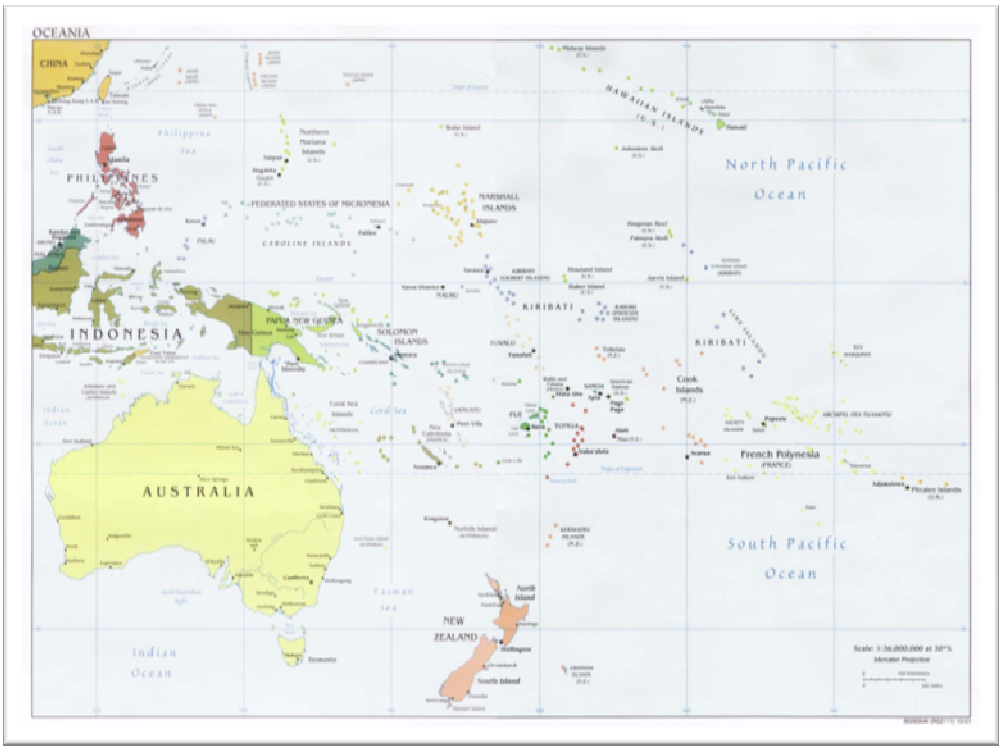
Pacific regional report on the cooperative performance audit into solid waste management



Contents

Abbreviations and Glossary of Terms

ADB	Asian Development Bank
AusAID	Australian Agency for International Development
FSM	Federated States of Micronesia
IDI	INTOSAI Development Initiative
INTOSAI	International Organisation of Supreme Audit Institutions
INTOSAI WGEA	INTOSAI Working Group on Environmental Auditing
LOE	Line of enquiry
NZ OAG	New Zealand Office of the Auditor-General
PASAI	Pacific Association of Supreme Audit Institutions
PICTs	Pacific Island Countries and Territories
PRAI	Pacific Regional Audit Initiative
PIFS	Pacific Island Forum Secretariat
RWGEA	Regional Working Group on Environmental Auditing
RMI	Republic of the Marshall Islands
SPREP	Secretariat of the Pacific Regional Environment Program
SWM	Solid waste management
SAI	Supreme Audit Institution

Glossary of Terms

Performance audit – An audit of the economy, efficiency, and effectiveness with which an audited entity uses its resources in carrying out its responsibilities.

Cooperative performance audit – A cooperative performance audit involves a group of audit offices carrying out an audit on the same subject at the same time. An overview report is usually prepared, as well as individual reports by each audit office for tabling in their respective jurisdictions.

Summary

Summary

This report provides a regional overview of the process and outcomes of the cooperative performance audit in the Pacific region on solid waste management. The report records the achievements against Pacific Regional Audit Initiative (PRAI) objectives, including building performance auditing capacity within the member audit offices of the Pacific Association of Supreme Audit Institutions (PASAI), and the lessons learned from the first cooperative audit. In addition, the high level findings about solid waste management in the Pacific countries that were part of the audit, are presented.

Introduction

The Summary assesses the contribution of this first cooperative performance audit to achieving the PRAI objectives. It also provides a high level, regional perspective of the outcomes of the ten individual country audit reports of solid waste management.

PRAI objectives and outcomes

The overarching PRAI objective is: *to raise Pacific public auditing to uniformly high standards*. To achieve this objective, one of the PRAI outputs is to build and sustain public auditing capacity through conducting cooperative audits with participating Supreme Audit Institutions (SAIs) in the Pacific region.

The PRAI work program notes that SAI capacities differ throughout the region but they all face similar human resource capacity challenges. In seeking to address this issue, one of the strategies used is to develop performance auditing capacity through a cooperative audit approach. This component of the PRAI supports cooperative performance audits that result in individual national reports and an overview regional report.

What is cooperative performance auditing?

A cooperative performance audit involves a group of audit offices carrying out an audit on the same subject at the same time, using their own methodology but cooperating at key points in the audit cycle and learning from each other during the audit process.

Why an environmental topic?

Heads of SAIs of the region decided that the first cooperative performance audit in the Pacific region should be on an environmental topic, and chose the topic of solid waste management. The INTOSAI Working Group on Environmental Auditing (WGEA) has encouraged SAIs to carry out cooperative audits on environmental topics as these audits can have added impact where a number of countries share the same environmental issues. The WGEA has encouraged such audits at the regional and global level, and has produced guidance on carrying out these audits.

Planning for the audit drew heavily on the WGEA guidance on undertaking cooperative audits and on auditing waste.

Capacity building through the cooperative audit process

For SAIs, the benefits of engaging in cooperative audits include facilitating mutual sharing and learning, capacity building, networking, and identifying good practices.

The cooperative audit process is an expensive one, particularly given the size of the PASAI region and would not be possible without significant support from donor agencies.

However, it is undoubtedly an effective process. The results of this investment are two fold:

- increased capacity within the Pacific Island Countries and Territories (PICTs) to carry out performance audits, with the longer term aim of all PICT audit offices producing individual reports without the need for a formal cooperative audit process; and
- ten individual SAI reports on solid waste management in the PICTs, plus this regional overview report. It is expected that this regional report will have an audience and influence beyond the national Parliaments in the PICTs and the audit community.

Which SAIs participated?

Ten member audit offices from PASAI participated in the region's first cooperative performance audit. The audit reports of seven of the ten SAIs – Cook Islands, Federated States of Micronesia (FSM), Guam, Marshall Islands,

the Republic of Palau, Papua New Guinea (PNG), and Tuvalu – are now in the public domain. The remaining three SAIs participated in the cooperative audit but have not yet released their individual country reports. Because of confidentiality issues, these country reports cannot be identified in this regional report. As a result, when cross-country comparisons are made in this report, they will be referred to as PICT 1, PICT 2 and PICT 3.

The cooperative audit was the first performance audit for five of the participating SAIs. The governments of these ten PICTs are also members of the Pacific Regional Environment Program. The Secretariat of the Pacific Regional Environment Program (SPREP) is located in Apia, Samoa.

Support for the audit

Under the broader PRAI banner, the cooperative audit on solid waste management is the first of a rolling program of cooperative performance audits.

The audit was supported by the Asian Development Bank (ADB), the INTOSAI Development Initiative (IDI), the Pacific Association of Supreme Audit Institutions (PASAI), and the New Zealand Office of the Auditor-General (NZ OAG).

The audit teams worked together on the planning phase and the reporting phase of the audit, using a peer review approach. They also worked with support from expert advisers including in-country support during fieldwork, audit analysis, and report drafting for the majority of audit teams.

Cooperative audit objectives and scope

The aim of the audit was for each participating SAI to:

> *Assess the effectiveness of the management of solid waste in a selected location within the audit jurisdiction by auditing:*
>
> - *the existence of a legal and policy framework for solid waste management;*
> - *the process by which the legal and policy framework is implemented, including whether risks to implementation have been considered; and*
> - *compliance with the legal and policy framework, including monitoring arrangements.*

It was intended that each participating audit office would report its findings in its own jurisdiction and that a high-level regional perspective would be contained in this regional overview report.

Overall audit conclusion

The overall objective for the cooperative audit was to assess the effectiveness of solid waste management in selected locations within ten PICTs.

Although the majority of the ten audited PICTs had a legal framework in place, implementation of the framework was variable. The reasons for this included:

- strategies and plans to give effect to legislation were still in draft form;
- there were poor coordination arrangements between agencies responsible for implementation;
- there was a lack of clarity as to roles and responsibilities; and
- funding constraints often limited the implementation of key aspects designed to ensure the achievement of policy objectives, including sufficient funding for community awareness programs.

