PACIFIC ISLAND PARADISE – WASTING AWAY?

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INTRODUCTION

The Pacific region comprises 22 sovereign states spread over an area of 30 million km², of which only 2% is land comprising about 7,500 islands, 500 of which are inhabited. Island geography varies greatly, ranging from large volcanic landforms with steep and mountainous terrain (e.g. Papua New Guinea) to low lying coral based atolls (e.g. Kiribati). Considerable attention is being directed to the impending threats of global warming and associated sea level rise and changed climatic conditions. While significant, the obvious and immediate threats of urbanisation, pollution and poor sanitation create a greater threat to the sustainability and viability of PICTs. Nowhere is this more evident than the small PICTs where subsistence lifestyles have given way to increased consumerism with poorly managed solid waste management (SWM) systems threatening fragile ecosystems, environmental sustainability and severely stressed and limited water resources.

This paper provides a brief overview of SWM in the Pacific from a broad context and then focuses on specific SWM issues and solutions for two PICTs where the author has direct experience through project assignments, concluding with some lessons learned from these projects applicable to SWM in the Pacific as a whole.

SWM IN THE PACIFIC

Poor SWM is a major threat to PICTs, as the lack of adequate SWM has potentially serious negative consequences in areas such as public health, environmental quality and sustainability and economic prosperity. There are several factors requiring special attention in relation to SWM in PICTs:

- **Country size and location:** most PICTs are small, in terms of both area and population and located far from industrialised countries. Physical inputs necessary for SWM such as equipment, machinery, spare parts and fuel are expensive and in some cases, extremely difficult to procure, meaning careful decision making is needed in equipment selection.
- **Economy:** Many PICTs depend heavily on foreign aid, including high cost items required for good SWM - refuse collection vehicles, landfill construction and waste compaction equipment (e.g. bulldozers). This can create a dependency culture and a failure to implement adequate SWM cost recovery measures.
- **Public health:** Deficiencies in water supply, sanitation, wastewater management and SWM are adversely affecting public health in the Pacific, being the major cause of infectious diseases such as diarrhoea, hepatitis, malaria, filariasis and dengue fever.
- **Environmental protection:** The natural environment is highly fragile and vulnerable to human activities. Worsening pollution may affect other sectors of the economy, including agriculture, fisheries, trade and food security. Tourism is also likely to suffer - a healthy and beautiful environment will promote tourism, while clean towns and beaches definitely attract more tourists.

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1 Adapted from WHO (1996), “Healthy Cities, Healthy Islands”
PICTs also present specific SWM characteristics and challenges:

- Increasing waste generation caused by population and economic growth.
- Increasing consumerism and high reliance on imported goods, generating excessive amounts of packaging wastes, which because of the limited market and high transportation costs to industrialised countries has very little potential for recycling other than high value items such as aluminium cans and car batteries, and to a lesser extent glass bottles and scrap metal. In the past, most waste used to be organic and was mainly fed to animals.
- Unsustainability of SWM systems when installed due to the use of inappropriate technology, insufficient or inadequately trained institutional and human resources capacity and inadequate solid waste financing. Inadequate funds are provided for operation and maintenance (O&M), while essential landfill infrastructure (e.g. leachate pumps, control systems) and vital equipment (e.g. collection vehicles, bulldozers, incinerators) are poorly operated, fail early and are not repaired due to a lack of skilled personnel, spare parts or funds. The lack of a culture of asset management relates back to the low income base of the PICTs, coupled with a dependence on donor funding for major SWM assets and a reluctance to establish equitable user charges.
- Difficulty of finding and acquiring suitable landfill sites, due to limited land availability, particularly on small islands and atolls, exacerbated by customary land tenures and Not-in-my-back-yard (NIMBY) attitudes.
- Lack of cleanliness awareness amongst the public.
- Inadequate systems for dealing with problematic and emerging waste issues – e.g. disposable nappies, e-waste, waste oils and PCBs.

