs, but was not able to reimburse PICTs for the volume of used oil.

6.1.2 Study Team and Method

The study team was led by the Waste Business and Policy Specialist, Mark Ricketts, with guidance and review from Team Leader and POPs and Institutional Specialist, Melanie Ashton.

To further investigate the feasibility of a sub-regional initiative to address used oil, the following activities were undertaken:

- Investigation of potential waste oil disposal strategies, including direct recycling as a lubricant, beneficial re-use as fuel for power generation, and beneficial re-use as a replacement fuel for industry;
- Investigation of the preparedness of American Samoa and New Caledonia to accept waste oil and therefore become partners in the sub regional initiative;
- Consultation with Fletcher Pacific Fiji and facilities assessment, to determine if infrastructure upgrades are necessary;
- Consultation with Government of Fiji on regulatory issues; and
- Preliminary activity design and costing.

As part of the feasibility investigations, Mr Ricketts visited Fiji to meet with Government of Fiji representatives and Fletcher Pacific Fiji, and conducted an initial facilities assessment of the Fletcher Pacific Fiji operation. The visit was undertaken from 11 to 15 November 2008. The meeting minutes and outcomes of the visit are included as Annex C.

6.2 Analysis

6.2.1 Development Context

Waste oil, largely from lubrication of internal combustion engines, is a growing issue in the Pacific. While ultimately biodegradable over an extended time, waste oil's inappropriate disposal can affect delicate littoral ecosystems, fresh water and particularly the fresh water lens that sits within the sand below most coral atolls.

Waste oil from bulk fuel storage and Mobil and BP sites has historically been shipped to Australia for recycling. However, due to the region-wide divestment of these sites by petroleum companies to PICT governments, shipping for recycling is now limited. Currently most PICTs are storing, but not exporting waste oil. Furthermore waste oil shipments made by petroleum companies covered only waste oil from those sites, and not waste oil from other businesses or government departments.

Disposal of waste oil was prioritised as an area for assistance by Polynesian and Melanesian PICTs. While Micronesia put plastic and metal recycling as higher priority, waste oil was next on the list of priorities. Further, several Micronesian PICTs including Kiribati and FSM ranked the issue of waste oil as a high priority for assistance. As such, they may wish to make use of the systems developed to reuse waste oil in the Pacific.

Few Pacific countries have anything more than token facilities to receive waste oil from industries and consumers. According to survey data Polynesian and Melanesian PICTs have over 20,000L of waste oil stockpiled. This figure is doubled if Kiribati is also included. Given that Fiji alone "consumes" almost 10,000,000L each year and that there is currently no reuse system, it is clear that the majority of waste oil is inappropriately disposed to the environment, through dumping in waste sites and open-burning.

This situation has been exacerbated as the previous producer stewardship of the oil companies has been neglected in the changes of ownership structure for lubricant distributors. Re-establishing this Extended Producer Responsibility, voluntarily or preferably legislated, would provide a long term solution to the problem.

6.2.2 International Legal Context

The Basel and Waigani Convention regulate the international trade in waste oil.

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 entered into force in 2001 and classifies waste oil as hazardous. SPREP serves as the Convention's Secretariat. New Zealand, Samoa, the Cook Islands, Tonga, Tuvalu, PNG, the Solomon Islands, Vanuatu and Fiji are party to the Waigani Convention.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal seeks to minimize the movement of hazardous wastes across international borders, through an agreed regime of rules and procedures. It also commits to assist developing countries manage hazardous waste in an environmentally sound manner. Under the Convention waste oil is classified as hazardous and shipments to and from non-Parties are illegal without prior bilateral agreement. Cook Islands, Federated States of Micronesia (FSM), Kiribati, (not in this initiative) Nauru, Papua New Guinea (PNG), France, New Zealand and Samoa are party to the Basel Convention. As Fiji, the proposed recipient of oil, is party to the Waigani, but not to the Basel Convention, Nauru, Kiribati and FSM, would be either need to become party to Waigani, prior to participating in this initiative. Another alternative is that Fiji also ratify the Basel Convention. Initial consultations have been undertaken with the government of Fiji on this matter. Correspondence with environment department staff indicates they will consider the matter, but that it is an unlikely scenario.

6.2.3 Situational Analysis

Disposal strategies examined included, in descending order of environmental desirability:

- Recycling as a lubricant;
- Beneficial re-use as fuel for power generation; and
- Beneficial re-use as a replacement fuel for industry.

Recycling as a lubricant: was found to be expensive, a high risk due to process and equipment complexity and the final product unviable due to product consumer resistance. The Pacific is not kind on sophisticated equipment and maintenance a significant hurdle for sustainability. Spares are hard to source and expensive and the expertise to service such equipment is not currently available locally. Moreover, there are significant market barriers to using recycled oil. Most engine manufacturers void any warranties if recycled oil is used as a lubricant. The experience elsewhere has been that consumers believe that recycled oil is of lesser quality and will not purchase it unless it is significantly cheaper. This would not be the case and the recent drop in oil price has ensured that oil recycling is not viable and would require significant subsidies. These two market barriers have been responsible for stymieing the development of oil recycling in Australia and it is likely that a similar situation would apply in the PICTs.

Beneficial reuse as fuel for power generation: No electricity agencies have shown interest in the use of waste oil. SLN in New Caledonia expressed interested, but noted that New Caledonia's environmental legislation precludes the import of waste oil from other countries

or territories. It is highly likely that, once the systems are established and the volumes known, some power generators will become interested. This can only assist as it will build a market and value for waste oil. However, the recent collapse in the price of oil may make this option later rather than sooner.

Beneficial reuse as a replacement fuel for industry: is the preferred option based on current reuse options in the PICTs, with the possibility of moving up to power generation if sufficient volumes of waste oil can be captured for re-use.

6.2.4 Evaluation of Industry Facilities capable of accepting used oil

Four industry facilities currently reusing waste oil were considered:

- Reuse for phosphate drying in Nauru;
- A cannery in American Samoa;
- SLN Nickel refinery, New Caledonia; and
- Fletcher Pacific Fiji, Fiji.

Phosphate Drying Process, Nauru: Reuse for phosphate drying in Nauru was eliminated due to low temperature combustion and poor environmental controls on emissions. If the phosphate drying kilns are up graded, this option may prove viable in the future.

Cannery Facility, American Samoa: Reuse in American Samoa was considered a high risk for sustainability due to ongoing doubts about the fish canneries commercial longevity in the face of greatly reduced subsidies from the US. Recent changes in US legislation have created uncertainty about the viability of the canneries and both have made statements about moving their factories to the Philippines. While no announcement has been made, it was considered unwise to predicate a disposal solution on an industry with that level of uncertainty.

SLN Nickel Refinery, New Caledonia: Melanie Ashton visited SLN Refinery while visiting New Caledonia. According to SLN representatives, SLN have a program to reuse waste oil from New Caledonia. SLN charge waste oil collectors for delivery and reuse the oil to generate power. While representatives noted that more oil was required, they also noted that New Caledonia's environmental legislation precludes the import of waste oil from other countries or territories. Ergo, despite having a well developed opportunity for oil recycling, this was option was eliminated.

Fletcher Pacific Fiji, Fiji: The proposed disposal facility is Fletcher Pacific Fiji, Walu Bay, Fiji. Fletcher will use waste oil as a fuel substitute in their rolling mill as they partly do already. This burns at over 1,000^{o}C, which effectively ensures the destruction of minor contaminants and prevents the formation of dioxins and furans. When the needs of the rolling mill's output are exceeded, Fletchers can increase the operating hours of the mill to function as an industrial incinerator.

Beyond 4 Megalitres (ML) per year, the possibility of a direct injection engine for internal power generation is viable and beyond 9 ML pa, the mill can install a boiler to provide power to their own operation plus sell into the Fijian grid. Fletchers' needs are primarily that the oil volume and quality is reliable. This may require oil / water separators at the exporting PICT's to both clean the oil and to minimise packing and shipping costs.

Beneficial reuse, both as steel rolling mill furnace fuel and possibly for power generation at Fletcher Pacific Fiji's facility in Walu Bay, Fiji was found to have a number of very desirable characteristics and was chosen as the focus of the feasibility assessment. Fletcher

Pacific is a division of the NZ Fletcher Building Group and has operated in Fiji at the Walu Bay site for over 30 years under different names. They are considered one of Fiji's best corporate environmental citizens with an integrated workplace health and safety, quality assurance and environmental systems. They have also been one of the first Fijian companies to be selected to be a Green Production Project to reduce greenhouse emissions through energy efficiency. Utilising Fletcher Pacific Fiji for waste oil reuse also has significant advantages for the AFD. Fletcher Pacific Fiji provides a sustainable option to address waste oil issues in the subregions with little risk and little cost. Fletcher Pacific Fiji operations provide a robust solution, in that they can function successfully at almost any level of collection.

The Fiji Division of Environment is very supportive of this system, both from the perspective of assisting their fellow PICTs with a problem waste but also as it will help Fiji's environment which currently has over 5 ML dumped into it each year. The benefit to Fiji compounds if the waste oil is sufficient to generate power as this provides an economic boost without exacerbating the balance of payments.

There is a potential issue in that the new Fijian Environmental regulations will require an upgrade of the mill stack to meet environmental best practice. Neither Fletchers nor the Division of Environment see any difficulty as Fletchers are one of Fiji's environmental exemplars.

Based on the review of activity options above, Fletcher Pacific Fiji was selected for further feasibility assessment as detailed in the subsequent sections of this report.

6.3 Strategy selection

The proposed strategy involves establishing an ongoing sustainable system with a chain of custody from user, to a re-use, recycling or disposal option.

Waste oil is generated on an on-going basis and its medium term storage requires robust facilities, and a strong maintenance regime. A system that uses long term storage creates significant environmental and fire safety risks and there is little to be gained in economies of scale for shipping.

From point of generation in the workshops or backyards of the Pacific through the collection system, export, import and final use, all links in the chain will function more safely and efficiently with an ongoing activity.

The following outlines the benefits of a sustainable ongoing activity on waste oil:

- Makes the education of users a more functional process as they will need to develop a habit of returning their waste oil;
- Allows for an slow expansion of collection volumes as the education process becomes effective;
- Creates a viable collection "business";
- Provides continuity for training the various personnel in the chain of custody in safe handling of waste oil;
- Reduces the capital outlay for storage facilities;
- Ensures easily duplicated safe and legal shipping under the Waigani Convention hazardous waste transport system;
- Creates an ongoing commercial relationship between distributor and disposer;

- Allows for gradual expansion both within PICTs and into new PICTs over time and as the system can accommodate it; and, probably most importantly;
- Provides a predictable volume of supply for the disposer to rely on; and
- Involves a PICT industry as disposer, thereby building capacity in PICTs.

The system involves each participating PICT legislating to require companies importing lubricating oils, to fund a system of regular collection of the used oils, as an Extended Producer Responsibility (EPR). This system would focus on the major users such as workshops and bus companies but would be available to all consumers. Encouraged by a comprehensive public education campaign, lubricant users would return the waste oils to convenient collection facilities.