In addition, the monitoring and reporting systems that were in place were not adequate to capture reliable data to provide assurance that key environmental and public health risks were addressed or to inform future planning and decision-making for solid waste management. The generally poor quality of available data limited SAIs' ability to determine whether the solid waste management system in their jurisdiction worked effectively and that its individual system elements were integrated and mutually supportive.

Each SAI made a number of recommendations suggesting where improvements could be made. The implementation of these recommendations should lead to improved solid waste management in the Pacific region, with associated population health and environmental benefits. The individual SAI recommendations are included in Part 5 of this report.

Main audit findings

The main audit findings for each of the three lines of enquiry are noted below.

Existence of a legal/policy framework

An effective legal framework, supported by strategies and policies, is essential for effective solid waste management. This has been a goal of the first regional waste management strategy developed by SPREP.

The country audits found that there was an adequate legal framework for managing solid waste in most countries. Most PICTs had general environmental legislation that covered solid waste management to some extent, and five of the ten PICTs had specific regulations for solid waste management.

Most PICTs also had public health legislation relevant to solid waste management. Three had legislation prohibiting littering and three had specific solid waste legislation, with a fourth pending.

In some PICTs, the legal framework is complicated by different roles and responsibilities at federal and state level, and at national and local level. The audit reports for these PICTs identified coordination of effort across the levels as a key challenge.

The country audits found that the legal framework had not always been supported by national policies or strategic plans. Only two PICTs had a national policy on solid waste management and, in several other PICTs, strategies and plans to give effect to legislation were still in draft form.

The results for this line of enquiry are summarised in Part 4 of this report (Table 4.1 and Table 4.2).

Implementation of legal/policy framework

The country audits assessed implementation of waste management laws and policies against the following key aspects of the waste stream:

- prevention;
- generation;
- recycle, reuse, recover (3Rs);
- collection;
- transport; and
- treatment and disposal.

An effective waste management system requires an integrated approach. The focus needs to be on reducing the amount of waste that is disposed of through awareness raising about waste prevention and encouraging reuse and recycling. It also requires an efficient and effective system for collecting, transporting, treating, and disposing residual waste.

Table 4.3 summarises the findings of the country audits on implementing solid waste management laws and policies throughout these key aspects of the waste stream.

The extent to which policies had been implemented was variable across the ten PICTs audited. The most common form of waste management in the PICTs, and the most visible, is disposal of waste at landfills and dumps, and this poses particular challenges for small islands and atolls where suitable land is scarce.

Generally, there is not enough focus on minimising the amount of waste generated through awareness raising activities and encouraging reuse and recycling. The focus is often solely on the treatment and disposal of waste.

This report highlights some examples of good practice in several areas of the waste stream, many of which involve donor agencies.

Financial sustainability of solid waste management arrangements

The goal of the second regional waste management strategy developed by SPREP is for PICTs to become financially sustainable in terms of managing solid waste, rather than remaining reliant on aid funding. This report notes past and current levels of international donor aid for solid waste management in the audited PICTs, and that most country audits found that a lack of financial resources was a significant barrier to effective solid waste management. This suggests that donor support will be required for the foreseeable future.

Public health risks

A small number of the country audits found significant public health risks arising from poor waste management practices in the areas of lack of control over scavenging at landfills and the treatment and disposal of hospital/medical waste.

Compliance with the legal/policy framework and monitoring arrangements

Agencies responsible for managing solid waste need to have monitoring systems in place to provide data on the environmental and public health effects of waste treatment and disposal. A good monitoring regime should be able to provide assurance to stakeholders that the legal and policy framework is sound, or suggest where changes to the framework can be made based on the information gathered.

Nine of the ten audits found that there was no central system of recording and using monitoring information on outcomes of waste management actions or the effectiveness of waste management activities. This lack of information made it difficult for individual PICTs to evaluate whether they have effective solid waste management systems in place or whether they needed to make adjustments to their systems.

This was the weakest area of the three lines of enquiry considered.

A lack of good quality information about whether expenditure on waste management is achieving the intended result is a significant barrier to PICTs developing sustainable waste management systems with a greater focus on waste minimisation (as advocated by SPREP).

Structure of regional report

This report consists of five parts:

- Part 1 reports on the achievement of the first cooperative performance audit against the principal PRAI objective;
- Part 2 contains general information on the audit, the cooperative audit approach adopted, and participating audit offices;
- Part 3 provides background information on the Pacific region and the status of solid waste management;
- Part 4 contains the main findings against the three lines of enquiry – the existence of a legal/policy framework, the implementation of the framework, and monitoring the outcomes of the implementation process; and
- Part 5 contains the Executive Summaries of those national reports that are in the public domain, including responses from the audited entities.

1. Reporting against Pacific Regional Audit Initiative objectives

Objectives and outcomes of the Pacific Regional Audit Initiative

1.1 The overarching Pacific Regional Audit Initiative (PRAI) objective is: *to raise Pacific public auditing to uniformly high standards*. This in turn will contribute to good governance through improved transparency, accountability, and efficiency in managing and using public resources in the Pacific region. To achieve this objective, one of the PRAI outputs is to build and sustain public auditing capacity through the conduct of cooperative audits with participating Supreme Audit Institutions (SAIs) in the Pacific region.

1.2 The PRAI work program notes that SAI auditing capacities differ throughout the region, but they all face similar human resource capacity challenges. In seeking to address this issue, one of the strategies, funded under the PRAI, is to develop performance auditing capacity through a cooperative audit approach. This component of the PRAI supports cooperative performance audits that result in individual national reports and an overview regional report.

What is cooperative performance auditing?

1.3 A cooperative performance audit involves a group of audit offices carrying out an audit on the same subject at the same time, using their own methodology but cooperating at key points in the audit cycle and learning from each other during the audit process.

Capacity building through the cooperative audit process

1.4 For SAIs, cooperative audits include benefits such as enabling mutual sharing and learning, capacity building, networking, and identifying good practices.

1.5 The cooperative audit process is an expensive one, particularly given the size of the region of the Pacific Association of Supreme Audit Institutions (PASAI). The audit would not have been possible without significant support

from donor agencies. However, the results of this audit indicate that the process is undoubtedly an effective one.

1.6 PASAI's approach to cooperative auditing has involved:

- the PASAI Governing Board and Congresses determining cooperative audit topics; and
- individual SAIs then considering the audit topics and deciding whether to participate in the cooperative audit.

1.7 Table 1.1 indicates which SAIs participated in the first cooperative audit, their level of experience, and the size of the audit teams allocated to the task.

Table 1.1

Participants in the first cooperative performance audit

SAI	Level of experience	Audit team size
Cook Islands	high	**3**
FSM	low - medium	2
PICT 1	high	2
Guam	high	1
Marshall Islands	low	2
Palau	high	2 reduced to 1
PNG	low	2
PICT 2	low	2
PICT 3	low	2 reduced to 1
Tuvalu	low	1

How do we know the cooperative audit approach works?

Success of the cooperative audit approach can be measured through increased capability and improved performance by the staff of the audit teams that participated. This will take time and cannot be fully assessed until the PRAI is evaluated after its completion in 2012. However, in the interim, there are two outcomes to date for participating audit team members:

- those audit team members that already had performance audit experience have improved their skills; and
- those with no previous experience now have some experience and a greater understanding of the performance audit process.

1.8 Confidence in carrying out a performance audit is a key measure of success. There was an observable increase in confidence across all audit teams during the audit.

1.9 Performance audit skills gained by participants in the first cooperative audit included:

- developing a detailed audit work plan and suitable methodology related to the broad audit objective, that was endorsed by Heads of SAIs, and tailoring the plan to the circumstances of each Pacific Island Country and Territory (PICT);
- peer review support for other teams;
- presentation skills for audit plans and reports;
- fieldwork, evidence gathering, and testing the adequacy of evidence;
- analysis of audit evidence and translating this into audit findings and potential recommendations; and
- report writing, focusing on key messages.

1.10 Participating audit teams particularly valued the peer review approach and contribution from other audit teams in the Pacific region and from experts. Their increased ability in the peer review process was demonstrable between the start (October 2009) and completion (April 2010) of the project.

1.11 Five of the audit offices already carry out performance audits. However, the cooperative audit process is likely to be necessary in the medium term to lift capability in audit offices in PICTs and to enable SAIs to share experiences and to benefit from learning from each other.