WHO (1996) sets out five strategic measures to improve SWM in PICTs:

- Firm commitment of the relevant authorities for better SWM. Establishment and enforcement of appropriate legislation, delivery of reliable services and maintaining communication with service users and contractors are key to this.
- Strategic planning, as the essential path to the cost effective use of limited resources.
- Waste minimisation is the first priority.
- Improve the collection service, saving costs.
- Use saved costs for improving final disposal.

The Pacific Regional SWM Strategy 2010-2015 (SPREP, 2010) was adopted by 25 PICTs in November 2009, including New Zealand, Kiribati and the Cook Islands. It sets out a vision of a healthy and socially, economically, and environmentally sustainable Pacific for future generations. Nine key strategic areas are identified for action, with the first five priorities being: (i) sustainable financing; (ii) integrated SWM – 4Rs (refuse, reduce, reuse, recycle), collection and disposal; (iii) legislation; (iv) awareness, communication and education; and, (v) capacity building. The four remaining strategies relate to environmental monitoring; policy, planning and performance; solid waste industry; and medical waste.

**SWM IN KIRIBATI**

This work was undertaken by Fraser Thomas for the New Zealand Aid Programme (formerly NZAID) during 2009-10 in support of its Sustainable Towns Programme (STP) for Kiribati and specifically for the two urban councils of South Tarawa, who had identified SWM as a high priority issue. It involved a desktop study and field work, identification of key SWM issues and development of an Action Plan.
Background

Kiribati comprises 33 coral islands and atolls in the central Pacific with sandy soils, limited vegetation and a maximum elevation of less than 5m above sea level. South Tarawa is the capital of Kiribati. It comprises a string of seven islets with shallow tidal passages joined by causeways stretching about 30km from east to west. Its economic base comprises a seaport, international airport, government offices and shipping, fishing, trading and financial activities. South Tarawa is divided into two local government administrative areas. Betio Town Council (BTC) covers the Betio township (a single island), while Teinainano Urban Council (TUC) covers the area from Bairiki to Bonriki (six islets). Approximately 40,000 people live on South Tarawa in crowded conditions, with BTC and TUC having population densities\(^2\) of 7,970 and 1,960/km\(^2\) respectively. To put this into perspective, Singapore and Auckland city have population densities of 7,020 and 655/km\(^2\) respectively.

Figure 1: South Tarawa showing key SWM “landmarks”

![Map of South Tarawa showing key SWM landmarks](image)

The Ministry of Environment, Lands and Agricultural Development (MELAD) has prepared a draft National SWM Strategy and associated Action Plan. It is responsible for issuing and regulating Environmental Licences for specified activities, including landfills. The two local Councils are responsible for rubbish collection and disposal at three landfills built within seawalls constructed under the “Sanitation, Public Health and Environment Improvement Project (SAPHE) in 2001-04\(^3\).

Waste Generation, Composition and Fate

Waste generation is currently estimated to be around 6,900T/yr, of which around 75% is organic, comprising mainly garden waste and including some hard fibrous materials (palm/pandanus fronds). Approximately 38% of generated waste is estimated to be collected by Council, with the remaining waste either disposed of on-site (26%), recycled (1%) or disposed of by illegal dumping (35%) into the sea/lagoon. The current waste stream is shown in Figure 2.

Healthy Aspects

Healthy Aspects of the current SWM system include:


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\(^2\) 2006 census figures for South Tarawa and Auckland city and 2009 statistics for Singapore.

• Council SWM revenue collection is excellent from government employees, where SWM fees are deducted directly from their wages. However, very few, if any, other people pay SWM collection fees.

• Disposal practices have improved following remedial works to the Betio landfill and construction of two new landfills under the SAPHE project, compared with the past when much rubbish was disposed to beaches, with a lot of it being washed away.