Under this EPR scheme, the importing distributors of oil would participate, imposing a safe disposal levy or marginal price increase on top of the usual commercial wholesale. This extra money would be to fund (possibly along with the appropriate Government agency), an ongoing (post-activity) education campaign to inform consumers about where, and how to return waste lubricants.

The levy would also fund collection facilities at convenient sites such as mechanical workshops, bus company depots, and oil company depots. Waste oil would be collected at regular intervals and transported to the importing company or storage facility for packaging for export. As it is too expensive to return the waste containers from overseas, the oil will need to be packed in either metal framed plastic storage containers or used oil drums and then placed in shipping containers.

The importing distributors of the lubricants are the "producer" and become responsible, in partnership with the PICT government, for educating their customers to return waste oil to the distributor–funded and installed collection points. The main focus are the big users and the lubricating oil importing companies know who the big users are and deal with them closely.

It is expected that the producer / distributor, as part of their EPR will enter into commercial contracts with appropriate commercial service providers to:

- Regular collection of waste oil from drop-off facilities (in small PICTs this may be simply a place at the central depot);
- Storage (if necessary) prior to export;
- Shipping arrangements and costs; and
- Supply of waste oil to the disposer.

A regulatory framework provides commercial certainty across the sector and allows all parties to contribute appropriately. As the proposed activity requires the oil importers or distributors to establish and pay for the collection system, PICT Governments may need to establish a regulatory framework to require compliance with this producer responsibility. It may even be the PICT government's choice to operate the system themselves and fund it using a tax on the importation of lubricants.

Each PICT will have some legal constraints on the collection and or disposal of waste oil, either specifically or mostly in general statutes banning polluting behaviour or the causing of environmental damage. These will need to be complied with including providing bunded storage facilities with safe collection and possibly licensed collectors. If there is no current licensing requirement for liquid hazardous waste transporters, this may well be an

appropriate time for PICTs to consider implementing such a system. Safe vehicles and driver training requirements are easily administered through a licensing scheme and greatly minimise the regulatory costs and negative environmental consequences of illegal dumping. Consideration will need to be given to funding the regulatory side of the system and a licence system is the obvious mechanism. Establishment and infrastructure issues such as installation of waste oil receival points or water separators will also be relatively simple to assess performance.

For any eligible PICTs not party to the Waigani Convention, advice will be provided from the project team on the process of ratification, at the beginning of the activity. Participation in the activity will likely be contingent on ratification of this instrument.

The collected oils would then be stored at a central facility to export to the disposal facility in Fiji. The central facility in each PICT would separate out any water before arranging shipping in robust containers to Fletchers Steel in Fiji and completing the Waigani documentation. The shipping would be controlled by individual contracts between Fletchers and each PICT's importers. The waste oil would be received by Fletchers in Suva and transported to Walu Bay rolling mill for disposal as an alternate fuel.

The system would commence in Fiji as the EPR legislation has already been passed, and in any other PICT that is ready for exporting waste oil. As further PICTs legislate or lubricant distributors voluntarily assume their EPR responsibilities, the collection network of PICTs can be expanded.

6.3.1 AFD Potential to contribute

The proposed activity includes education and economic instruments components, consistent with the regional priorities in waste. This complements Component 1 of the AFD Solid Waste Management Initiative, which focuses on building PICT capacity in policy development.

AFD can also add significant value to this subregional activity, through the funding of the inclusion of Wallis and Futuna.

6.4 The Activity

6.4.1 The Goal and Purpose

The goal of this activity is to reduce the negative impacts of waste oil on the environment of the participating PICTs. The purpose is to establish a sustainable system that manages the on-going waste stream of used oil, with minimal environmental impact, while maximising any economic opportunities for the Pacific without requiring continued external financing.

The activity is structured as a single component. The activity proposes to provide PICTs with a simple template of EPR legislation, facilitate a collection and export to Fletcher's under the Waigani Convention, implement in partnerships with PICTs a public education program and undertake environmental auditing of the reuse facility.

6.4.2 Component Structure

The objectives of the component are to facilitate:

- PICTs enacting EPR legislation;
- A fully funded pilot waste oil collection system in each PICT; and
- delivery of oil to a suitable reuse entity (Fletcher Pacific Fiji).

The Implementing organisation will deliver the following Outputs:

1. Prepare a brief Background Paper on the implementation of EPR systems for waste oil to distribute to all PICTs governments.

   The Paper would outline the role expected of participating PICTs and outline the assistance available to those who wish to take up the AFD offer on a "first come first served" basis.

2. Initial Consultation program

   Consult with PICTs about the project, the prerequisites and the assistance that will be made available.

3. Determine the sequence and quantum of assistance and a two-year rolling implementation program for AFD consideration and approval

   Design the implementation program and then visit each successful PICT to establish the necessary systems for successful progress.

4. Develop, with the Government of Fiji, a product stewardship and collection system:

   - A voluntary or legislative product stewardship agreement with the lubricant importers (Fiji has already got a legal EPR provision);
   - A program to progressively implement the collection system, beginning with the major customers and then moving on to all licensed workshops;

5. Develop drafting instructions for EPR legislation and guidance on the use of the Waigani instrument, and a model contract for use by Fletcher Pacific Fiji and the waste oil exporters

   The project team would develop Drafting Instructions for generic EPR legislation, including the general provisions of licensing of transporters and offences for inappropriate disposal. This will not only service the needs of this activity but will provide the legal ability for PICTs to require any importer to be responsible for the waste that the imported goods generate. PICT governments would translate the drafting document into the particulars of their specific enabling legislation and legal framework. Fiji has already enacted such legislation and are moving on the management of lead acid batteries. The Fiji legislation may be used as a framework by the project team.

6. Develop a generic public education program on waste oil and its collection.

   The project team will deliver a generic public education campaign which will be trialled in Fiji. The output deliverables will be key text messages and images relating to the negative consequences of oil pollution. These will be combined with information regarding participation in each PICT's collection system. Each PICT will be able to use these in newspaper ads, posters or flyers as appropriate. Mode of delivery will vary according to the development context in each PICT, and will be agreed between the PICT and the project team during the initial consultation phase.

   It would be appropriate for some contribution to the education campaign to come from the lubricant importers in the long run, as there will be an ongoing element needed to change behaviour. However, the initial funding for developing and running the campaign will be included under this initiative. This also provides the AFD with an easy mechanism to brand the activity and gain recognition for their assistance in addressing this waste oil issue.

7. Develop an in-country used oil collection system in each participating PICT.

   The project team will negotiate the draft design and contractual arrangements for a waste oil collection system with the lubricant importers, major users and the relevant government agencies. The in-country parties will then be responsible for the creation of the system on advice from the project team.

   The collection system will:

   - Collect used oil from individual sites using suitably qualified used oil collectors. Investigate a formal licensing system for these used oil collectors;
   - Provide a central short-term storage location, that is compliant with environmental legislation including providing bunded storage facilities
   - Undertake training in the completion of Waigani paperwork in preparation for export of used oil.

8. Conduct environmental audits of the collection and the reuse facility.

   While each PICT is primarily responsible for their own environmental enforcement, the fourth proposed output is to ensure the establishment phase is responsibly implemented. To ensure this, the project team will perform annual environmental audits on the participating PICTs' collection and export systems and also the disposal facility at Fletchers Steel. PICT environmental agencies will also participate in these as a training exercise to ensure that the ongoing waste system remains environmentally safe.

6.4.3 Responsibilities for Outputs

The project team will be responsible for all of the above outputs, with PICT governments as a key partner. A MOU will be necessary to gain full commitment of both parties before commencing on delivering specific outputs with that PICT.

However, the ongoing implementation of the system will involve a series of partnerships between lubricant importers, PICT Environmental agencies and Fletcher Pacific Fiji. For example, while the project team will deliver the drafting instructions for EPR, it will be the responsibility of the PICT government to convert those into legislation appropriate to their situation and then enact and enforce those laws.

The PICT governments will be required to undertake the following outputs:

- Output 5: Enact legislation giving effect to EPR and Waigani Convention and to facilitate the signing and enforcement of contracts between the waste oil exporters and Fletcher Pacific;
- Output 6: Implement with the lubricant importers, the public education program using the generic materials provided;
- Output 7: Develop an appropriate and safe collection and storage system in consultation with the lubricant importers;
- Output 8: Provide appropriate regulatory staff to participate in the environmental audits for capacity building.

6.4.4 Resources and costs

The following provides a summary of the estimated activity costs and resources:

Cost estimates for delivery of outputs 1 – 5: This includes 70 days in the PICTs, for implementation visits to 10 participating PICTs, to assist with negotiations and designing the collection system that is appropriate to each situation. The collection system should be finalised to a point where appropriate private sector service providers and costings can be established to ensure a "no surprises" implementation. It also includes follow-up visits to 5 PICTs in the event of implementation problems and minimal second year expenditure, focussed on environmental audits, monitoring and reporting progress.

PICT funding: AUD250,000 fund to be apportioned to the first ten participating PICTs to assist with implementation issues and infrastructure;

The full budget is approximately AUD800,000 over two years with expenditure largely in the first year, including initial investments and assistance in developing storage systems (AUD40,000 is budgeted per PICT). The long term implementation of the collection system in each participating PICT, and any further up-grades by the disposer in Fiji are, of course, additional to this.

6.4.5 Suggested timing

The proposed activity will be implemented over two years and is fully elaborated in Annex C.

Work on the MOUs, legal templates and education program will commence at inception. Work in individual PICTs will be contingent on signing of the respective MOU between the PICT government and the project team on behalf of the AFD.

The timing of the activities will be dependent on the responses from the PICTs and therefore the project team will have to be both proactive and flexible in their approach. However, the proposal is to begin immediately in Fiji as they have the majority of waste oil, the disposal facility, strong Government agency support, EPR legislation enacted and potentially willing partners in the lubricant importers. Lessons learned in Fiji will inform and improve service delivery elsewhere.

The inception visits will determine the timetable in each participating PICT. Some PICTs are ready to begin export without the more comprehensive system envisaged. In those, as they are party to Waigani, limited export would commence immediately while the legislation and full collection system is developed.

6.5 Performance Indicators and Reporting Requirements

6.5.1 Measurement of performance

Performance monitoring of the activity will primarily be the responsibility of the project team, and ultimately AFD. Measurement of progress on delivery of the outputs 1-4 will be incorporated into the Consultation, Mission and Annual Reports.

In most cases, the relevant performance indicator will simply be the percentage of PICTs in which the output has been delivered. In addition to activity progress, the reports will also contain indicators of the effectiveness of the system. Volumes of waste oil exported from each participating PICT will be reported as part of the Waigani documentation. The effectiveness will be measured by volumes of oil recovered as lubricating oil should not experience large seasonal variations.