1.12 The result of this and future cooperative audits will be increased capacity within the PICTs to carry out performance audits. The longer term aim is that all PICT audit offices can produce individual reports without the need for a formal cooperative audit process. It is expected that participants in the current process will transfer skills gained to their own audit offices. This will be supported by the development of a performance audit forward work plan within individual SAIs.

What are the risks to effective cooperative performance auditing?

1.13 Sound risk management is an important performance audit management tool. Table 1.2 illustrates some of the key risks to the cooperative approach and also includes strategies for managing these risks. Many of these strategies were developed in conjunction with audit teams.

Table 1.2

Risks to cooperative audit approach and ways of managing them

Risks	Management
One person audit teams	When selecting SAIs to participate, adequate resourcing should be a criterion.
Quality of report writing	Build additional and targeted resources into the program budget to address these needs.
Delay in audit teams' outputs	Closely monitor team performance through Head of SAI.
Different SAI approaches to report writing	Adopt staged approach to reviewing reports, for example, teams could submit parts of the report in sequence such as when one line of enquiry has been completed. This approach can be supported by monitoring against been deadlines.

Communication	Investigate availability of interactive video-conferencing, for example, Skype.
Coordination of inputs	On-going, regular discussion between external experts and PASAI Secretariat with a focus on improved delivery to cooperative audit participants.
Technical aspects of complex environmental audits	Where possible, seek early input of subject matter technical expert.

1.14 Maintaining regular communication between the teams and the external advisers as well as with each other was an ongoing challenge during the audit and needs to be considered closely for future cooperative audits. There may be scope to look at more interactive technologies such as Skype or other means of video-conferencing. Teams commented that communication with each other, especially around mile-stone points in the audit process was important and email was often either not available or not an appropriate form of communication at these particular points.

1.15 The teams also expressed support for the early engagement of a technical expert, that is, someone with an in-depth understanding of the subject matter being audited. Participants were fortunate that technical guidance were provided by the solid waste management adviser at the Secretariat of the Pacific Regional Environment Program (SPREP), located in Samoa. . Teams suggested this as a regular feature of future regional cooperative performance audits on complex environmental topics.

1.16 These lessons will guide future cooperative performance audits in the PASAI region.

Support for the cooperative audit approach

1.17 The audit was supported by the Asian Development Bank (ADB), the INTOSAI Development Initiative (IDI), the Pacific Association of Supreme Audit Institutions (PASAI), and the New Zealand Office of the Auditor-General (NZ OAG). This involved:

- ADB funding a Performance Audit Expert to guide the project;
- IDI funding audit teams' participation at the planning and reporting meetings;
- PASAI providing input through their Capacity Development Adviser and logistical support for team meetings; and
- the NZ OAG supporting the planning meeting for the audit and, through the coordinator of the Regional Working Group on Environmental Auditing (RWGEA), providing access to resources and support for the project with the INTOSAI Working Group on Environmental Auditing (WGEA), and ensuring a close link between the audit and the RWGEA and ultimately the INTOSAI WGEA.

Available guidance

1.18 It was important for this first cooperative audit that audit guidance was available. Heads of SAIs decided that the first cooperative performance audit in the Pacific region should be on an environmental topic, and chose the topic of solid waste management. The INTOSAI WGEA has encouraged SAIs to carry out cooperative audits on environmental topics because these audits can have added impact where a number of countries share the same environmental issues. The WGEA has encouraged such audits at the regional and global level, and has produced guidance on carrying out these audits.

1.19 Planning for the audit drew heavily on the WGEA guidance on undertaking cooperative audits and on auditing waste. Heads of SAIs decided that the topic for the second cooperative audit would also be an environmental one – in the area of freshwater – and the third would be on the sustainable management of fish stocks.

Capacity development through peer review

1.20 Audit teams came together at two key points in the audit cycle – planning and report writing. (These two key points are discussed in more detail in Part 2 of this report

Sharing "lessons learned" from cooperative audit experiences and highlighting what can be done better next time

1.21 The feedback from the audit teams at the end of the report writing meeting was invaluable in planning the second cooperative audit:

- Audit teams were largely supportive of the audit timeframe and also of coming together at critical points in the process.
- Audit teams suggested that an earlier start to the audit cycle should be considered. They suggested late September or early October, so that fieldwork (four to eight weeks) could be completed before the Christmas closure, which, in a number of instances, extended into late January. This approach was adopted for the second cooperative audit.
- Audit teams were of the view that one week was sufficient for planning and reporting. However, there was concern that less experienced audit teams may require additional time and support to prepare performance audit reports to the required standard – this addresses one of the risks identified in Table 1.2.
- Audit teams were also supportive of the peer review approach that was adopted for the two meetings and valued the opportunity of learning from each other.
- Audit teams expressed the view that the on-site support, provided by the ADB Performance Audit Expert, was valuable, especially for those teams that were new to the performance audit process. Teams considered that off-site support provided by the ADB adviser could be better utilised by providing the adviser with early drafts, so that adjustments could be made and additional evidence gathered where required. Again this was a risk identified in Table 1.2 and the suggestion will be pursued in the second audit.

The second cooperative performance audit

1.22 At the PASAI Congress in Kiribati in 2010, Heads of SAIs decided to continue with the cooperative performance auditing model and chose a second environmental topic – *access to safe drinking water* – as the subject for the second performance audit.

1.23 A further measure of the success of this cooperative audit approach to building performance auditing capacity is demonstrated by the composition of the SAIs and the audit teams for the second cooperative audit. Heads of SAIs have approached this in different ways but all with the ultimate objective of building long-term performance auditing capacity:

- PICT 2, PICT 3, and Tuvalu – have ensured that one member of the previous audit team is involved in the second audit, typically in the team leader capacity. This approach supports audit team members who are new to performance auditing.
- The Cook Islands, PICT 1, the Republic of Palau, and PNG – have introduced new team members to performance auditing. These team members are supported by a body of experience within their SAIs that can be drawn upon.
- Kiribati and State audit offices of the Federated States of Micronesia (FSM) – Kosrae and Yap – have decided to build performance auditing capacity.

2. Introduction to the audit

This Part sets out the reasons for conducing a cooperative performance audit on an environmental topic; the planning process for the audit; objectives and scope; the participating SAIs; and the cooperative audit approach. The audited entities are also identified.

Reasons for the audit

2.1 The cooperative audit on solid waste management is the first cooperative audit to be carried out in the PASAI region, and is intended to be the first of a rolling program of cooperative audits in the region.

2.2 The audit was conducted under the PRAI. A key aspect of the PRAI is to build capacity in individual SAIs through participating in cooperative performance audits and cooperative financial audits. This fits with the strategic objective of INTOSAI for greater cooperation among SAIs.

2.3 At the 2008 PASAI Congress, Heads of SAIs decided that the topic for the first cooperative performance audit should be an environmental one. This was a very good fit with a goal of the INTOSAI's WGEA, which is to facilitate concurrent, joint, or co-ordinated audits in each INTOSAI region, as part of its 2008-10 Work Plan.

Planning for the audit

2.4 Planning work for the audit was carried between the 2008 and 2009 PASAI congresses. This included discussion of the audit at two meetings of PASAI's interim governing body – the Transitional Working Group. The NZ OAG, in its role as coordinator of the RWGEA, conducted a survey of PASAI members to identify suitable topics for the cooperative audit and to find out which SAIs would be interested in taking part.

2.5 The survey favoured solid waste as the topic for the first cooperative audit, with freshwater management a close second, and fisheries the third choice. Lack of mandate was not generally a problem, and many SAIs expressed interest in taking part.

2.6 Audit planning also considered the guidance produced by the WGEA on conducting cooperative audits, to determine the appropriate form of cooperation, and the level of support that would be required.

2.7 The audit was planned and conducted as a cooperative audit, that is, the same audit topic was audited in each of the ten jurisdictions, with audit teams coming together at critical points in the audit cycle – planning and report writing. It was envisaged that each SAI would report in its own jurisdiction, and that a regional report would be compiled to present to the 2010 PASAI Congress and an overview given to the meeting of the INTOSAI WGEA in China in June 2010.

2.8 The ADB agreed to fund an adviser to lead the project and the IDI agreed to support planning and reporting meetings for the project.

2.9 At the July 2009 PASAI Congress in the Republic of Palau, Heads of SAIs agreed on the topic of solid waste management and ten Pacific SAIs decided to participate.

What is waste?