• Resource recovery is working well. Some waste items have been significantly reduced through the introduction of import controls on certain goods (e.g. bottled beer), while reuse is common (e.g. glass bottles and tyres used as borders around gardens). Most food/kitchen waste is fed to animals (mainly pigs and also chickens and dogs). Container deposit legislation and the “Kaoki Mange” recycling system for aluminium cans, PET bottles and vehicle batteries works well and is widely regarded as a success story in the Pacific. Small scale home composting of garden waste is practised by some households (e.g. banana circles).

• The Environmental Science syllabus for primary schools contains a good coverage on waste related topics and composting/home gardening.
SWM Issues

#1 Institutional and Organisational Strengthening Urgently Needed
There are some serious institutional and organisational issues relating to SWM in South Tarawa that need addressing:

- Existing TUC/BTC SWM organisational structures are weak and need strengthening. SWM service provision is one of BTC/TUC’s core functions and needs strong management and adequate human, vehicle/equipment and financial resources to be allocated for SWM works.
- Lack of short, medium and long term SWM plans.
- Lack of proper supervision, poor labourer management and collection performance monitoring.
- Poor cooperation with other departments indirectly involved in SWM (e.g. vehicle repairs, spare parts stock, ordering fuel, worker equipment).
- Both Councils need to review their SWM expenditure against income, particularly the quantum of the fee and collection from the non-government sector.
- Poor public-Council relations, characterised by a lack of clear instructions to the public detailing citizens’ responsibilities, waste discharge rules, fines, etc.
- Lack of knowledge on proper SWM, particularly in relation to landfill management.
- Lack of record keeping and no annual reporting to MELAD.
- Lack of coordination between MELAD and BTC/TUC in relation to SWM, and particularly enforcement.

#2 Improvements to Technical Systems and Increased Public Cooperation Needed

- The present rubbish collection system involves considerable wasted effort and is inefficient. For example, many people discharge their rubbish in any container or none; at any time and place, resulting in lots of rubbish discharged at the roadside, or at public collection points, causing waste scattering and creating mini-dumps. Much of this rubbish is garden waste that could be mulched or composted.
- Both Councils are largely to blame for this, due to the collection service being inefficient and unreliable, being characterised by many collection points, double handling and long (manual) loading times. Vehicle breakdowns and long delays for repair make it difficult for both Councils to keep to scheduled rubbish collection routes and frequencies.
• There are currently no processing/treatment facilities for rubbish, particularly green waste, even though the Councils have a mulcher provided by donor funding. In spite of this, MELAD actively promotes the source separation of waste.
• There is a lack of ongoing and systematic education of the public on waste issues.
• Whilst household compounds are clean and tidy, litter is very common in public places, while there are a large and growing number of derelict cars/vehicles scattered around South Tarawa.

#3 Inadequate Final Disposal
Proper final disposal is the most important component required to establish the reliability of SWM works.
• Two of the existing landfill sites are both operated poorly, with very few, if any environmental protection measures being taken. The third (Bikenibeu) landfill is not yet in use. It suffered a serious breach of its seawall in 2005 which took 2-3 years to repair, has yet to be licensed by MELAD and is currently full of water. The Betio landfill is likely to be full in several years and nothing is being done about replacing it. TUC often illegally disposes of waste behind unlicensed seawalls on private land for land reclamation purposes) rather than to the engineered landfills, despite MELAD trying to stop such practices.
Bikinibeu landfill: seawall between landfill (full of water) (right) and lagoon (left).  
Seawall on private land (coral stones with no cement) behind which waste was dumped.

SWM Action Plan

This section sets out a suggested 10 year action plan for improved SWM for South Tarawa and specifically the BTC and TUC areas. The vision is to make South Tarawa a clean place to live and to protect its environment through establishment and operation of a stable, appropriate and reliable SWM system that maintains and improves and/or extends the good practices already in place, promotes the reduction of waste to landfill and actively involves the public. The main objectives for improved SWM over the next 10 years are:

- SWM institutional/organisational reform and strengthening (top priority).
- Improving the rubbish discharge and collection system (top priority).
- Improving final disposal (second priority).
- Reducing waste to disposal through waste minimisation and resource recovery activities.
- Improving public education/awareness.