Therefore the proposed performance indicators are:

- Volume of waste oil exported in each participating PICT per month;

- Total volume of waste re-used at Fletchers each month; and
- Percentage of lubricating oil users aware of the collection system.

Verification of these assessments will be by project team and ultimately by AFD upon review of the relevant reports.

Measurement of progress will be reported on in the Environmental Audit report. Verification of this assessment will be by AFD upon review of the report.

Establishment and infrastructure issues such as installation of waste oil receival points or water separators will also be relatively simple to assess performance. The only other significant issue requiring performance management will be the education program. This does represent a difficulty as the usual cost-effective techniques of telephone polling for measuring awareness are not possible. It would be possible to include a simple competition in the education program as a way of establishing the penetration of the education program but such measurements are at best indicative.

6.5.2 Reporting requirements

For the Project team, the reporting schedule is included in the implementation schedule, included as Annex C.

As the risk profile is very low, reporting frequency would be minimal on this activity to keep administrative costs down.

The Project team would provide:

- A Consultation Report detailing responses from the PICTs on participation, prerequisites to participation; threshold issues and proposed PICT visit schedules;
- Mission Reports on inception visits, negotiations for system design, and progress on implementation. These will provide performance indicator and other monitoring data as well as an assessment of each participating PICT;
- An environmental audit of the collection and storage system and of Fletcher Pacific Fiji's disposal; and
- An annual report and completion report after two years.

Participating PICTs be required to provide:

- Annual plans including any activity assistance required
- Brief six monthly progress reports (using a template provided by the project team); and
- An activity completion report.

6.5.3 Risks and Risk Management

Analysis of risks was informed by interviews with stakeholders in Fiji and by consultation via email with other Melanesian and Polynesian PICTs. The following risks have been identified, as well as recommended strategies to mitigate them:

PICT Government Support: The key risk for this activity is inadequate PICT Government support. The activity has been developed under the assumption that the expressed priority of the Melanesian and Polynesian PICTs for managing waste oil, will translate into government action in issues such as signing the Waigani Convention, passing laws to require EPR for the lubricant importers and supporting the education campaign. Historically reliance on PICT

legislating for specific issues have stymied or slowed programs that ostensibly had full government support. In most cases, the complicating issue was simply other and higher government priorities for legislation. To mitigate this risk a prerequisite for participation is the political will of PICTs to enact EPR. Furthermore the activity has been designed as a pilot, thereby not relying on EPR legislation being enacted during the pilot, but to help ensure sustainability at the completion of the activity.

Environmental Risks: The major environmental risk will be that the in-country collection system is inadequate and excess oil is spilled into the environment. This will arise through inadequate facilities or inadequate collection frequency. It is proposed that the former be mitigated by providing assistance to participating PICTs in installing environmentally sound receival facilities. This will also assist in ensuring that the quality of the waste oil is not compromised by poor storage. It is proposed that the latter be mitigated by providing PICT governments training in spill control and clean up. PICTs may seek further support for activities in this area, including funding for in-country facilities, under Component 3, the AFD Fund.

Risks Associated with Fletcher Pacific Fiji: A significant risk involves the disposal option being wholly dependent on the continued consumption of waste oil by Fletcher Pacific Fiji. Unfortunately, no other option is available that is comparable in benefits to Fletcher. While it is possible to re-direct the waste oil to Australia or another Pacific rim developed country but the costs greatly increased and benefits diminished to the Pacific. Fletcher's corporate history indicates it has been operating consistently for over 30 years and has been successful with one of only two Green Productivity Projects in Fiji to increase energy efficiency and reduce Greenhouse gases. Fletcher Pacific Steel only use recycled steel to make rod and are NZ's largest recycler. Further consultation with the Government of Fiji indicates Fletcher Pacific Fiji is considered a reliable corporate partner.

Risks to AFD: The risks to AFD are considered minimal as PICTs will not be eligible for funding unless they address certain fundamentals like ratification of the Waigani Convention and passage of EPR legislation or other sustainable funding mechanism.

6.5.4 Sustainability and Sustainability Management

The sustainability of the activity is paramount. To commence the activity and then stop may cause more environmental damage than if it never happened as the amalgamation of waste oil carries an increased risk compared to widely spread and more easily assimilated small volumes of oil.

Financial sustainability is the key challenge to the ongoing sustainability of this initiative. "Polluter pays" is the internationally accepted principle applied to similar cases. In this case it is businesses that import the lubricants that profit from the consumption. Lubricant wholesalers and retailers will simply pass the costs onto those who use the product. By making the importers liable for the costs of the system, those companies will try to ensure a simple and cost-effective system is in place to keep the final product costs as competitive as possible.

Just as importantly for the Pacific's private sector, no extra taxation will be required and the costs of compliance are minimised. Also, the education of lubricant users is a simple point-of-sale exercise between seller and customer. There is no need to pass over potentially commercial-in-confidence sales figures to Government and no chance of taxes being used for purposes other than intended.

It is quite possible that costs will reduce over time. The differential in cost between new and old oil will increase in the medium term and the value of used oil to the Fijian steel mill will also increase if they can reach the threshold necessary for generating power. In that case, PICT companies will be able to negotiate a value to their waste oil.

6.5.5 Management arrangements

AFD-funded assistance of AUD40,000, for the first ten eligible PICTs, may range from liaison with the lubricant importers, financial assistance with establishing safe and bunded collection and storage points, oil / water separators, robust exporting procedures, education programs and enforcement strategies. This is managed through the project team reporting back to the AFD.

The AFD would request the project team to:

- Prepare a brief background paper on the implementation of EPR systems for waste oil to distribute to all PICTs governments. The paper would outline the role expected of participating PICTs and outline the assistance available to those who wish to take up the AFD offer on a "first come first served" basis.
- Consult with PICTs about the project, the prerequisites and the assistance that will be made available.
- Design the implementation program and then visit each successful PICT to establish the necessary systems for successful progress.
- Work with the government of Fiji on the product stewardship and collection system in partnership to develop:
    1. A voluntary or legislative product stewardship agreement with the lubricant importers (Fiji has already got a legal EPR provision);
    2. A program to progressively implement the collection system, beginning with the major customers and then moving on to all licensed workshops;
    3. An education campaign with both commercial and public elements to ensure all know the consequences of waste oil disposal and how to safely recycle their old lubricants. The education campaign would be monitored for effectiveness and provide a template for other PICTs bearing in mind that each education program would need to reflect the specifics of the individual PICTs collection system and the particular media or other public engagement modalities.
- Develop drafting instructions for EPR legislation and guidance on the use of the Waigani instrument, and a model contract for use by Fletcher Pacific and the waste oil exporters that respects the rights and responsibilities of both parties.
- Determine the sequence and quantum of assistance and development a two-year rolling implementation program for AFD consideration and approval.
- Establish the likely volumes that would be generated by each participating PICTs to enable Fletcher Pacific Fiji to begin to plan their future investment in generating capacity.

6.5.6 Skills required

The project team will require at least the following specific skills or be able to source them at short notice.

- Experience delivering multi-stakeholder projects in PICTs;
- Expertise in negotiation and high level liaison with PICT governments and business;
- Expertise in waste management collection, use of economic instruments, training and public education programs;
- Expertise in preparing legislative drafting instructions, contracts and guidelines;
- Expertise in project design, costing and management; and
- English and French languages capabilities.

6.6 Feasibility, Impacts and Sustainability

6.6.1 Manageability of the Activity

It is proposed the management of this activity be undertaken by the project team, over a two year period.

This activity requires a mix of policy, legal, political and practical skills. The recommended agency for implementing the activity is a private sector consultancy or other agency with strong Pacific experience and a range of expertise that can be marshalled to provide expert assistance when necessary but are not engaged full time.

6.6.2 Technical, Financial and Economic Feasibility

The only challenging technical issue is the disposal technology and that is established and well monitored by the Fijian Division of Environment. The disposal facility will require some minor upgrading that has already been scheduled independently. The collection system is a simple logistics exercise focussing on major producers of waste oil. Many already collect and store their own waste. Oil water separators can be sophisticated but simple gravity tanks are sufficient for this purpose.

Financially, the activity's long-term feasibility hinges on the political will of the participating PICTs to enact EPR legislation, or some other mechanism to ensure the oil lubricant importers pay for the collection and export of their waste products, as well as effectively operate collection and export schemes. An indication of this political will is a prerequisite for participation in this activity.

Economically, the system is feasible. Increases or decreases in lubricant sales will be matched by increased or decreased costs. The margin is minor and unlikely to affect sales volumes. The economics of the disposal agent, Fletcher Steel, improves with greater volumes as they will move into generating power for profit. There are no current barriers to that and it would provide a minor economic and investment boost to both Fletchers and Fiji.

The very recent volatility in global financial markets has several direct and indirect consequences on waste oil management. The price of crude oil has dropped significantly since July 2008, and there is considerable debate as to the future direction of the oil price. Thus, cost advantage of the use of waste oil as a substitute for new, is reduced significantly when compared to mid-2008. However, assuming transport markets are somewhat efficient, transport costs should also reduce, in response to the lower cost of fuel and stabilise. For the purposes of assessing the feasibility of this initiative, significant volatility in oil markets is assumed, and therefore very conservative planning and cost estimates have been used.

The waste oil system is built on transferring responsibility from Government to the lubricant importers to fund and operate the system as a form of EPR. It is envisaged that this will be

mandated by each participating PICT Government. As such, each PICT Government has a sovereign control as to exactly the extent of the collection system and what financial contribution they will require from these reasonably powerful companies.

The AFD's role will be to assist with the one-off establishment costs but all operating costs in collection and recycling are intended to borne by the private sector in order to ensure the system is on-going and economically sustainable.

The variables in the recycling system are largely PICT-specific and will be the result of negotiations and decisions made in the future. The extent of the system will be a function of what quantum of advanced recycling fee on top of the wholesale oil price the lubricant importers are prepared or required to impose on consumers.

The project costings are developed to provide some boundaries to a project budget and ensure variables are managed. It is important to note that the project budget and the system budget are distinct. The cost of the system will hinge on the extent of collection (numbers of receival facilities, frequency of collection, and the storage infrastructure) and the standard of facilities required by the sovereign PICT Environmental agency. Depending on the parameters of the collection system, the private sector may be bearing much of the cost. The AFD funds are simply an inducement to act and should be seen as a "top-up" rather than funding the new system.

The level of assistance of AUD40,000 per PICT is arbitrary and not based on a unit cost for receival facilities or storage facilities, as requirements in each PICT are highly variable. For example, the cost of a 100 tonne storage facility is AUD200,000. An oil/water separator varies from AUD5,000 through to very sophisticated systems at AUD50,000. "Drop off" receival stations, if built to Australian standards, cost between AUD10,000 and AUD15,000 per station. However, some drop offs in the Pacific may well simply be a recycled oil drum in the shed at the back of the petrol station at zero cost.