2.10 Planning for the audit drew on guidance produced by the INTOSAI WGEA – *Towards Auditing Waste Management*. This guidance describes waste as a product that is no longer suited for its intended use. It may be worn out or it may be an unwanted by-product of a process. The different categories of waste are identified as:

- non-hazardous (solid waste) or "garbage", although non-hazardous waste can cause harm or damage to people and environment;
- hazardous waste has inherent chemical and physical characteristics (toxic, ignitable, corrosive, carcinogenic) that can cause significant adverse effects (this includes hospital waste); and
- radioactive waste is highly toxic; exposure to radiation can cause illness and even death.[1]

2.11 For both developing and developed countries, waste management is an important factor in safeguarding human health and environmental

[1] INTOSAI Working Group on Environmental Auditing, *Towards Auditing Waste Management*, 2003, p. 14.

protection. Unsatisfactory handling of waste can lead to the contamination of soil, surface water, ground-water, and air.

2.12 As the topic of waste is such a large one, and as cooperative performance auditing was a new endeavour for PASAI member countries, Heads of SAIs decided to focus on solid waste because of its particular importance for the Pacific environment. However, it was acknowledged, and the audit has confirmed, that hazardous waste management is clearly an issue in some Pacific countries. In a number of country audit reports, reference is made to the disposal of hospital/medical waste. This was mainly because this type of hazardous waste was disposed of in open dump sites and as such increased the level of risk to public health and environmental protection.

Participating audit offices

2.13 Ten PASAI member countries concurrently performed audits of solid waste management policies and practices: Cook Islands, FSM, PICT 1, Guam, Marshall Islands, the Republic of Palau, Papua New Guinea (PNG), PICT 2, PICT 3, and Tuvalu.

2.14 This high level of participation in the first cooperative performance audit provided a representative cross-section of PICTs.

2.15 It was agreed that the audit would be conducted in selected locations in each country, rather than in all locations, to make the audit more manageable.

2.16 Table 2.1 sets out the selected location and/or focus of each individual audit.

Table 2.1

Audit offices and audit focus

SAI	Selected location/ Focus of audit
Cook Islands	Rarotonga landfill
FSM	Interaction of National and Pohnpei State laws, policies and practices
PICT 1	Interaction of national agencies, local councils and rural authorities, and management of a landfill
Guam*	Focus on federal receivership arrangements for Ordot Dump and future intentions
Marshall Islands	Focus on operations of newly formed Majuro Atoll Waste Management Inc
Palau	National legislation and management of M-dock landfill.
PNG	National capital – management of dump
PICT 2	Management of landfill
PICT 3	Management of waste on the main island and its landfill
Tuvalu	Implementation of new solid waste legislation

*The special situation in Guam

In a February 2004 Consent Decree (Consent Decree), the United States Environmental Protection Agency ordered the Government of Guam to correct Clean Water Act violations or face penalties. The Solid Waste Management Division (SWMD) within the Department of Public Works (DPW) was tasked to ensure compliance with the Consent Decree by closing the Ordot Dump and opening a new landfill.

Due to the lack of progress in meeting the milestones set out in the Consent Decree, the US District Court placed the island's solid waste operations under federal receivership in

March 2008. The purpose of the federal receivership was to replace DPW as the overseer of the Consent Decree projects with a third-party. As a result, Gershman, Brickner, and Bratton (GBB) was appointed as federal receiver and tasked to build a new landfill, close the Ordot Dump, and manage DPW's SWMD.

One of GBB's first tasks was to assess the condition of the Ordot Dump and determine the amount of space left to accept solid waste. As a result of their assessment, the closure of the Ordot Dump is now expected to occur in or about July 2011 with GBB taking the necessary steps to bring Guam's solid waste management into compliance with the Consent Decree.

Because of these arrangements, the Government of Guam's legal and policy framework for solid waste management is now out-of-date.

Audited entities

2.17 The country audits examined the operations of agencies with responsibility for implementing national environmental and specific policies concerned with solid waste management, and those agencies responsible for monitoring the arrangements.

The cooperative performance audit process

2.18 After the 2009 PASAI Congress, participating SAIs were asked to nominate up to two staff members to take part in the audit, with a preference for one senior and one junior team member.

2.19 Once the audit teams were assembled, they carried out a preliminary study before attending a planning meeting for the audit. The objective of the preliminary study was to ensure that the teams were fully acquainted with the management of solid waste in their individual countries.

Planning meeting

2.20 The planning meeting took place in Nadi, Fiji from 19-26 October 2009.

2.21 The session was jointly led by the ADB Performance Audit Expert and the IDI Regional Training Manager. An expert on solid waste management in the Pacific region from SPREP attended part of the planning session.

2.22 The objectives of the meeting were to:

- develop individual audit work plans for auditing solid waste management that could be productively used to guide field work; and

- strengthen capacity to develop audit work plans by working together with audit teams and experts from different audit offices.

2.23 Each audit team developed an audit work plan, using a peer review approach. The process was divided into a number of different phases. The first phase consisted of teams working individually to develop audit criteria and related audit questions. This was followed by a peer review by another audit team and discussion as to how best to improve work. Comments were provided by the ADB and IDI experts following these discussions and current work was adapted where appropriate.

2.24 The second phase consisted of a similar process to identify sources of evidence and information gathering techniques. The final phase consisted of bringing these individual components together so that teams could identify the links between audit lines of enquiry, audit criteria, questions, sources to answer the questions and techniques to gather and corroborate the information necessary to develop audit findings based on relevant, sufficient and appropriate evidence.

Outcomes of the planning meeting

2.25 Each audit team produced an audit work plan tailored to their individual country circumstances, to be used to guide their audit field work and to be approved by their Head of SAI after the planning meeting.

2.26 A small participant feedback survey was also conducted. The results indicated that participants valued the peer review approach and contribution from other audit teams in the Pacific region. They also indicated that participants' confidence levels had increased sufficiently so that they felt able to conduct the necessary fieldwork.

2.27 The contribution of the experts was also valued, including the contribution of the technical solid waste management expert from SPREP.

Key success features of the planning meeting

2.28 The participants considered these aspects to have been the key success features of the planning meeting:

- developing capacity through learning from each other, supported by expert assistance where necessary – ten audit work plans developed;

- audit work plans are "living" documents that the audit teams could implement, subject to agreement by their Head of SAI, on return to their country; and

- building confidence in the performance audit process and how this can improve public administration in PICTs.

Audit fieldwork

2.29 Audit fieldwork took place between November 2009 and January 2010. This was largely dependent on the availability of the audited agencies as well other audit work commitments.

2.30 Audit fieldwork and analysis of results and the initial drafting phases were supported on-site by the ADB Performance Audit Expert. This support was targeted to those SAIs with minimal or no performance audit experience. It included on-site support in January 2010 in PICT 3, PICT 1 (minimal support), and Tuvalu. In February 2010, performance audit support was provided in the Republic of Palau, FSM - Pohnpei, and the Marshall Islands. In March 2010, PNG and PICT 2 were assisted in the drafting stages. Time with each SAI varied and depended on SAI capacity and the requirements of the audit teams.

2.31 The participating audit teams indicated that they would prefer to start the audit cycle earlier, in late September or early October, so that fieldwork (four to eight weeks) could be completed before the Christmas closure, which, in a number of instances, extended into late January.

Report writing meeting

2.32 The report writing meeting took place in Nadi, Fiji from 8-15 April 2010. A similar peer review process was again successfully used.

2.33 Expectations of the report writing session included:

- finalising individual country audit reports to a high reporting standard so that Auditors-General could approve them for tabling in respective jurisdictions;

- identifying key themes across PICTs concerning the management of solid waste for inclusion in the regional report; and

- sharing "lessons learned" from cooperative audit experiences and highlighting what could be done better next time.

Reporting session outcomes

2.34 Each of the expectations of the report writing session were realised – ten individual country reports were drafted for clearance by the Head of SAI; key themes were identified for the regional overview report; and audit teams reflected on their cooperative audit experience and made suggestions as to what could be done better next time.

2.35 At the reporting meeting, the audit teams agreed to a timetable for report clearance by the respective Heads of SAIs and associated quality assurance measures; the distribution of draft reports to audited agencies for comment; and the preparation of audit reports for reporting or tabling in respective jurisdictions.

3. Solid waste management in the Pacific region

This Part provides a background to the management of solid waste in the Pacific region, largely drawing on work carried out by SPREP.

The Secretariat of the Pacific Regional Environment Program

3.1 SPREP is a regional organisation established by the governments and administrations of the Pacific region to look after the region's environment. It has grown from a small program attached to the South Pacific Commission (SPC) in the 1980s into the Pacific region's major inter-governmental organisation charged with protecting and managing the environment and natural resources. SPREP is based in Apia, Samoa, with over 70 staff.