The Action Plan is summarised in Table 1, whilst the potential effects of “good” implementation of this plan on the waste stream by 2020 are shown in Figure 3.

**Table 1: Kiribati - SWM Action Plan**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tr>
<td>10. Institutional and organisational system</td>
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- Prepare long-term SWM plans (4-10 years) for BTC/TUC.  
- Modify and update Council by-laws.  
- Establish SWM Department, comprising all SWM staff, possibly including street/public open space cleaners.  
- Establish SWM Committee for South Tarawa and possibly a landfill monitoring committee for each landfill.  
- Investigate future private sector participation in various services - street sweeping and public place cleaning; shredder operation; composting; rubbish collection and transportation.  
- Improve enforcement of existing legislation, policies and by-laws. |
| 20. Management System | 
- Provide training for MELAD and BTC/TUC staff.  
- Streamline refuelling and vehicle repairs system.  
- Provide motorcycles for supervisors.  
- Prepare job descriptions for all SWM staff.  
- Implement various SWM management tools (monthly report, control board, SWM manual).  
- Prepare annual report for MELAD.  
- Provide collection workers with boots, gloves and possibly tetanus injections. |
### 30. Financial System
- Establish SWM accounting codes
- Expand SWM budget to provide for other key items (e.g. labourer equipment, vehicle depreciation, landfill operation and maintenance).
- Review current BTC/TUC service charges.
- Improve service charge collection, by expansion of the existing system (e.g. communal rate for poorer communities), or considering other alternatives (e.g. Greenbag or green coupon “user-pays” systems; adding the service charge to a utility user charge; “rubbish tax” on goods and services; “environment tax” on airport departure fee; contracting communities for rubbish collection in difficult to access areas and requiring them to collect a “rubbish collection charge” from people in these areas).

### 40. Discharge, storage and collection
- Introduce rubbish discharge rule.
- Improve current collection system.
- Introduce more stationary container collection points.
- Introduce litter bins in public places.
- Introduce separate discharge system for garden wastes.

### 50. Processing/treatment
- Introduce mulching/composting of organic waste.
- Investigate incineration of disposable nappies.

### 60. Final Disposal
- Eliminate illegal dumping of waste behind seawalls on private land.
- Increase budget for landfill operation.
- Undertake urgent works at two landfills (repair perimeter fencing, improve operation and waste compaction, improve soil cover, leachate management) and repair western seawall at Betio landfill.
- Make Bikenibeu landfill functional.
- Find and develop new landfill site for BTC.
- Undertake water quality monitoring in accordance with landfill pollution control licences.

### 70. Resource Recovery
- Promote 3Rs – biodegradable shopping bags, increased import duties, extended producer responsibility schemes, extended container deposit legislation.
- Promote giving food/kitchen waste to animals (current practice).
- Use existing shredder.
- Extend Kaoki Mange recycling programme to include steel cans and possibly cardboard.
- Investigate other small scale recycling business activities (handicrafts; plastic pellets, lumber and/or plaster; use of ground glass and/or tyres as aggregate replacements).

### 80. Publicity, education and awareness raising
- General publicity to inform community about SWM related matters.
- Promote school SWM initiatives.
- Participate in planned review of Environment Science syllabus.
- Undertake targeted education/awareness campaigns – e.g. competitions, school/community workshops, community theatre, dedicated resource person, teacher resource kit, radio programmes and interviews.
- Undertake periodic cleanup days.

Note: Attention should also be paid to dealing with problematic or hazardous wastes such as household batteries, e-waste, healthcare waste, disposable nappies, waste oils and PCBs.