As mentioned, the AFD contribution is managed to ensure to remove risks of escalation or unforeseen contingencies. The only real financial issue is whether the AFD establishment contribution is sufficient to encourage PICTs to participate given that they haven't established one to date. However, their environment agencies have recognised the problem and are, presumably, under-funded or uncertain as to how such a system could be developed. Until fairly recent divestment of oil franchises from the large multi-nationals who dealt with waste oil in a limited way, to the local under-skilled companies who do not have the corporate environmental structures that would have maintained the system.

6.6.3 Institutional Feasibility

The primary institutions involved are the PICT governments and the lubricant importers. All are quite capable of the actions necessary for success and only some minor capacity-building, specific to the project, will be necessary. Any training will be incorporated into the PICT inception visits. This is not complicated and can function successfully from the lowest levels of participation and collection up to the highest. As such, the activity is very robust and immune to individual institutional failure or individual PICTs' tardiness to implement.

6.6.4 Sustainability Impacts

The activity has primary value in addressing an environmental imperative for better waste oil management and fuel substitution, by facilitating the development of an ongoing system for waste oil export and reuse. There will be a wider educative role from involving the public, as well as some very minor economic advantages from the activity. The impacts on social

issues are negligible and there are no foreseen gender, cultural, poverty or other development issues that are impacted on positively or negatively by the activity.

7 SUMMARY OF PROPOSED ACTIVITY COSTS

The aforementioned sections outlined the scoping studies, for subregional activities on school chemicals and disused pesticides/POPs, waste oil reuse and scrap metal recycling. The following table (Table 3) summarises the proposed activity costs and timeframe for implementation.

Table 3: Summary of cost estimates and implementation times of subregional activities

Subregional activity	Cost estimate AUD	Cost estimate EUR	Implementation timeframe	Subregion
School chemical and disused pesticides/POPs	AUD532,530	EUR278,988	12 months	Melanesia
Scrap metal recycling	AUD1,397,200	EUR731,982	36 months	Micronesia
Waste oil reuse	AUD794,200	EUR416,075	24 months	Melanesia and Polynesia

8 ANALYSIS OF POTENTIAL FUNDING SOURCES

A review of donor priorities in the Pacific Region indicates several synergies with the three subregional activities scoped and proposed by this feasibility study. Most relevant are the activities of the Australian Government, through the Australian Agency for International Development (AusAID), the Global Environment Facility-Pacific Alliance for Sustainability (GEF-PAS) and the Xth European Development Fund. These synergies are discussed below.

AusAID funded the implementation of the POPs in PICs Project from 2003-2008. The activity removed over 100 tonnes of POPs and intractable pesticides. AusAID has recently announced its intention to fund a scoping study in PNG in an attempt to cost a similar activity in PNG. Accordingly, PNG was omitted from the disused pesticides and inventory-making process proposed as part of the school chemical and disused pesticide/POPs activity.

AusAID staff have been kept up to date with the progress of this study, through monthly stakeholder update emails, and through direct consultation over the agencies plans for POPs in PNG. Recent correspondence with AusAID (Susan McDonald, Infrastructure, PRIF and Environment Pacific Branch) indicated that AusAID was in the initial stages of considering future solid waste management activities in the Pacific region. According to the correspondence, AusAID is looking at bulky waste and scrap, using Kiribati's metal collection as a potentially replicable activity. AusAID also indicated interest in the "next level" of hazardous waste in the form of the proposed school chemicals and disused pesticides/POPs activity.

Consultations on potential synergies with activities under GEF-PAS were undertaken with UNEP Chemicals (David Piper, Division of GEF Coordination). According to UNEP Chemicals there is a POPs and waste reduction project for the Pacific. Under this project all elements must be approved by June 2009 and submitted in April 2009, this includes co-financing and endorsements. UNEP noted that it may be possible to use AFD Component 2

funding, if AFD confirms that the funding will arrive during the project. If funding was not confirmed by AFD, UNEP noted GEF funds could still be used to co-finance POPs-related activities under Component 2, perhaps with co-finance from another donor, for example AusAID as an extension to POPs in PICs. Alternatively, UNEP could build a simple project on POPs and wastes, which would link funding under Component 1 and 3, as co-financing, once AFD confirm funding for these components.

Consultations on the Xth European Development Fund (EDF) were undertaken with AFD, New Caledonia (Dominique Hautbergue, AFD, New Caledonia). According to AFD New Caledonia, under the Xth EDF there are three "wallets" of funding. The first is allocated for training in New Caledonia, the second is allocated for Wallis and Futuna, New Caledonia and French Polynesia, to finance waste, and the third is allocated to the 19 Pacific Island Countries, and the aim is to promote cooperation among territories and between territories and PICs. According to AFD New Caledonia, 8-10 million Euros is allocated to the EDF waste project for a regional activity, but that this may be reduced, and that a feasibility study for such an initiative was likely to begin in December 2008, through to March 2009. AFD New Caledonia noted the potential links between the waste project under the Xth EDF and the AFD Solid Waste Management, Component 2 activity. It is recommended that AFD consider seeking co-financing for activities under Component 2, from the Xth EDF funds allocated for wastes.

Strong synergies and potential opportunities for co-finance have been identified with AusAID, under GEF-PAS, and under the Xth EDF. Given the current availability of funds under the AFD Solid Waste Management initiative, it is recommended that AFD share the scoped activities and this report with donors and potential partners as soon as possible, in an effort to identify co-finance. It is also recommended that this report be shared with other donors active in the Pacific region including JICA, NZAID and the Asian Development Bank.

9 ASSESSMENT OF ECONOMIC AND ENVIRONMENTAL DIMENSION OF STRATEGIC APPROACHES

The AFD defined two fundamentally different approaches to funding waste problems in the Pacific. The first involves funding the removal of stockpiles of waste regularly and from time to time. The second involves establishing a permanent funding system and supporting, as an alternative to financing regular clean up.

The activities included in the scoping study and outlined in the aforementioned sections, were considered in light of these two approaches, as defined by AFD. The subregional activities on scrap and school chemicals and disused pesticides/POPs, both require the initial clean ups of legacy waste, and include strategies to prevent the legacy wastes recurring and therefore mitigating the need for further regular clean ups.

In the case of scrap metal, a two-phased approach is proposed, where legacy scrap is collected, and concurrently a second pilot phase is undertaken with the Government of Kiribati, to trial a self-funded recycling scheme, to ensure that the Government of Kiribati can manage the export of used cars, without external assistance in the future. In the case of school chemicals and disused pesticides/POPs, a first phase of disposal of disused school laboratory chemicals, and then later export of these chemicals is proposed. This includes a provision to review PICT school chemistry program and provide advice on those chemicals which can be safely disposed of in delicate Pacific environments and those which will require future export as waste, allowing PICTs to make informed decisions on future chemical orders. In the case of used oil the activity involves the start up and facilitation of an

ongoing oil recycling program. The design includes for provision of Drafting Instructions of EPR legislation, therefore providing PICTs with the means to continually fund the export of used oil.

In light of the above, it is clear that each of the scoped activities addresses legacy issues, but each also has design measures built in to provide long term self-funding options. In the case of school chemicals, capacity building for PICTs to allow PICT governments to avoid future build up of waste school chemicals, requiring export, has been built in. However a second phase to export school chemicals and disused/POPs will also be required.

Accordingly, the activity designs indicate that prospects for sustainability have been into each initiative. However, it is likely some PICTs will require further assistance in specific areas. As such, it is proposed that the fund designed under Component 3, will actually serve the needs of PICTs to address these issues in the future.

10 CONCLUSIONS AND RECOMMENDATIONS

To continue the momentum developed over this 5-month study, during which PICTs showed a strong interest and support for the projects developed under Component 2, it is proposed that work begin on at least one of the proposed activities in 2009.

The waste oil reuse activity would serve to address an urgent and ubiquitous hazardous waste challenge, is comparatively low cost, and has the potential to showcase the AFD commitment widely through the Melanesian and Polynesian PICTs. Further, it can be easily extended to interested PICTs in Micronesia. It is therefore recommended that this activity be considered for implementation in 2009.

The school chemicals/POPs project is also ready for implementation, and is cost-effective. This activity may attract co-financing through the GEF-PAS funding, and given the tight timeframe for GEF-PAS approval, this needs to be progressed as a matter of urgency. Further AusAID have also expressed interest in building on the outcomes of the POPs in PICs Project and therefore it is recommended that AFD approach AusAID formally to establish the agencies interest in co-financing this activity. Also, the Xth EDF has earmarked some funds for waste management in the French territories and synergies with this funding opportunity should be explored.

The financial feasibility of the scrap metal/bulky waste activity has been significantly impacted by the 2008 commodity collapse. It is expected that the value of scrap steel will rise again to 2007 levels, but this may well take several years. It is therefore recommended that this activity be scheduled later (i.e. 2010 or 2011) to allow scrap prices to recover as much as possible. This would also allow the politics of the global recession to pass, making it politically feasible for PICTs to introduce import taxes on new vehicles.

It is recommended that AFD share this study with interested regional donors and development partners in an effort to identify co-finance opportunities. While it is recommended that the scrap metal activity be postponed for one-two years, to allow commodity prices to recover, the waste oil reuse and school chemicals and disused pesticides/POPs activities, represent important and cost effective activities and should therefore be implemented as early as possible.

11 REFERENCES

Ashton, M. and McRae-Williams, M. (2008) Kiribati Chemical and Waste Management Advice and Banaba Reconnaissance Mission, Government of Kiribati.

Ashton, M., Ricketts, M. and Campbell, P. (2008), Regional Initiative for Solid Waste Management in the Pacific Region, Feasibility Study (Phase I, Component 2), l'Agence Française de Développement.

Annex A

School chemicals and disused pesticides field visit summary, cost estimate, implementation schedule and logframe analysis

New Caledonia (5 – 8 November 2008)

Record of meetings – compiled by Melanie Ashton

Note: All meetings were attended by Melanie Ashton and Valerie Harper. Valerie Harper acted as interpreter. These minutes are for the use of the AFD Team (Daniel Todd, Petra Campbell and Mark Ricketts) and are not for general circulation.

5 November 2008

8am – Valeria Harper and Cyrille Berhault – Clarification of interpretation services

- Met Cyrille and Valerie at the hotel and clarified the need for interpretation services, but not for transport. Briefed them on the purpose of the study and Cyrille provided several more names of individuals who may be useful contact points.

- Accompanied Valerie to her home to make telephone calls and set up appointments.

2pm – Maud Pierano, Interim Director, Prevention of Pollution and Risk, Department of Environment, South Province (Chef de Service par interim, Service de la Prévention des Pollutions et des Risques (SPPR), Direction de l'Environnement de la province Sud) (maud.peirano@province-sud.nc)

- Introduced the AFD SWM Feasibility Study and explained as part of Component 2 on subregional initiatives, I was visiting New Caledonia to find more out about the presence of disused pesticides and school laboratory chemicals, and also the practise of reusing waste oil. Also explained that Marie-Francoise Pierre completed the AFD survey and prioritised the issues of disused pesticides and school laboratory chemicals for assistance, and that she also stated a study of these issues was underway. Maud explained Marie-Francoise was one of her staff.