3.2 The Pacific islands' governments and administrations saw the need for SPREP to serve as the conduit for concerted environmental action at a regional level. The establishment of SPREP also sends a clear signal to the global community of the deep commitment of the Pacific islands' governments and administrations towards sustainable development, especially in light of the outcomes of the World Summit on Sustainable Development in the form of the Plan of Implementation, the Millennium Development Goals and Declaration, the Barbados Plan of Action, and Agenda 21.

The Pacific Regional Solid Waste Management Strategy

3.3 The first Pacific Regional Solid Waste Management Strategy 2005-2010 was coordinated by SPREP in collaboration with the Pacific Island Forum Secretariat (PIFS) and endorsed by SPREP members in September 2005. SPREP membership includes the ten countries that are the focus of the region's first cooperative performance audit into solid waste management. The goal of the 2005-2010 strategy was to develop the necessary legal framework within SPREP member countries (including attention to International Treaties); putting in place national coordination mechanisms; and developing national solid waste management strategies; supported by a range of on-the-ground measures.

3.4 The second SPREP strategy covering 2010-2015 notes improvements within individual PICTs and also identifies where more work is required. The overall goal for the Pacific Regional Solid Waste Management Strategy 2010-2015 is:

> *Pacific Island Countries and Territories will adopt cost-effective and self-sustaining Solid Waste Management Systems to protect the environment, in order to promote a healthy population and encourage economic growth.*[2]

3.5 The strategy notes that despite the progress made between 2005 and 2010, solid waste management continues to be a high priority work area for PICTs. Each country needs to move towards a system of solid waste management that can be sustained without reliance on external aid. SPREP advocates that a self-sustaining system should be based primarily on the principles of waste avoidance and minimisation, recycling and reuse in concert with the collection and disposal of residual waste. This can only occur where approaches, policies, and practices are integrated and supported by effective monitoring systems.

3.6 It was in this context that the PASAI cooperative performance audit into solid waste management within ten SPREP member countries was conducted.

The Pacific region

3.7 The Pacific islands region is large and diverse, incorporating substantial areas of water and relatively small areas of land mass. The geography of the islands varies enormously ranging from large volcanic landforms with steep mountainous terrain to low-lying, coral-based atolls. This diversity in geography and population poses particular problems for PICT governments when developing solid waste management systems that are effective and responsive to the needs of individual countries and their communities.

3.8 Table 3.1 presents the geographical and population characteristics of the ten PICTs involved in the regional audit.

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[2] Secretariat of the Pacific Regional Environment Program (SPREP), *Strategy for Solid Waste Management in Pacific Island Countries and Territories 2010-2015*, endorsed November 2009, p. 1.

Table 3.1

Geographic and population information on audited PICTs

Country	EEZ (km²)	Land area (km²)	Population	Population density (people/ km²)	Annual growth rate (%)
Cook Islands	1 830 000	237	15 537	66	0.4
FSM (CFA)	2 978 000	701	110 443	158	0.4
PICT 1	1 290 000	18 272	837 271	46	0.6
Guam (AT)	218 000	541	178 980	331	2.8
Marshall Islands (CFA)	2 131 000	181	53 236	294	1.0
Palau (CFA)	629 000	444	20 279	46	0.6
PNG	3 100 000	462 840	6 473 910	14	2.2
PICT 2	120 000	2 935	179 645	61	0.1
PICT 3	700 000	650	102 724	158	0.4
Tuvalu	900 000	26	9 279	374	0.3

Note: The Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau are in a Compact of Free Association (CFA) with the USA. Guam is an American Trust Territory (AT).

Source: Secretariat of the Pacific Regional Environment Program (SPREP), *Strategy for Solid Waste Management in Pacific Island Countries and Territories*, November 2009, p. 3.

3.9 As is evident from the above Table, the country with the largest landmass and population in the region – PNG – is included in the audit as is one of the smaller land masses and population – Tuvalu. Tuvalu is a series of coral-based atolls and a small number of islands. Population density and associated solid waste management issues is also evident with both Guam and Tuvalu exceeding the 300 person per square kilometre mark. The Marshall Islands, a series of coral atolls, comes close to that density mark.

4. Main findings against each line of enquiry

This Part presents overview findings against each line of enquiry (LOE). It is supplemented by good practice examples where available.

LOE 1 – the existence of a legal/policy framework

4.1 It is important that solid waste management activities are supported by practical, effective, enforceable, and culturally-sensitive legislation and policies.

4.2 Table 4.1 sets out legislation related to solid waste management in the ten PICTS.

Table 4.1

Legislation related to solid waste management in audited PICTS

PICT	Environment Act	Regulation on SWM	Other relevant Act eg Public Health Act	Specific Solid Waste Management Act	State/Municipal Laws or plans
Cook Islands	✓	Draft	✓	✖	N/A
FSM	✓	✓	✓	✖	✓
PICT 1	✓	✓	✓ outdated	✖	✓
Guam*	✓	✓	✓	✓	N/A
Marshall Islands	✓	✓	✓	✖	✓
Palau	✓	✓	✓	✖	✓
PNG	✓	✖	✓	✖	By laws (pending)
PICT 2	✓	N/A	✓	✓ (Bill)	N/A
PICT 3	✖	Draft	✓	✓	N/A
Tuvalu	✓	Draft	✓ outdated	✓	✓

* All laws in Guam concerning waste management need to be updated due to the activities of the federal receiver.

Source: Individual country audit reports.

4.3 Environment Acts have been passed in the majority of PICTs, with the exception of PICT 3, which has an Environmental Assessment Act.

Regulations specifically concerning the management of solid waste are in force in five of the ten PICTs, with another three in draft form.

4.4 Each PICT has enacted other pieces of legislation relevant to the management of solid waste. These are principally generic Public Health Acts, concerned with the effect of solid waste management on population health, especially any contribution to air borne diseases. In addition, PICT 1, the Republic of the Marshall Islands, and Guam have Littering Acts.

4.5 Of major importance is the existence of specific solid waste legislation in Guam, PICT 3, and Tuvalu. At the time of the audit, PICT 2 had a Bill before its Parliament. These legislative advances are to be commended.

4.6 In a number of PICTS, appropriate management of solid waste through the legal framework is complicated by a federated structure of government requiring the coordination of efforts between national and state governments, for example, the Federated States of Micronesia and the Republic of Palau. In other PICTS – PICT 1, the Republic of the Marshall Islands, and Tuvalu – there is a need for effective coordination between the national government and local or municipal councils. All individual country reports, where it was applicable, identified coordination across all levels as a major challenge.

4.7 A number of reports focused on the lack of coordination between government agencies and the effect this had on effectively implementing government policy. The PICT 3 report highlights the difficulties associated with this:

> Even though the *Waste Management Act 2005* is in place and the functions and responsibilities of each authority have been established and are clear, there is a lack of coordination between the authorities to support and guarantee the effectiveness of the implementation process.
>
> Audit noted that the failure is due to lack of resources such as people, equipment and funds to carry out these responsibilities and the slow process of adopting a strong enforcement and implementation regulatory tool (draft regulation).
>
> The deficiencies identified have the potential to hinder the effective implementation process and activities of the Waste Authority (the Approved Authority under the 2005 Act responsible for managing solid waste) to ensure the proper management of waste.

Strategic plans

4.8 The existence of strategic planning arrangements to support the implementation of legislative objectives is fundamental to effective solid waste management. National policies and plans should clearly set out and define the roles and responsibilities of the agencies concerned with solid

waste management. In the absence of well-designed policies and plans, the risk of non-compliance with legislative objectives increases.

4.9 Table 4.2 details the status of the policy and planning frameworks across the ten audited PICTS.

Table 4.2

Policies, strategies, and plans for solid waste management in audited PICTs

PICT	National policy on SWM	SWM strategy or plan
Cook Islands	Draft	Draft
FSM	Draft	✓
PICT 1	✗	✓
Guam*	✓	✓
Marshall Islands	✓	✗
Palau	✗	Draft
PNG	✗	Draft
PICT 2	✓ (outdated)	Draft
PICT 3	✗	Draft
Tuvalu	✗	✗

* All policies and plans in Guam concerning waste management need to be updated due to activities of federal receiver.

Source: Individual country audit reports.