The Action Plan was well received by the NZ Aid Programme and the local Councils. Each Council is in the process of implementing some of the smaller action plan measures, including purchase of labourer uniforms and safety gear, rubbish bins and stationary containers and undertaking initial community engagement activities. The STP Advisors are currently assisting both Councils to prepare performance based SWM budgets for 2011 and associated action plans and to finalise and adopt SWM bylaws. Under Phase 2 of the STP (mid-2010 to 2013), it is proposed to provide further funding for SWM activities in Kiribati, including landfill remedial works and to support scaled up work by the urban councils to
The Kiribati National Water and Sanitation Coordination Committee (NWSCC) has recently established a high level Task Force to (i) prepare a programme document for the improvement of the water supply and sanitation sector (including the capital intensive components of SWM), (ii) to obtain the support of all stakeholders and development partners for an Action Plan which has been prepared with the assistance of the Pacific Infrastructure Advisory Centre, and (iii) to manage the implementation of the Water, Sanitation and SWM Improvement Programme. The Kiribati government intends to convene a meeting of all donors in the sector in late 2010 at which possible further funding for SWM investments not supported by STP may be forthcoming.

**COOK ISLANDS – WASTE MANAGEMENT FACILITIES REVIEW**

**Background**

This work was undertaken by Fraser Thomas for the Asian Development Bank (ADB) in 2009. It involved an independent review of the status and operation of the waste management facilities (WMFs) in Rarotonga and Aitutaki to identify key issues facing these facilities and develop an Action Plan to resolve them.

The WMF project involved the design and construction of modern engineered landfills and septage/leachate lagoons for Rarotonga and Aitutaki to satisfy demand for the following 20 years. Engineered control systems for the landfill include sub-drains, landfill liner, leachate and landfill gas collection systems, while the septage facilities comprise two lined lagoons, sand filtration and land disposal by irrigation. Both landfills incorporated an impermeable “rain cover”, designed to divert surface runoff on unfilled areas of the landfill to the stormwater system and prevent it from contributing to leachate. Both sites had modern day operational and environmental control systems, including groundwater monitoring wells. These facilities began operation in 2005.
Landfill Design and Construction Issues

The review identified significant design and construction issues, generally relating to over-complex design, particularly the telemetry data collection and electrical control systems, more suited to a country like New Zealand rather than the much smaller Cook Islands, which does not have appropriate operational and maintenance facilities readily at hand.

These problems were compounded by five cyclones that occurred in 2005 which caused significant damage to the rain covers at both facilities and led to major problems coping with excess leachate generation deriving from stormwater entering the leachate system.

The treated effluent irrigation fields were found to be undersized, particularly at the Rarotonga Waste Facility (RWF), as a preliminary analysis showed that the size of these fields is controlled by nitrogen loading, while they have been designed based on average hydraulic loadings with no account being taken of high flows due to wet weather nor of nitrogen loads, while nitrogen enrichment is a significant issue in the lagoon and independent monitoring has shown elevated nitrogen levels in the lagoon at the “Public Works” monitoring point, located downgradient of the Rarotonga landfill.

WMF Operation and Management (O&M) Issues

Both WMFs are being operated more as crude open dumps, rather than as the modern, engineered landfill facilities that they are. They are not being managed properly and are believed to be underfunded in relation to Facility Management Plan (FMP) requirements, particularly the RWF. Compliance with the FMPs is relatively poor, particularly in relation to waste acceptance controls; waste placement, cover and compaction; septage pond management, and a complete lack of environmental monitoring. The FMPs for both facilities are overly complex and detailed for daily management and operation and need to be simplified to produce a concise O&M Plan suitable for daily use.

This situation has recently improved, with the RWF receiving extra funding from the Government for soil cover and more regular compaction, on an approximately fortnightly basis. The government’s actions are believed to be largely driven by a resident’s group that was formed recently to lobby the government for improved landfill operation due to a plague of flies in their homes. This group is well educated, organised and has a range of skills. They have reviewed various WMF reports and appreciate that the facility is not in compliance with its FMP. The government has listened and taken some action as outlined above, and the fly situation is now significantly improved. However, the Lobby group want other non-compliance issues resolved as well, particularly fencing (actioned), septage pond overflows, banning fires, and the lack of daily soil cover. If no further improvements are made, they have indicated that their next step is to take their campaign to the international level; i.e. donors and international media.