- Maud explained that the Environment Department, Southern Province, had very little information on either of these issues and that the study would be commended in May/June 2009. She said she understood assistance would be required for export and disposal, and recommended consulting the Agriculture Department.

- Regarding school chemicals, Maud suggested contacting the Vice Rectorat.

- Maud noted that 85% of the New Caledonian population resides in the southern province, but recommended also contacting the Northern Province (Germain Padome, Chargé de mission environnement de la province nord, charge.environnement@province-nord.nc) and the province of the Loyalty Islands (Michelle Lebolte).

- Regarding incineration of oil, Maud explained Societe Le Nickel (SLN) reuse waste oil. This practice of incineration of oil by using it as feed to the power plant will cease between 2012-2014. Environment Sud would like SLN to help find a new solution – perhaps a new incinerator. Maud noted that New Caledonia require ISO compliance. She also noted a new regulation, effective November 2008, requiring importers to finance the collection of waste

oil (Juridoc.nu–JONC=8187). An importers organisation Trecodec, has been formed to manage this.

3.00pm – Stephan Bohen, Deputy Consul General (Consul Général Adjoint), (Stephan.bohnen@dfat.gov.au)

- Briefed Stephan on the nature of the AFD Initiative and he explained the types of assistance provided by the Australian Government to New Caledonia to support the implementation of the Noumea Accord. He explained the Consul General's Office also services French Polynesia and Wallis and Futuna.

- He said that New Caledonian community based associations, are eligible for grants under the Direct Aid Programme. Grants are usually between AUD5K and AUD10K.

- Regarding demand, Stephan explained it certainly exists, but that they really struggle to get quality applications. The Consul General's office provides assistance to complete applications. One of the issues in New Caledonia is that as a French Territory, its residents are used to receiving subsidies. The culture of "grants" and the need for an application for funding, to be spent on something specific, is a new concept.

- He also noted the Australian Government funds educational scholarships.

4pm – Philippe Gazeau, Director of Energy (Chef de service Energie, Department Entretien Usine) (p.gazeau@eramet-sln.nc)

- Philippe explained that in SLN 99% of the fuel to make energy, is new fuel. He said the rest of the fuel was distilled from waste collected from New Caledonia. He explained the plant's process to separate impurities, check quality and mix it with new fuel, to feed the power plant. He said the percentage of used oil is never more than 4% and this is regulated. He said SLN's primary activity was to make Nickel, but that they need energy, which is expensive. As such the company uses as much waste oil, as is available to it.

- He noted that SLN had the capacity to use more, but, that they had no authority to accept waste oil imported from other countries or territories. There is a legislative barrier to this. The law is in place to protect New Caledonia from importing potentially PCB-contaminated oil.

- The current procedure for testing for PCBs is to collect one oil sample, for every 10 trucks that deliver oil. The oil is burnt before the sample results are retuned (from NZ or Australia). Once in the last 10 years a sample tested positive for PCBs. The source of the oil was a ship from Spain, that changed its oil in New Caledonia. DIMENC are currently developing a way to analyse for PCBs on island. Once this is in place, procedures will be changed and oil from each truck will be analysed.

- There are collection companies in Noumea that collect waste oil and deliver it to SLN. Upon delivery, the truck pays XPF3.4K per tonne. He said quality was variable, sometimes the oil is full of water. SLN charge for oil and water, in attempt to educate polluters.

- Currently accepts 1,954 tonne of waste oil per year. Could accept up to 3,000 tonnes.

- In 2012 the power plant will be replaced. The current oil fired plant, will be replaced by a coal fired plant. Not sure if it will be possible to feed the new plant waste oil.

- Phillip requested and Melanie sent, the project resume executif.

6 November 2008

9am – Dominique Hautbergue, Deputy Resident Manager, AFD (Directeur Adjoint, Agencee régionale de Nouvelle-Calédonie) (hautbergued@groupe-afd.org)

- Dominique explained the work of AFD in New Caledonia, French Polynesia and Wallis and Futuna. He said funds are provided through loans for example for the construction of landfills, collection of waste and procurement and installation on incinerators.

- Under EDF10 there are three "wallets" of funding. One is for training in New Caledonia. A second is allocated for Wallis and Futuna, New Caledonia and French Polynesia, to finance waste. The third is allocated to the 19 Pacific Island Countries (PICs). The aim is to promote cooperation among territories and between territories and PICs.

- In the second funding wallet, the aim of the project is to identify a regional project on waste. 8-10 million Euro has been allocated to this. A feasibility study for such an initiative is likely to start in December 2008 and run through to March 2009.

- Dominique also noted that the money allocated for the AFD SWM may be reduced. He said AFD want simple, sustainable solutions and said AFD favour highly visible projects.

- Regarding New Caledonia's prioritization of disused pesticides and school chemicals. Dominique explained it was unlikely that Southern Province consulted with the other provinces. He elaborated that the Southern Province would have the capacity to formulate an inventory, but was uncertain about the capacity of the Northern Province. He said there was unlikely to be capacity in the Loyalty Islands.

- Regarding pesticide use, Dominique explained pesticides are often used quite badly in New Caledonia and that there are a lot of legacy pesticides.

- New Caledonia has new Extended Producer Responsibility (EPR) regulations for waste oil, tyres, batteries, cars and lead-acid batteries. Dominique explained Trecodec are a New Caledonian organization of producers. They are an industry organizing collecting waste oil, and may also work on other issues under the EPR regulations.

1.30pm – Clement Gandet, Responsible for Plant Agriculture, Chamber of Agriculture (Chambre d'Agriculture) (cgandet@canc.nc)

- Clement explained that the role of the Chambre d'Agriculture is an organisation representing growers. It has links to government, especially DAVAR, but is an autonomous institution. Chambre d'Agriculture has also set up a voluntary certification scheme for New Caledonian farmers, on integrated pest management. He said that the Chambre d'Agriculture works collaboratively with growers, DAVAR is the regulator.

- Clement explained that a person has been hired to study and collect information on the quantity and type of disused chemicals in New Caledonia. He is French and has previously worked in Guadeloupe, inventorising pesticides, and will be arriving in New Caledonia next week. The inventory should be complete by March 2009.

- On pesticide us in New Caledonia, Clement provided a background of information. He said first and third world practices were undertaken side by side. He said agriculture was extensive, but not intensive. He said some substances had recently been banned from use and that it is likely these will stockpiled, but some less educated users, may throw them out.

- On hazardous pesticides, he noted that endosulfan was still in use in New Caledonia, but that its use on leaf vegetables had been banned. Despite restrictions on use, he said endosulfan is still one of the most widely used pesticides. He said use was most prevalent among less-educated, small producers. He said the bigger producers use biological controls.

- Regarding the relationship of New Caledonian pesticide use to French and therefore EU regulations, he said New Caledonia and French Polynesia are autonomous. All other French territories are required to follow "the mother ship." Clement explained DAVAR had all of the information on chemical imports.

- Regarding bigger producers, he said many growers have large quantities of waste chemicals, as they change their crops every two years. Some producers have built dedicated stores. Chambre d'Agriculture has a member magazine and tries to educate people on not throwing away chemicals. However he said producers lack significant technical support and inappropriate disposal of chemicals remains a significant problem. Clement cited recent examples of chemicals being disposed of and burned in the landfill and also disposed of in the river.

- Regarding civil society activity on chemicals, Clement explained there were two groups lobbying for reduced chemicals use and for New Caledonia to come into line with EU pesticide regulation. The two organisations are the French Union of Consumers (UFC) and Ensemble Pour La Planet (EPLP) (http:www.eplp.asso.nc). Both groups are working together with Chambre d'Agriculture on raising public awareness and lobbying government for technical assistance.

- Clement explained due to the sensitive ecosystems of the Loyalty Islands, organic agriculture was being developed and promoted.

- Clement said assistance was required for exporting disused pesticides. Money is not the object, where and how to export chemicals is the more significant problem. Melanie agreed to send information on storage, segregation, repackaging, export, permitting and destruction of chemicals.

3.00 pm Isabelle Ohlen, President of the Environment Commission of the Southern Province (elected official)

- Isabelle noted the recent introduction of the EPR in New Caledonia.

- Isabelle explained that civil society groups including WWF and Conservation International lobby mainly on green environmental issues such as ecosystem preservation. She said there has been a recent increase in awareness of the need to recycle and segregate waste.

- She also mentioned that knowledge on the dangers of pesticides was increasing through the work of EPLC and UFC. Isabelle explained that some pesticides that are forbidden in Europe, are used in Australia. New Caledonia follows Australia's guidance.

- Isabelle mentioned that there have been several instances of disused fertilizers leaching into rivers, due to inappropriate storage, eg under trees. She stressed the importance of enhancing education and knowledge.

- Melanie explained that PICs received this information under the Stockholm Convention National Implementation Plan development. Isabelle highlighted the need for New Caledonian's to receive education and awareness training, as well as information on international conventions. She said most conventions that France are party to apply to New Caledonia (accept Kyoto Protocol), but that there was no public information about them. She said politicians and the public need to be made aware and said this could be done the Environment Consultative Committee. She said this is likely to also be the situation in French Polynesia and Wallis and Futuna.

7 November 2008

8.00 am – Dr Suzanne Chanteau, Director (Directrice, Institut Pasteaur De Nouvelle-Caledonie) (schanteau@posteur.nc) and Collin Vivianne, Purchase and Logistics Officer (Service Technique General) (stg@posteur.nc)

- Microbiology Institute problems with liquid waste including dangerous spent reagents, out of date reagents and some radioactive waste. Suzanne explained assistance was required to manage these wastes. She said the stockpile had been building for 20 years and is located 10km from the hospital.

- Suzanne explained an inventory had been undertaken recently of these wastes and that included advice on disposal options, and advice where no disposal solutions exists. Suzanne agreed to email a copy of this survey to Melanie.

- Suzanne also suggested contacting Barguil Yam (y.barguil@cht.nc) at the main hospital laboratory. Melanie agreed to email him and ask for information on waste chemicals.

9.00 am – DAVAR, Aurelie Chan and Remy (Aurelie.chan@gouv.nc)

- Remy explained there has been a surge in awareness of pesticides during 2007-2008 and that there are several campaigns regarding use of pesticides. He explained that campaigners want New Caledonia to follow EU pesticide regulations, as opposed to the less-stringent Australian regulations. This would involve banning another 27 pesticides.

- He said the New Caledonian Government has a policy of following Australian regulations as a lot of fruit and vegetables are imported from Australia – where these pesticides are used

anyway. He said banning these would be viewed as a barrier to trade. This is the official government position. He noted Australia still uses endosulfan, as such, so does New Caledonia.

- Aurelie agreed to provide Melanie a list of deregistered products via email.