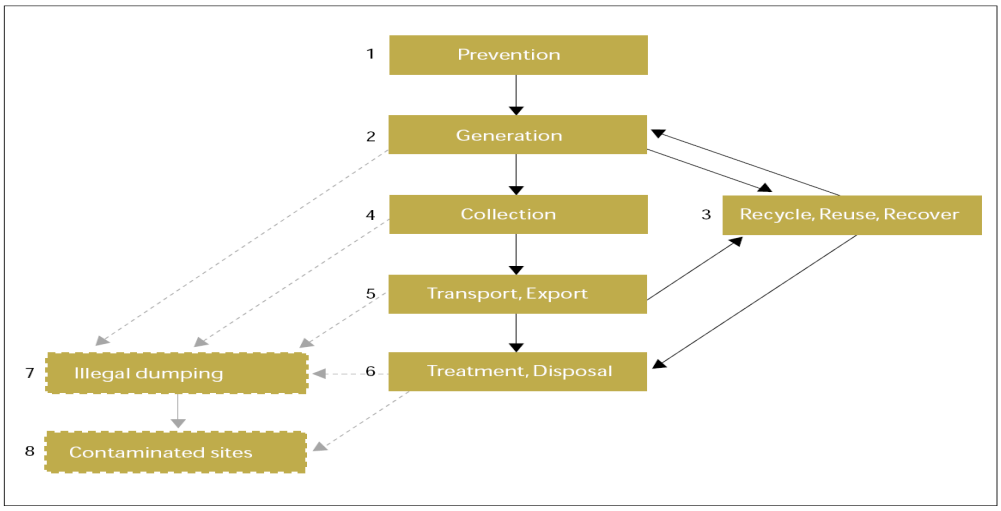
LOE 2 – implementation of the legal/policy framework

4.10 The ten audited PICTS used the "waste stream", presented graphically in Figure 4.1, to assess how solid waste management laws and policies were implemented. SPREP notes that an integrated approach to solid waste management is critical. It must encompass community awareness and participation to reduce the amount of waste generated. It should be accompanied with recycling and reuse activities and appropriate waste collection and disposal of residual waste.[3]

[3] SPREP, op cit.

Figure 4.1

The waste stream



Source: INTOSAI Working Group on Environmental Auditing (WGEA), *Towards Auditing Waste*.

4.11 Key aspects of the waste stream that the audits focused on were:

1. *Prevention*
   Information and education that is available to the community and businesses to increase awareness of how they can limit the amount of solid waste that is produced.
2. *Generation*
   This aspect examines who produces the waste – households, businesses, and government; how it is quantified; and what measures are in place to recycle solid waste, including the separation of waste at source.
3. *Recycle, reuse, and recover (3Rs)*
   This aspect examines policies or procedures that are in place to assist waste generators to recycle waste products. It also examines what processes are in place, as part of the collection process, to maximize opportunities for recycling and reuse of components of solid waste.
4. *Collection*
   This involves examining the process of waste collection from the generators. The means, fee structure, and the frequency of collection are also covered.
5. *Transport*
   This aspect of the waste stream refers to the transportation of waste once collected from the generators.

6. Treatment and disposal

This covers the treatment and disposal of waste and the suitability of areas designated for these purposes.

4.12 Where relevant, illegal dumping and contaminated sites were also considered.

4.13 Table 4.3 sets out comparative audit findings for the ten audited PICTs in relation to waste stream activities 1-6.

Table 4.3

Implementation of solid waste management practices

PICT	Prevention	Generation	3Rs	Collection	Transport	Treatment and disposal
Cook Islands	✓	✓	✓	✓	minimal	✓
FSM	partial	✓	partial	partial	partial	✓
PICT 1	✓[1]	No separation of waste at source	✓[2]	✓	✓	✓
Guam	✓	✓	×	✓	✓	✓
Marshall Islands	✓	✓	✓	partial	partial	partial
Palau[3]	✓	✓	✓	✓	✓	✓
PNG	poor	No separation of waste at source	poor	✓	✓	poor
PICT 2	partial[4]	No separation of waste at source	No formal arrangement with recycling company	✓	✓	✓
PICT 3[5]	Limited public awareness	Limited separation	✓	✓	✓	limited
Tuvalu[6]	✓	×	✓	partial	partial	partial

[1] The Department of Environment in PICT 1 is focused on awareness raising activities.
[2] One of six municipal councils is practising composting.
[3] As the National Solid Waste Management Plan is still in draft form, it is difficult to assess the effectiveness of the implementation of waste stream activities.
[4] Awareness programs are in schools only – not national.
[5] Implementation process limited due to lack of resources – collection and transport fully implemented.
[6] All of the above waste stream activities should be in place with the full implementation of the newly enacted *Waste Operation and Services Act 2009*.

Source: Individual country audit reports.

4.14 There are many challenges to the management of solid waste in PICTs, including:

- increases in waste generation caused by economic and population growth;
- limited availability of suitable land on small islands and atolls for landfills, exacerbated by customary land tenures and "not in my backyard" attitudes;
- the remoteness of many PICTs resulting in high costs for consumables required for waste management (for example, spare parts and fuel) that must be imported; and
- small and sometimes sparse populations, which limit potential economies of scale.[4]

4.15 Because of these challenges, it is important that solid waste management policies and plans are integrated and focus on minimisation strategies and optimising recycling opportunities and that these messages are effectively communicated to the community.

Prevention

4.16 To minimise the quantity of waste being transported to dumps and landfills, it is important that the population is informed and aware so that individual community members can support and participate in waste minimisation practices. Community awareness of, and willingness to comply with, good practice is essential to overall waste management.

4.17 Table 4.3 illustrates that coordinated, well-developed communication strategies, in accessible formats, advocating prevention practices are variable across the ten audited PICTS.

4.18 The following good practice in the Marshall Islands highlights a comprehensive community awareness program.

[4] SPREP, op cit.

The Marshall Islands' Environmental Protection Authority (EPA) is responsible for public awareness on solid waste issues. EPA's goals are:

1. to increase knowledge of environmental issues in the community and increase participation of the community in caring for the environment;
2. to increase knowledge of environmental issues with school children; and
3. to increase participation of schools in caring for the environment.

To achieve these goals, the EPA has developed a community awareness program for the next three years in coordination with the local governments, traditional leaders, and the Ministry of Internal Affairs. The program includes a monthly newspaper article, weekly radio broadcasts, printed materials on environmental issues, and maintaining the EPA website. In addition to these, there are scheduled community clean-up activities in conjunction with the Japan Overseas Corporation Volunteer (JOCV).

Generation

4.19 To optimise the life span of landfills and dumps and to encourage recycling practices, it is important to know who produces the waste – households, businesses, and government; how it is quantified; and what policies and measures are in place to recycle solid waste, including the separation of waste at source.

4.20 Again, Table 4.3 indicates the variability of practices concerned with waste generation across the audited PICTs.

4.21 However, there are some good practices from which lessons can be learned.

In the Federated States of Micronesia (FSM), a comprehensive World Health Organisation study was conducted, which forecast waste generation by households and the commercial sector up to 2007-2009. The country audit identified that this study was carried out in 1991 and the underlying assumptions supporting the forecast would have changed considerably between then and 2007, affecting the quality of the forecasts. The audit noted the need for an up-to-date survey to guide current and future planning activities concerning solid waste management in FSM.

Recycle, reuse, and recover (3Rs)

4.22 Policies or procedures need to be in place to assist waste generators to recycle waste products and also, as part of the collection process, to maximize opportunities for recycling and reuse of components of solid waste.

4.23 As illustrated in Table 4.3, reuse is one of the solid waste management practices that is receiving attention in the audited PICTs, though not uniformly. A good practice example from the Tuvalu audit report is provided below.

In 2005, ADB developed an Integrated Solid Waste Plan, which was subsequently endorsed by the Tuvalu government. One of the activities outlined in the plan was:

Green Waste Diversion with a *Target* of 50% reduction in waste volume going to landfill by mid 2005, based on diversion of green waste to composting.

The country audit noted that: as per the 2007 progress report for Tuvalu Waste Management Department, 30-40% of green wastes have been diverted to composting activities. However, more needs to be done to ensure that there is more space for non-organic wastes at the dumpsite. This is a good result for Tuvalu as it serves a dual purpose:

- minimising the amount of waste going to the dump; and
- diverting the waste to a productive composting activity.

Collection and transport

4.24 Well-managed waste collection and transportation systems are important to maintain community support for waste management systems.

4.25 In a number of the audited PICTs, the waste collection system covers only the main urban areas, with limited service in rural or outlying areas. This was the case in FSM, the Marshall Islands, and Tuvalu. In particular, in a number of instances, where the community was encouraged to separate green waste at source, as in Tuvalu, the segregated wastes were often re-combined during the collection and transportation process having a negative effect on community involvement in good waste management practices.

4.26 A number of PICTs have adopted better practice waste collection and transportation systems. The following example is from Guam.