Recycling Issues

Whilst both WMFs have recycling depots, recycling in Rarotonga and Aitutaki is currently largely in limbo. Local television advertisements in Rarotonga actively encourage source separation, but the refuse contractor currently places both refuse and recyclables together in the compactor truck, even if it has been separated at source by households. This is partly because all recyclables at the WMFs are currently being stockpiled and not exported, while Recycle Cook Islands Ltd (RCI) has suspended its scrap metal recycling activities due to financial difficulties. RCI has recently put forward a proposal to the Government for
financial support that would involve them transferring their recycling operation to the RWF and expanding the range of materials recycled to include many of the materials currently disposed to landfill. Informal discussions are ongoing.

There is an urgent need to resurrect recycling on the islands and to look at other waste reduction/recycling initiatives, such as producer responsibility “take-back” and container deposit schemes, a composting facility and developing uses/markets for other recyclables on the islands. In making decisions on future recycling, the Government needs to remember that recycling should generate at least enough income to cover its costs or otherwise be accepted as a social cost for the betterment of the environment or other reasons (e.g. tourism). Furthermore, it should remember that increased recycling will reduce the amount of waste to landfill, increasing landfill life, extending the landfill capex costs already expended over a longer period and deferring future capital expenditure on any new landfills.

SWM Action Plan

A prioritised Action Plan was developed to address the issues raised. The Plan includes remedial works and management measures to significantly improve facility operation and the cost effectiveness of SWM, including the following:

<table>
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<tr>
<th>Fire at landfill, October 2008 (photo supplied by Ray Hedgland, FTL)</th>
<th>Septage ponds, showing second pond about to overflow during heavy rain, December 2008 (photo supplied by Rob Cox, CIMRIS)</th>
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<tr>
<td>Aitutaki landfill - showing deposited refuse, ponded water and sections of removed rain cover.</td>
<td>RWF: stockpiled bales of plastic bottles.</td>
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• Urgent actions to address serious O&M issues, preventing the WMFs from operating as intended. These include monitoring to collect sufficient water quality data to assess the adequacy of the septage ponds and effluent disposal field systems, whether the WMFs are causing environmental pollution and developing associated remediation measures, as required.
• Short, medium and long term measures to address less serious issues and issues that require more time for proper consideration and to plan for the future. In particular, the government needs to make some important decisions relating to possible privatisation and the long term financial sustainability of these facilities and recycling/composting.

The Government has since appointed a Waste Management Initiative Design Project Steering Committee, whose tasks include facilitating the implementation of the recommendations of the FTL review report. To date (August 2010), some urgent remedial works have been completed; operational improvements (daily and intermediate cover, waste compaction) are in various stages of implementation; the FMPs are being revised and simplified; staff training and appointment of a peer reviewer are under discussion with NZ local government agencies; and a proposal has been put forward for contracting out of the landfill, septage pond, recycling and collection for a five year contract period. Furthermore, at an Infrastructure Forum last month there was a push from the public for the Government to complete most of the urgent items identified in the Action Plan.

LESSONS LEARNED FOR THE PACIFIC AS A WHOLE

The five strategic measures proposed by WHO and the nine key strategic areas in the Pacific SWM Strategy 2010-2015 are considered sound, with both the Kiribati and Cook Islands SWM Action Plans being consistent with these strategies. 25 PICTs have signed up to the 2010-2015 Strategy and each have prioritised areas for action. Some important lessons from the Cook Islands and Kiribati work which may assist this process are summarised below.