- Remy mentioned a large quantity of a ticicide for use on cattle. He said it was stored in shipping containers but leaking. The product was used for an anti-tic campaign, but the tics developed a resistance.

- Remy mentioned Adivalor is an association in France that collects pesticides for treatment. He said the Chambre d'Agriculture would like to replicate this, but export chemicals to Australia, as opposed to France.

- Remy advised that DAVAR also had a laboratory department and that they may have small quantities of chemicals. He suggested contacting Denis Desoutter (denis.desoutter@gouv.nc) to find out details of these chemicals.

10.00 am – Debrief with Valerie Harper

- Melanie and Valerie briefly discussed the outcomes of the visit.

Cost Estimate - Disused pesticides/POPs and School laboratory chemicals

	Total Inputs (Days)		No. of PICTs	No. Staff	Total (Days)	Fee per day	Per diem	Total costs (AUD)
Technical outputs	Aust	Pacific						
1. Consultation with PICTs on the location, type and volume of school laboratory chemicals and disused chemicals/POPs	10	20	7	1	30	1200	300	45,000
2. Compilation of an inventory of disused pesticides/POPs chemicals (Nauru, Solomon Islands, Vanuatu, Fiji, New Caledonia and Wallis and Futuna);	0	3	6	2	36	1200	300	54,000
3. Training of environment staff in inventory development;	0	1	6	2	12	1200	300	18,000
4. Training for environment staff in the safe storage and management of chemicals;	0	1	6	2	12	1200	300	18,000
5. An inventory of waste school laboratory chemicals (from nominated urban centre)	0	1	7	2	14	1200	300	21,000
6. Training for environment staff, laboratory technicians and science teachers in the stabilisation and neutralisation of school chemicals (from nominated urban centre) and safe arrangement of laboratory stores;	0	1	7	2	14	1200	300	21,000
7. Stabilisation, neutralisation and disposal of school chemicals (from nominated urban centre);	0	3	7	2	42	1200	300	63,000
8. Provision of PPE and training in the use of PPE	0	1	7	1	7	1200	300	10,500
9. Design and estimated cost of subregional repackaging, collection, shipping and disposal activity for POPs and school chemicals; and	50	0	0	1	50	1200	0	60,000
10. Review of PICT school science chemistry program and associated required chemicals. Advice on those chemicals which can be neutralised, stabilised and disposed of on-island, and those which require an off-island solution.	0	1	7	2	14	1200	300	21,000
Activity management reports								
Consultation report	10	0	6	1	10	1200	0	12,000
Mission reports	4	0	6	1	24	1200	0	28,800
Activity completion report	10	0	6	1	10	1200	0	12,000
Reimbusable costs								
Airfares (based on two team members travelling to each PICT)								25,000
Local travel allowance for outer island PICT representatives to attend training (average 2-3 per PICT)								10,000
Car hire / local transport								25,000
Procurement (cement for stabilisation, PPE, field test kits and spill kit for PICTs)								40,000
6. Contingency (10% of total cost)								48,230
Total								532,530

Implementation schedule - Disused pesticides/POPs and school chemicals

Task and Activity		Months 1 to 12											
Task	Activity Month	1	2	3	4	5	6	7	8	9	10	11	12
	Project Management and reporting												
	Consultation report			●									
	Mission reports					●	●	●					
	Activity Completion report											●	●
	AFD Review												▬
	Technical outputs												
1	Consultation with PICTs on school chemicals and disused pesticides	▬	▬	▬									
2	Compilation of an inventory of disused pesticides/POPs chemicals (Nauru, Solomon Islands, Vanuatu, Fiji, New Caledonia and Wallis and Futuna);				▨	▨	▨	▨					
3	Training of environment staff in inventory development;				▨	▨	▨	▨					
4	Training for environment staff in the safe storage and management of chemicals;				▨	▨	▨	▨					
5	An inventory of waste school laboratory chemicals (from nominated urban centre)				▨	▨	▨	▨					
6	Training for environment staff, laboratory technicians and science teachers in the stabilisation and neutralisation of school chemicals (from nominated urban centre) and safe arrangement of laboratory stores;				▨	▨	▨	▨					
7	Stabilisation, neutralisation and disposal of school chemicals (from nominated urban centre);				▨	▨	▨	▨					
	Provision of PPE and training in use of PPE				▨	▨	▨	▨					
8	Design and estimated cost of subregional repackaging, collection, shipping and disposal activity for POPs and school chemicals; and				▨	▨	▨	▨					
9	Review of PICT school science chemistry program and associated required chemicals. Advice on those chemicals which can be neutralised, stabilised and disposed of on-island, and those which require an off-island solution.								▬	▬	▬	▬	

Key

● Indicates report

▨ Intermittent implementation

▬ Implementation

Logframe analysis, School laboratory chemicals and disused pesticides/POPs subregional initiative			
Intervention logic	**Objectively verifiable indicators**	**Sources of verification**	**Assumptions and risks**
Overall activity goal and purpose			
Activity goal: contribute to the sound management of chemicals in the Melanesian subregion	Proposed outputs completed	Activity reports, consultation with participant PICTs, independent evaluations.	
Activity purpose: to stabilise, neutralise and dispose of school chemicals and to safely store and inventorise those school laboratory chemicals and pesticides and POPs chemicals that cannot be disposed of on-island, to enable disposal under subsequent activities.	Proposed outputs completed	Activity reports, consultation with participant PICTs, independent evaluations.	
Output 1: Consultation with PICTs on the location, type and volume of school laboratory chemicals and disused pesticides/POPs			
Consultation with PICTs on school chemicals and disused pesticides/POPs	Consultation mission completed and information from PICTs on details of disused chemicals received and collated.	Airplane tickets and receipts, copies of correspondence to and from PICTs.	PICTs are willing to participate and make staff available to collect necessary information.
Output 2: An inventory of disused pesticides/POPs chemicals			
Inventory of disused pesticides/POPs	Inventory produced for each participating PICT.	Mission report, inventory document and photographs of chemical stores visited.	PICTs locate and have access to chemical stores.
Output 3: Training of environment staff in inventory development			
Training in inventory development	Invitations sent to relevant staff, training undertaken.	Mission report, meeting minutes, photographs of training sessions, completed participant training evaluations.	PICT staff available for training.
Output 4: Training of environment staff in the safe storage and management of chemicals			

Training in safe storage and management of chemicals	Invitations sent to relevant staff, training undertaken.	Mission report, meeting minutes, photographs of training sessions, completed participant training evaluations.	PICT staff available for training.
Output 5: An inventory of waste school laboratory chemicals (from nominated urban centre) and similar laboratory chemicals in hospital and veterinary laboratories			
Inventory of waste laboratory chemicals	Inventory produced for each participating PICT.	Mission report, inventory document and photographs of school chemical and other laboratory stores visited.	PICTs locate and have access to stores.
Output 6: Training for environment staff, laboratory technicians and science teachers in the stabilisation and neutralisation of school chemicals (from nominated urban centre) and safe arrangement of laboratory stores			
Training in the stabilisation and neutralisation of school chemicals	Invitations sent to relevant staff, training undertaken.	Mission report, meeting minutes, photographs of training sessions, completed participant training evaluations.	PICT staff available for training.
Output 7: Stabilisation, neutralisation and disposal of school chemicals (from nominated urban centre)			
Stabilisation, neutralization and disposal of school chemicals	Stabilisation, neutralization and disposal of school chemicals completed at one urban centre per PICT	Mission report, photographs of stabilisation, neutralization and disposal processes.	
Output 8: Provision of PPE training and kits to environment and education departments			
Training on PPE and provision of PPE kits to environment and education departments	Training complete and PICTs provided with PPE kit.	Mission report, training photographs, photographs of kit.	PICT staff available for training.
Output 9: Design and estimated cost of subregional repackaging, collection, shipping and disposal activity for disused pesticides/POPs and school chemicals			
Design and estimated cost of subregional repackaging, collection, shipping and disposal activity for disused pesticides/ POPs and school	Design and cost estimate completed.	Project design document.	

chemicals			
Output 10: Review of PICT school science chemistry program and associated required chemicals, and advice on those chemicals that can be disposed of on-island, and those which require an off-island solution.			
Review of PICT chemistry programs and provision of advice on suitability of chemicals for disposal on-island and off-island.	Review of chemistry program and advice on use of chemicals provided to each PICT.	Mission report. Copies of advice to PICTs.	Availability of documented school chemistry program in each PICT.

Annex B

Scrap metal recycling field visit summary, cost estimate, implementation schedule and logframe analysis

AFD Regional Initiative for Solid Waste:
Component 2 – Bulky wastes (scrap) and waste oil sub-regional opportunities – Feasibility Study

AFD Feasibility Field visit – Kiribati and Fiji (04/11/2008 – 14/11/2008)
Record of Meetings, Mark Ricketts:

Kiribati

Tues, 5 November, 2008: MELAD offices, South Tarawa

Met with Ms Tererai Abete-Reema, Director of Environment, to discuss visit, sub-regional projects and country-specific projects. Ms Abete-Reema was recently a team member of the External Review of SPREP. We discussed SPREP service delivery in context of AFD Initiative. She was not confident of SPREP's ability to respond to PICTs needs and mentioned that SPREP waste officers had recently visited Tarawa but had minimal contact with MELAD. Ms Abete-Reema spoke very positively of the recent visit of Melanie Ashton and Mike McRae-Williams recent visit, under National Implementation Plan funding.

She undertook to provide her officers to assist in the gathering of data, organising meetings and also provided transport. She also undertook to attempt to arrange briefings for her Minister and Dept Secretary. In short, MELAD could not have been more helpful.

Wed, 6 November, 2008: MELAD Offices, South Tarawa

Updated several MELAD officers on the AFD study. Unfortunately, the primary officer on the bulky waste project had been detained in Sydney and was not released in time to connect before my departure. As his release date was uncertain, it was agreed that Farran Redfern would have primary responsibility and a number of other officers were also involved. It was agreed to hold a planning workshop on Friday afternoon.

Thurs, 7 November, 2008: Lagoon Motors, South Tarawa

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Ministerial or Permanent Secretary meeting with Mr Mark Ricketts

Background:

- Mr Ricketts was previously SPREP's waste officer but is now an independent contractor working for a consultancy company, (GHD), who have been contracted by the French Overseas Aid Agency (AFD) to progress their Regional Solid Waste Initiative. He has had a very positive relationship with Kiribati and MELAD for a number of years.
- The AFD Regional Solid Waste Initiative is a US$6m, 3 year project beginning in mid 2009 and has three $2m (approx) Components...
    1. Regional: capacity building, information dissemination probably administered by SPREP;
    2. Sub-regional: possible multi PICT projects on managing waste oil, expired vehicles & bulky wastes, & Persistent Organic Pollutants & school chemicals;
    3. In-country: a competitive fund to finance PICT-determined and co-financed waste projects that are consistent with the National Waste Strategy.