In Guam, the federal receiver – Gershman, Brickner, and Bratton – initiated the first phase of its program to "introduce modern efficiencies into Guam's solid waste system" through the implementation of a rolling trash cart project. The initial project started with the delivery of roll-out carts in four villages, to be expanded village by village in an effort to convert the island's trash collection to a cart-based system.
However, the audit found that the Department of Public Works management did not have any input into the decision to incorporate and implement a trash roll-out cart program. Without the Government of Guam's input into whether the trash roll-out cart program was a viable program, it is unclear whether it will be a part of the Government of Guam's strategy for the future management of solid waste.

Treatment and disposal

4.27 Disposal of waste at dumps and landfills is the most commonly practised form of waste management in PICTs and is also the most visible.

4.28 As noted previously, the availability of land suitable for waste management activities is a significant challenge in the Pacific region. This is especially so for the two audited coral-based atolls – the Marshall Islands and Tuvalu. On coral atolls, the disposal of waste on the edge of a reef or lagoon is often the only option available.

4.29 SPREP recommends that waste avoidance, minimisation, and recycling activities are more critical as land is not available for managing large amounts of residual waste.

4.30 An additional problem for coral atolls is the availability of suitable material – sand or soil – to cover the waste in the landfill or dump on a regular basis as required under solid waste management regulations. This presents particular environmental hazards and suggests that extra care needs to be taken when developing strategies to manage waste in these fragile environments. It also suggests that innovative solutions need to be developed if waste is to be treated and disposed of in an environmentally friendly manner and in keeping with solid waste management regulations.

4.31 The Cook Islands has developed a potential solution.

The audit found that the Ministry of Infrastructure and Planning recently implemented policies such as the acceptance of non-recyclable materials such as glass for reuse as coverage for the landfill as well as the free-of-charge distribution to private businesses for use as raw materials in the production of locally made tiles. These policies are particularly aimed at encouraging participation by the private sector in solid waste management.

The financial sustainability of solid waste management arrangements in the audited PICTs

4.32 SPREP's goal for solid waste management in PICTs is premised on each country moving towards a system that can be self-sustained without reliance on external aid. Table 4.4 illustrates past and current levels of international donor aid to solid waste management activities and related outcomes.

Table 4.4:

International donor aid for individual country solid waste management activities

PICT	Donor aid involvement in SWM activities
Cook Islands	Combination of public and aid donor funds, especially in recycling activities.
PICT 1	The main landfill was jointly funded by the European Union and the Government of PICT 1.
FSM	National SWM arrangements are largely funded under the Compact of Free Association with the USA.

Guam	Cost of the construction of the new landfill and the closure of the Ordot Dump, secured by the Government of Guam through bond financing.
Marshall Islands	SWM arrangements are largely funded under the Compact of Free Association with the USA, with a revenue component derived from recycling activities and a collection fee system.
Palau	Funds are appropriated through the Palau National Congress for SWM activities. However, the rehabilitation of the national landfill was jointly funded by the Palau National Congress and the Government of Japan under the Japan Technical Cooperation Agency.
PNG	Funds appropriated for SWM activities in the capital city.
PICT 2	Funds appropriated for SWM activities. Additional funds to be provided by the Government of Japan under the Japan Technical Cooperation Agency for the installation of a weighbridge at the landfill.
PICT 3	AusAID and the Government of PICT 3 jointly funded the Solid Waste Management Project. The project funded the new Landfill, which resulted in the closure of the old Dumpsite and the establishment of the Waste Authority Ltd, the "Approved Authority" for waste management under the Waste Management Act 2005.
Tuvalu	Sequential donor involvement, the latest being the European Union.

* The site infrastructure at the landfill comprises a staffed gate office, weighbridge, administration block, workshop, and main access road. Waste being transported to the landfill is closely monitored at the weighbridge by employees of the landfill.

Source: Individual country reports.

4.33 The above table indicates that the majority of the ten audited PICTs are some considerable distance from SPREP's goal of financial sustainability. In this context, it is important to note the joint approaches that are being undertaken between individual governments and donor agencies. It is also important to take account of the limited revenue base of PICTs and the avenues open to them to generate enough revenue to fund sound solid waste

management processes and practices. Most audits found that the lack of resources significantly affected the development of a holistic approach to solid waste management, including enough funds available for awareness programs (PICT 3) to recycling activities (PICT 1) to adequate disposal facilities (PNG). However, the following approach, if effectively implemented, could make a difference to the funding constraints associated with solid waste management activities.

The Republic of Palau: the audit report noted that a system of tipping fee is a conventionally-accepted self-funded scheme to pass on the cost of operating and maintaining a landfill to users (those who produce waste). A tipping fee also encourages users to minimise the volume of waste materials disposed at the landfill. A tipping fee was contained in a draft National Solid Waste Management Plan, but because the plan remains in a draft format, the potential revenue source from tipping fees has been delayed.

Public health risks

Scavenging

4.34 Scavenging at public landfills and dump sites in the Pacific region is a common activity. It received considerable attention in the country audit reports of PICT 2 and PNG because of its potential adverse effects on public health, including the risk to the health of the individuals involved in this activity.

4.35 The audit report of PICT 2 found that:

> *Physical security at the landfill is poor, with ease of entrance and exit. The lack of fencing means that the public can enter the landfill at any time and this has lead to wide-scale scavenging at the landfill. Scavengers are actively involved in the separation of waste at the landfill and receive compensation from the Recycling Company for what they collect. While such a practice supports recycling activities, it can also pose public health risks for the scavengers and the community more broadly. The (responsible agency) needs to manage these risks.*

4.36 This situation is reflected in the PNG audit report, which found that a community had settled near the dump site and made their daily living from the extraction of items from the dump for resale, with little scrutiny from government agencies as to potential health risks.

Medical waste

4.37 Medical waste should be managed in an environmentally-sound manner without adverse effect on public health and the environment. The most effective method of disposal is by incineration. However, this is not always an option in PICTs because of the lack of facilities and appropriately trained staff. Medical waste is often disposed of in general, non-hazardous solid waste treatment and disposal facilities.

4.38 A number of country audit reports commented on this practice, including FSM, the Republic of Palau, and PNG. Because of the specific risks attached to the proper disposal of medical waste, this topic lends itself to a future cooperative performance audit within the Pacific region.

LOE 3 – compliance with the legal/policy framework and monitoring arrangements

4.39 Accurate, current data is fundamental to providing stakeholders with assurance that the environmental and public health impacts of solid waste management are addressed and the implementation of the legal framework is sound. Without monitoring processes in place, such assurance is difficult to provide. The data gathered through monitoring can also be used to inform future planning and decision-making processes, by identifying gaps in implementation. Table 4.5 illustrates the monitoring arrangements, concerned with solid waste management, across the audited PICTs.

Table 4.5

Monitoring and reporting arrangements for solid waste management activities

PICT	Inspections at landfill – environment	Inspections at landfill – public health	Reporting of inspection outcomes	Monitoring against key aspects of waste stream, eg effectiveness of prevention programs	Centralised reporting of monitoring outcomes
Cook Is	✓	✓	✓[1]	✗[2]	✗
FSM	✓	✓	Monthly inspection reports	Partial – treatment and disposal	✗
PICT 1	✓	✓	✓	limited	✗
Guam	✓	✗	✓Quarterly	Introduced by receiver	Introduced by receiver
Marshall Is	Twice weekly	Twice weekly	✓	✓	✗
Palau [3]	✗	✗	✗	Limited[4]	✗
PNG	Twice daily	Twice daily	✓	Limited	Limited

PICT 2	✓	✖	✓	✖	✖
PICT 3 [5]	Partial	✖	✓ (By the Authority)	Poor	✖
Tuvalu	[6]	[6]	[6]	✖	Partial

[1] Inspection reports available but no analysis of data.
[2] Difficult to determine effectiveness because of a lack of monitoring and recording of actual practices.
[3] Last inspection at landfill for environmental purposes was done in June 2008.
[4] Are included in SWM Plan which remains in draft form.
[5] Regular monitoring/inspections of landfill are done by the Authority that manages the landfill. Independent, external inspections by the Ministry for the Environment and Climate Change and the Ministry for Health are not undertaken.
[6] Standards and reporting against them are required under the WOS Act 2009.

Source: Individual country reports.

Environmental monitoring and reporting arrangements

4.40 The audited PICTs had a number of different arrangements in place for the treatment and disposal of solid waste. These arrangements can be divided into three different categories:

- sanitary landfill;
- controlled dump; and
- open uncontrolled dump.

4.41 The main differences in these categories are the way they are operated and monitored and the level of adverse environmental effects they produce.[5]

4.42 Modern, sanitary landfills incorporate design features that support environmental monitoring activities. The Cook Islands, PICT 1, Guam, PICT 2, PICT 3, and, to a degree, the Republic of Palau fall within the category of modern landfills. However, even in these situations, routine environmental monitoring/inspections do not always take place – see Table 4.5.