The landfill facilities inspected in both Kiribati and Cook Islands are generally modern engineered, high cost landfills provided by donor funding. However, many aspects of the landfill design were too complex, while construction was poorly managed, creating ongoing problems for proper operation, compounded by poor operating practices resulting in these facilities being operated more as crude, open dumps without any monitoring to determine the resulting environmental effects. There is a need to simplify some aspects of facility design, whilst maintaining essential engineering and environmental controls. This process could possibly be assisted by implementing an independent peer review system for all SWM donor projects above a certain funding level. Similarly, there is a need for improved management and quality assurance (QA) of facility construction, so that certified, fully functional facilities are handed over to the respective governments. Thirdly, there is a need for much improved O&M of these facilities, which depends on local commitment, human and financial resources, and an adequate spare parts supply chain.

Large capital works, donor funded projects can provide valuable SWM infrastructure (landfills) and provide crucial equipment (collection vehicles, bulldozers, etc.). However, the institutional systems, human and financial resources have to be in place at the local level and supported by the government to maximise the usage of these facilities and equipment and to provide for their operation, maintenance and eventual replacement. These systems need to be kept simple and appropriate for the local situation and capability, while SWM cost recovery
measures may not be politically popular but are essential if financial sustainability is to be achieved.

SWM Action Plans need to be targeted, appropriate and affordable. The relevant authorities need to take ownership of these plans which will only occur if they are fully involved in their preparation. Simple but essential items are often overlooked (e.g. worker equipment, supervisor motorcycle, etc.). A step-by-step approach, focusing on gradual, incremental improvements may be more successful than one which aims too high, too fast. The Kiribati and Cook Islands Action Plans were developed on this basis by Fraser Thomas and have been well received.

The waste stream is highly organic in many PICTs. Mulching and composting are potentially the simplest and most effective means of reducing waste to landfill. They have multiple benefits – improved soil fertility, improved nutrition, waste reduction at source, and reduction in food imports. Successful mulching and home composting relies on involving community groups, using grass-roots communication and keeping the operation simple with the use of local resources. Whilst a donor funded mulcher sits idle in Kiribati, a similar mulcher provided to Samoa is being used with much success to shred coconut husks on a large network of small organic farms for use as a mulch, composting, or for sale to local gardeners. Recycling of inorganic materials is often crippled by transport costs to overseas processing facilities, except for aluminium cans and vehicle batteries. Scrap metal recycling, particularly of dead vehicles, is an ongoing significant problem. Vehicle graveyards pose potential public health threats (e.g. mosquito breeding sites) and negative environmental impacts; use up valuable land and are a visual eyesore, creating the perception of a “dirty island” with associated negative impacts on tourism and added pressure on landfills. RCI in the Cook Islands was doing a good job of ridding Rarotonga of legacy scrap metal until it ran into funding problems recently. In Kiribati, while a barge load of scrap vehicles were removed from South Tarawa in 2007-08, many derelict vehicles were observed there in late 2009 and the number is continuing to grow. Foreign scrap metal dealers are interested in processing this scrap, subject to obtaining assistance with transportation costs. Local uses of waste materials also need to be promoted (e.g. handicraft paper production; plastic pellets, lumber and/or plascrete; use of ground glass and/or tyres as aggregate replacements).

Overall, whilst progress has been made on SWM in the Pacific in recent years, as reported in the SPREP (2010) Strategy, there is clearly much to do and sooner rather than later. For many, the Pacific Islands are seen as a holiday paradise – sun, sand and crystal clear water, but the truth in many PICTs is murkier, with some serious and growing environmental issues. Some experts argue that South Tarawa has gone past the “tipping point” in terms of environmental sustainability, whilst the situation in Rarotonga and Aitutaki is much less precarious, but still of growing concern. Poor SWM and in particular poorly constructed and operated landfills and unsustainable SWM systems are potential contributors to the pollution of limited and stressed water resources. There is a need for urgent action on SWM in the Pacific to prevent this Island Paradise from wasting away.

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4 Email communication from Adi Tafuna’i, Women in Business Development Inc, www.womeninbusiness.ws
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