Mr Ricketts has come to Tarawa to examine the feasibility of

- Involving Kiribati in the waste oil project through sustainably funding the export & disposal with an Advanced Recycling Levy imposed on all oil imported into Kiribati. Project will also examine funding Kiribati's required infrastructure (collection points, storage containers, etc) and to fund the public education campaign but not on-going costs.
- Kiribati becoming the pilot PICT to establish a sustainable expired vehicle system using a deposit / refund scheme to provide an incentive for delivering old vehicles for dismantling for spare parts and export of scrap. Project would be funding capital equipment, community education, legislative change, etc.
- Mr Ricketts can advise on the drafting of some project proposals for Kiribati's high priority national waste projects for Component 3 while here.

The Meeting:

- Mr Ricketts wishes to brief you about the project details and the implications for Kiribati.
- Mr Ricketts also wishes to discuss the commitment of the Kiribati Government to the sustainable funding of the waste oil & expired vehicle projects after the initial phase.
- Mr Ricketts would also like to discuss the national priority waste projects that may be suitable for inclusion in Component 3.

Attachment 2 – Email contacts

Kiribati

Milton Ponnappan, Lagoon Motors: lagoonmotors@coconutwireless.ki ; lagoonmotors@yahoo.com

Fiji

Litea Kabakoro (Total): litea.kabakoro@total.com.fj

Joji Wasigitoni (EastWind): eastfab@connect.com.fj

Naithan K. Reddy (Carpenter's Lubricants): naithanb.cool@yahoo.com

Timothy Young (Health Dept): tyoung@health.gov.fj

Theresa Seru (BP): theresa.seru@sel.bp.com

Jone Feresi (Fiji Electricity): JoneF@fea.com.fj

Hira Lal and Meshak Shion(Fletcher Steel): heera@fps.com.fj ; meshaeh@fps.com.fj

Dinny Lanfenboek (Vatukoula Gold): dinny.l@vgml.com.fj

Shin Nodan and Rajesh R. Kumar (Nasim Town Council) : health.ntc@kidanet.fj , eng.ntc@kidanet.fj

GHD

www.ghd.com.au
Tel. (03) 8687 8000 Fax. (03) 8687 8111
180 Lonsdale Street Melbourne Vic 3000

Cost Estimate - Phases 1 &2 Bulky Waste collection and disposal

	Total Inputs (Days)		No. of PICTs	No. Staff	Total (Days)	Fee per day	Per diem	Total costs (AUD)
Technical outputs	Aust	Pacific						
Develop MOU, Background Paper	3	0	7	1	3	1200	0	3,600
Consultation with PICTs on participation	10	0	7	1	10	1200	0	12,000
Inception visits to PICTs	0	40	5	2	40	1200	300	60,000
Implementation Program, individual project plans & MOUs	5	0	5	1	5	1200	0	6,000
Public education materials & program	10	0	5	1	10	1200	0	12,000
Training for some PICTs	20	0	3	1	20	1200	0	24,000
Develop Phase 2 regulations, compliance & financial systems, appoint contractor in Kiribati	2	10	1	1	12	1200	300	17,400
Tender and appoint metal recycler for collection program	2	5	1	1	7	1200	300	9,900
Drafting Instructions for depsoit refund legislation	5	0	5	1	5	1500	0	7,500
Liaise with PICTs about adopting Phase 2	5	0	5	1	5	1200	300	6,000
Activity management reports								
Consultation report	4	0	5	1	4	1200	0	4,800
Mission reports (+ 5 Follow-up visits)	6	10	5	2	16	1200	300	19,200
Annual reports	4	0	5	1	4	1200	0	4,800
Reimbusable costs								
Airfares (based on one team member travelling to 7 PICTs for Inception and follow up on 5 PICTs)								45,000
Car hire								5,000
Training for some PICTs and $20,000 equipment allocation			**5**			**20,000**		100,000
Bounty payments for scrap ($100,000 Max/PICT)			**5**			**100,000**		500,000
Fund for previously uncollected legacy vehicles in Kiribati						**100,000**		100,000
Collection contractor payments			**5**			**300,000**		300,000
6. Contingency (~15% of total cost in light of commodity price risks)								160,000
Total			5					1,397,200

Assumptions

1:that 5 of 6 elligible PICTs participate

2: that 5 follow-up vists are sufficient
3: as volumes and actual costs are unknown, caps have been placed to protect budget

4: scrap price of $150/tn

5: shipping costs of $250/tn

Implementation schedule - Bulky Waste Recovery & Recycling Activity

Task	Activity	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
		Task and Activity	Months 1 to 12												Months 13 to 24												Months 25 to 36											
	Project Management and reporting																																					
	Consultation report								●																														
	Mission or monitoring reports											●					●			●			●						●						●				
	Annual Review report													●												●						●						●	
	Project Activities																																					
1	**Develop draft MOU and Background Paper for AFD approval and distribution**																																					
2	**Consultation with PICTs on participation, willingness to fund project manager and allocate a site**																																					
3	**Inception visits to elligble PICTs to negotiate MOU, Implementation Timetable, Assistance Package and gain high level Govt endorsement**																																					
4	**Develop implementation program, PICT project plans and MOU's and final budget for AFD approval**																																					
5	**Design and commission public education programs**																																					
6	**Phase 1: Commence scrap steel collection and consolidation at central sites**																																					
7	**PICT Training in consolidation and sorting**																																					
8	**Phase 2: Develop systems for inclusion of cars in deposit refund system (regulations, customs, finance, contractor)**																																					
9	**Commence Phase 2 Deposit Refund system**																																					
10	**Engage metal recycling contractor to collect scrap from Phase 1**																																					
11	**Liaise with Phase 1 PICTs to move into Phase 2**																																					

Key

- Indicates report
- Annual reports
- Intermittent implementation
- Bulky Scrap collection
- n-going activities
- Deposit Refunfd system

Annex B: Bulky Waste Logframe Analysis

Intervention logic	Objectively verifiable indicators	Sources of verification	Assumptions and risks
Overall objective			
Development objective	To reduce the negative impacts of bulky wastes in the participating Micronesian PICTs	Shipping tonnages of scrap sent for recycling	That the subsidies proposed are sufficient to remove 75% of scrap
Immediate objective	To provide the necessary situation for sustainable recycling of scrap vehicles within the Pacific using the successful experiences of Kiribati in the use of economic instruments to reduce costs and provide an ongoing revenue to fund any shortfalls.	Tonnages recycled and profits made by recycler	That the political issues with a new tax are overcome by benefits of sustainable recycling
Phase 1 : Output 1: A Briefing Paper and MoU			
to provide PICT's with the information needed to decide on participation;	Paper and MoU approved by AFD and distributed	Project reports	AFD willing to approve MoU

Output 2: Consultation with PICTs			
Establishing PICT commitment, pre-conditions for participation and project parameters	Suite of qualifying PICTs chosen to participate Project Managers appointed Technical Advisory Group appointed	Meeting minutes and activity reports	PICTs still remain interested in activity
Output 3: Collection system functioning			
Gather scrap from each PICT for subsequent export	Establish collection sites receival & sorting system payment procedures	Project reports	Infrastructure sufficient, Public suportive
Output 4: Awareness Program			
Inform public and business of project and how to participate	Material in local media, or in informal networks	Project reports Education materials	Awareness program too insignificant to gain attention
Output 5: Training Program			
Ensure capacity exists for collecting, cutting and sorting	Appropriate trainer appointed Programs conducted	Project reports	Trained staff remain with project
Output 6: Scrap exported and recycled			
A contractor (s) engaged to collect, export and recycle scrap collected in each PICT	Tender developed, advertised and successful contractor approved	Project reports	Competitive situation for tender Qualified tenderers
Output 7: Drafting Instructions for EPR legislation			
Enable legislation to empower Phase 1	Drafting Instructions produced	Project Reports Copy of DI	Phase 2 pilot successful

participants to move to a sustainable system			
Phase 2 Outputs: Output 1: Implementation program and timetable			
Ensure Govt of Kiribati remains committed to imposing import tax & detailing the issues necessary to resolve for success	Program and timetable acceptable to AFD and Kiribati	MoU and program Project reports	Economic collapse hasn't eroded political support
Output 2: System for collecting and dispersing deposits / refunds and recycling viable			
The necessary bureaucratic arrangements to fund viable recycling exporter	Export data Profits & govt financial data	Project reports Govt data	That deposits sufficient to motivate car owners and subsidise export

Bulky Scrap Financial Model

Phase 1: A Singular Collection Round of Legacy Scrap

Item	Summary Definition	Unit	Cost	Revenue (Scrap Price 200/tonne)	Revenue (Scrap Price 300/tonne)	Revenue (Scrap Price 400/tonne)
Retrieval	Estimated retrieval costs of car bodies and other bulky scrap metal from locations accessible by a heavy vehicle.	Tonne	$ 150.00			
Sort, bale & export	Cost estimated sorting at a central location within each PICT, preparing the scrap for shipping using the contractor supplied mobile crusher / baler which would accompany the collection ship, and exporting the metal. This cost is based on export to Singapore from the RMI. PICT-specific costs will differ depending on infrastructure, origin and destination.	Tonne	$ 250.00			
Scrap steel price	Current scrap steel price as at December 2008 AUD200/tonne	Tonne		$ 200.00	$ 300.00	$ 400.00
AFD Subsidy	Recommended AFD subsidy. Refer to Section 5.3.2 of the Component 2 Feasibility Report for full discussion.	Tonne		$ 150.00	$ 150.00	$ 150.00
Subtotals			**$ 400.00**	**$ 350.00**	**$ 450.00**	**$ 550.00**
Project Viability (Revenue - costs)				**-$ 50.00**	**$ 50.00**	**$ 150.00**

Phase 2: Pilot Self-funded Recycling System

Item	Summary Definition	Unit	Cost	Revenue (Scrap Price 200/tonne)	Revenue (Scrap Price 300/tonne)	Revenue (Scrap Price 400/tonne)
Sort, bale & export	Cost associated with sorting at a central location within each PICT, preparing the scrap for shipping using the contractor supplied mobile crusher / baler which would accompany the collection ship, and exporting the metal. This cost assumes the metal would be exported to Australia. Higher costs may be expected if exported to China.	Tonne	$ 250.00			
Delivery to port	Figure is an estimated average of Pacific-wide costs based on actuals during the Kiribati scrap program. (Note PICT-specifric costs will vary according to available infrastructure, labour costs and proximity to port)	Tonne	$ 50.00			
Spare parts (nett)	The proposed strategy focuses on the recoverable value from vehicular spare parts. Preliminary estimates show there is significant value in old cars for spare parts. Capturing the spare parts value has been identified as critical for financial sustainability so this must be a key criterion in the choice of private sector tenderer. The value of spare parts was estimated on the basis of a feasibility study performed in Tarawa in 2004. The spare parts gross wholesale value from one 10 year old vehicle with some damaged panels, after costs, was AUD500. Assuming removal of the higher value accessible parts before delivery for the refund, the estimated spare parts value is around AUD250. The labour costs are AUD100 per vehicle leaving a net residual income from spare parts at AUD150 per vehicle.	Tonne		$ 150.00	$ 150.00	$ 150.00
Scrap steel value following spare part removal	Assuming that following removal of spare parts, weight of car is approximately half a tonne.	Half tonne		$ 100.00	$ 150.00	$ 200.00
Advance Recylcing Fee	The Advance Recycling Fee is the nominal amount at current scrap prices designed to fund the subsidy necessary to fund the export of scrap vehicles from Kiribati. It is added onto the Import Deposit for administrative efficiency. In the event of scrap price rises, the funds could be used to cover the administrative costs to Government or whatever waste activities the PICT Govt decides.			$ 50.00	$ 50.00	$ 50.00
Subtotals			**$ 300.00**	**$ 300.00**	**$ 350.00**	**$ 400.00**
Project Viability (Revenues - Costs)				**$ -**	**$ 50.00**	**$ 100.00**

Annex C

Waste oil reuse field visit summary cost estimate, implementation schedule and logframe analysis

AFD Regional Initiative for Solid Waste:
Component 2 – Bulky wastes (scrap) and waste oil sub-regional opportunities – Feasibility Study

AFD Feasibility Field visit – Kiribati and Fiji (04/11/2008 – 14/11/2008)
Record of Meetings, Mark Ricketts:

Kiribati

Tues, 5 November, 2008: MELAD offices, South Tarawa

Met with Ms Tererai Abete-Reema, Director of Environment, to discuss visit, sub-regional projects and country-specific projects. Ms Abete-Reema was recently a team member of the External Review of SPREP. We discussed SPREP service delivery in context of AFD Initiative. She was not confident of SPREP's ability to respond to PICTs needs and mentioned that SPREP waste officers had recently visited Tarawa but had minimal contact with MELAD. Ms Abete-Reema spoke very positively of the recent visit of Melanie Ashton and Mike McRae-Williams recent visit, under National Implementation Plan funding.

She undertook to provide her officers to assist in the gathering of data, organising meetings and also provided transport. She also undertook to attempt to arrange briefings for her Minister and Dept Secretary. In short, MELAD could not have been more helpful.

Wed, 6 November, 2008: MELAD Offices, South Tarawa

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Met with Saso Fumiaka, JICA Environment Co-ordinator, and we discussed the Initiative, Saso's previous discussions with AFD and possible ways to work together.

Attachment 1 – Kiribati / MELAD Briefing Note

Ministerial or Permanent Secretary meeting with Mr Mark Ricketts

Background:

- Mr Ricketts was previously SPREP's waste officer but is now an independent contractor working for a consultancy company, (GHD), who have been contracted by the French Overseas Aid Agency (AFD) to progress their Regional Solid Waste Initiative. He has had a very positive relationship with Kiribati and MELAD for a number of years.
- The AFD Regional Solid Waste Initiative is a US$6m, 3 year project beginning in mid 2009 and has three $2m (approx) Components...
    1. Regional: capacity building, information dissemination probably administered by SPREP;
    2. Sub-regional: possible multi PICT projects on managing waste oil, expired vehicles & bulky wastes, & Persistent Organic Pollutants & school chemicals;
    3. In-country: a competitive fund to finance PICT-determined and co-financed waste projects that are consistent with the National Waste Strategy.

Mr Ricketts has come to Tarawa to examine the feasibility of

- Involving Kiribati in the waste oil project through sustainably funding the export & disposal with an Advanced Recycling Levy imposed on all oil imported into Kiribati. Project will also examine funding Kiribati's required infrastructure (collection points, storage containers, etc) and to fund the public education campaign but not on-going costs.
- Kiribati becoming the pilot PICT to establish a sustainable expired vehicle system using a deposit / refund scheme to provide an incentive for delivering old vehicles for dismantling for spare parts and export of scrap. Project would be funding capital equipment, community education, legislative change, etc.
- Mr Ricketts can advise on the drafting of some project proposals for Kiribati's high priority national waste projects for Component 3 while here.

The Meeting:

- Mr Ricketts wishes to brief you about the project details and the implications for Kiribati.
- Mr Ricketts also wishes to discuss the commitment of the Kiribati Government to the sustainable funding of the waste oil & expired vehicle projects after the initial phase.
- Mr Ricketts would also like to discuss the national priority waste projects that may be suitable for inclusion in Component 3.

Attachment 2 – Email contacts

Kiribati

Milton Ponnappan, Lagoon Motors: lagoonmotors@coconutwireless.ki ; lagoonmotors@yahoo.com

Fiji

Litea Kabakoro (Total): litea.kabakoro@total.com.fj

Joji Wasigitoni (EastWind): eastfab@connect.com.fj

Naithan K. Reddy (Carpenter's Lubricants): naithanb.cool@yahoo.com

Timothy Young (Health Dept): tyoung@health.gov.fj

Theresa Seru (BP): theresa.seru@sel.bp.com

Jone Feresi (Fiji Electricity): JoneF@fea.com.fj

Hira Lal and Meshak Shion(Fletcher Steel): heera@fps.com.fj ; meshaeh@fps.com.fj

Dinny Lanfenboek (Vatukoula Gold): dinny.l@vgml.com.fj

Shin Nodan and Rajesh R. Kumar (Nasim Town Council) : health.ntc@kidanet.fj , eng.ntc@kidanet.fj

Implementation schedule - Waste Oil Recovery and Disposal

Task and Activity		Months 1 to 12												Months 13 to 24											
Task	Activity Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Project Management and reporting																								
	Consultation report																								
	Mission reports																								
	Environmental audit of collection and disposal																								
	Annual Review report																								
	Project Activities																								
1	**Consultation with PICTs on participation, willingness to legislate EPR and ratify Waigani**																								
2	**Inception visits to elligble PICTs to negotiate Collection system, Implementation Timetable and Assistance Package**																								
3	**Negotiate & cost collection system, export contract and financial contributions with Lubricant Importers**																								
4	**Develop contract template and Waigani procedures for exporting waste oil to Fletchers Steel**																								
5	**Develop drafting instructions for EPR & Waigani legislation for use by participating PICTs**																								
6	**Design and commission public education program, initially in Fiji**																								
7	**Develop Guidance Package for Waigani documentation**																								
8	**Install collection infrastructure (tanks, water seperators, contract collection service)**																								
9	**Commence collection systems & export to Fletchers in Fiji**																								
10	**Environmental audit of collection and disposal**																								

Key

- Progress report
- Environmental audit of collection and disposal
- Annual reports
- Intermittent implementation
- Waste Oil system commencement
- On-going activities

GHD

www.ghd.com.au
Tel. (03) 8687 8000 Fax. (03) 8687 8111
180 Lonsdale Street Melbourne Vic 3000

Cost Estimate - Waste oil collection and disposal

	Total Inputs (Days)		No. of PICTs	No. Staff	Total (Days)	Fee per day	Per diem	Total costs (AUD)
Technical outputs	Aust	Pacific						
1. Background paper	3		12	1	1.5	1200	0	1,800
2. Consultation with PICTs on participation	3	0	12	1	1.5	1200	0	1,800
3. Inception visits to willing and elligible PICTs	0	40	10	2	40	1200	300	60,000
4. Develop pilot system in Fiji	2	10	1	1	12	1200	300	17,400
5. Legal templates - draft contracts & EPR + Waigani drafting instructions	0	6	10	0	6	1500	0	9,000
6. Public education materials & program	2	10	10	1	12	1000	0	12,000
7. Installation of collection and storage systems	5	20	10	2	25	1200	300	36,000
8. Environmental audits of collection and disposal	2		10	1	2	1200	0	2,400
Activity management reports								
Consultation report	4	0	12	1	4	1200	0	4,800
Mission reports (+ 5 Follow-up visits)	6	10	10	1	16	1200	300	19,200
Environmental audits of collection and disposal facilities	0	30	10	2	30	1200	300	45,000
Annual reports	4	0	10	1	4	1200	0	4,800
Reimbusable costs								
Airfares (based on one team member travelling to 10 PICTs for Inception environ. audits and follow up on 5 PICTs)								100,000
Car hire								5,000
Infrastructure Procurement (@ $40,000/PICT)								400,000
6. Contingency (10% of total cost)								75,000
Total								794,200

Annex C: Logframe Analysis Waste Oil Activity

Intervention logic	Objectively verifiable indicators	Sources of verification	Assumptions and risks
Overall objective			
Development objective: To reduce the negative impacts of waste oil on the environment of the participating PICTs	Volumes of waste oil recovered and safely disposed of.	Tracking waste oil volumes, environmental audits and independent project evaluations.	Objective is shared by political arm of PICT Governments.
Immediate objective: Establish a sustainable system that manages the on-going creation of waste oil with minimal environmental impact while maximising any economic opportunities for the Pacific without requiring continual external financing	EPR legislation passed; collection and disposal system functioning safely.	Tracking waste oil volumes, environmental audits and independent project evaluations of activity outputs.	System is maintained and laws enforced.
Output 1: Background paper on project for consultation with PICTs			
Provide clear information as basis for PICT analysis and commitment	Paper produced.	Project reports.	AFD is not clear on expected outcomes.
Output 2: Consultation with PICTs			
Ensure commitment and robust system of implementation	Robust project implementation plans.	Project reports.	PICTs are not committed to the plan.
Output 3: Design of the implementation program			
Ensuring generic plans are applicable to each participating PICT	System documented.	Project reports.	Pace of implementation varies in each PICT.
Output 4: Develop Pilot system with Govt of Fiji			
Trial implementation in Fiji	Design of system.	Project reports.	Fiji Govt is focussed elsewhere.

Output 5: Drafting instructions for legislation for Waigani Compliance, and to use economical instruments to provide sustainable financial support for the waste oil collection, export and re-use system, Draft contracts for arrangements with exporters and Fletcher Fiji			
EPR legislation and Waigani ratification facilitated.	Legislation passed Contracts.	Project reports.	PICT's highest priorities include these issues.
Output 6: Public education program on waste oil			
Program will inform public and business on • The environmental consequences of oil pollution; • How to participate in the new collection system	Program materials produced; Public Awareness raised.	Project reports; Competition results.	Very limited communication infrastructure.
Output 7: An initial waste oil collection and export system in each participating PICT.			
Basic system of waste oil collection and safe storage is fully funded and infrastructure established	Activity proposal submitted and approved by funding agency; Contracts awarded; Oil collection system in place and audited; Storage infrastructure constructed.	Project contracts; Milestone reports; Commissioning reports; Audit reports.	Difficulty sourcing funding; Low commitment of PICT Govt to regulating oil importers; Poor management of collection system implementation / infrastructure construction.
Output 8: Environmental audits of the collection and the re-use facility.			
Ensure waste oil collection and disposal system is functioning safely and in compliance with all national and international laws and practices..	No reports of spills; Environmental compliance achieved.	Environmental audit reports.	PICT environmental agencies enforce pollution laws.