4.43 Other unregulated arrangements such as open, uncontrolled dumps,[6] because of their high levels of potential risk, may require more rigorous monitoring and inspections, as is the case with FSM and PNG.

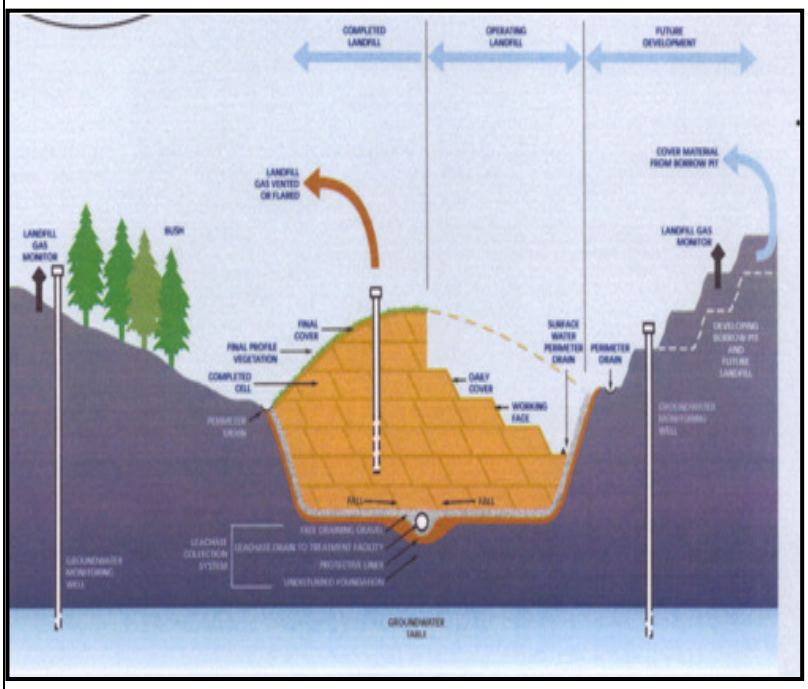
4.44 The focus of PICT 1's audit report is the landfill. The report identifies both good practice features and suggests where improvements are necessary.

[5] INTOSAI, *Towards auditing Waste Management*, op cit.

[6] This refers to designated or authorised dumps, not to illegal dumps.

The PICT 1 audit report noted that a landfill can have a number of environmental impacts:

- contaminated water called leachate (can contaminate soil as well as ground water and surface water);
- uncontrolled fires and toxic emissions are quite common if the landfill is poorly managed and are a major source of pollution; and
- landfills can also cause littering problems, odour, rodents, insects, and noise.



This landfill is engineered to a high standard to contain leachate and landfill gas produced by decomposing organic waste. The landfill protection liner prevents leachate permeating down into the underlying aquifers or nearby rivers, spoiling the local water. The daily cover and the final capping layer prevent odour issues and seepage of methane gas (one of the most harmful of the greenhouse gases.)

Monitoring of landfill operations is the responsibility of the Department of Environment (DOE). The DOE conducts weekly inspections of the landfill where breakdown of works are monitored together with checking of monitoring results submitted by the Contractor. The actual work conducted during the site visit is limited to checking current developments in landfill operations as per the operational management plan, for example, gate officer supervision, working phase, leachate management, traffic-tipping area, access road, and internal monitoring assessments. There are no checks conducted to establish whether landfill operations meet prescribed standards because of the absence of landfill standards. These are yet to be developed by the DOE.

Conflict of interest

4.45 Compliance with the legal and policy framework can best be assessed if the monitoring agency is independent from the agency responsible for implementing and managing a process. A separation between the implementation of a process, (for example, the management of a landfill) and the monitoring function (that is, assessing the effectiveness of landfill management) supports accountability requirements.

4.46 The importance of this separation of responsibilities was highlighted in the audit reports of PICT 1, PICT 2 and PICT 3. The PICT 2 audit report recommended that separate agencies perform the management and monitoring roles associated with better practice landfill management.

4.47 The PICT 1 audit report also identified the lack of resources as contributing to less than optimal monitoring arrangements.

Reporting of monitoring outcomes

4.48 Where monitoring actually took place in the audited PICTs, the monitoring outcomes were reported. This is an effective contribution to accountability. However, the Cook Islands report noted that although inspection reports were compiled, no analysis of the data was carried out by the responsible agency. This limits the understanding of trends over time, and potentially compromises the quality of information available for both compliance purposes and for future planning and decision-making.

Public health monitoring arrangements

4.49 Public health effects arising from poor solid waste management practices were identified by a number of audited PICTs as a significant detriment to national development aspirations. The lack of standards or regulations to mitigate public health risks are an ongoing concern.

4.50 A number of audit reports, including the Cook Islands and FSM reports, commented on the unsanitary nature of solid waste management activities and the tendency for landfills/dumps to provide a breeding ground for insects resulting in public health concerns. The Marshall Islands audit found that key risks to public health and environmental health were identified in the Management Plan that guided the operation of the Jable-Batkan solid waste landfill. However, because of a lack of resources, only limited measures to mitigate these risks could be carried out by the responsible authority.

4.51 Across the audited PICTs, where there were standards or regulations in place concerning public health risks, they were not supported by appropriately resourced monitoring arrangements to ensure their effective application.

Centralised reporting of monitoring outcomes

4.52 With the exception of Guam (and the monitoring arrangements put in place under federal receivership), all other audited PICTs reported that there was no central repository of the outcomes of monitoring efforts to address environmental and public health risks related to solid waste management practices or to assess the contribution of key aspects of waste stream activities to overall system effectiveness. This lack of central administrative oversight limits the capacity of individual PICTs to gain a full appreciation of the effectiveness of the implementation of solid waste management laws and policies. It also limits the capacity of PICTs to assess the contribution of integrated solid waste management activities (such as public awareness programs) to the development of cost-effective and self-sustaining solid waste management systems.

5. Executive Summaries of national reports

Cooks Islands Audit Office

Please find enclosed the Audit report relating to the performance audit of solid waste management on Rarotonga – Management of the Rarotonga Waste Management Facility (RWMF).

Introduction

The Cook Islands Audit Office completed its review of the management of the RWMF as part of the Pacific Association of Supreme Audit Institution (PASAI) cooperative performance audit on solid waste management initiative.

The Cook Islands Audit Office has a responsibility under Section 27(g) of the Public Expenditure Review Committee and Audit (PERCA) Act 1995-1996 "*to pursue any concern that arises in respect of the management of public resources which in its opinion justifies further investigation*". The Cook Islands Audit Office also has the responsibility to report its findings accordingly as stated under Section 32 of the PERCA Act 1995-1996.

The RWMF was identified as the Cook Islands Audit Offices selected location due to recent public concerns over the management of the facility caused by increase fly infestation in the nearby residential area as well as the significant amount of public and aid donor funds that have gone into constructing, establishing and management of the project.

The objective of the review is to assess the effectiveness of the management of solid waste at the RWMF by auditing 1) the existence of a legal and policy framework for solid waste management, 2) the process by which the legal and policy framework is implemented, including whether risks to implementation have been considered, and 3) compliance with the legal and policy framework, including monitoring arrangements.

Major audit findings

Existence of an overarching legal and policy framework
There are currently two legislations which address the management of solid waste in the Cook Islands, these being the **Environment Act 2003** administered

by the National Environment Service (NES) and the **Public Health Act 2004** which is administered by the Ministry of Health (MOH).

Our review found that although there is currently no national/overarching legal or policy framework for solid waste management in the Cook Islands, there exists a **draft National Waste Management Strategy (NWMS)** which was prepared in accordance with both above mentioned legislations. The strategy has clearly set objectives and targets in regards to solid waste management and also identifies the key agencies involved in achieving those objectives and their roles and responsibilities.

Implementation of the legal and policy framework
Audit found that each of the key agencies have implemented policies and programs in line with their roles and responsibilities aimed at achieving the objectives set out in the NWMS. Examples of these programs include:

- the education and awareness programs implemented by the National Environment Service which are aimed at minimising the amount of waste disposed at the RWMF so as to ensure maximisation of the life of the landfill;
- the education and awareness programs run by the Ministry of Health aimed at minimising the amount of organic waste such as food scraps which are disposed at the landfill so as to minimise the level of fly infestation at the RWMF;
- weekly spraying of the RWMF by the Ministry of Health as part of their insect and rodent control policy aimed at minimising the level of fly infestation at the facility; and
- regular compaction of waste at the landfill by MOIP also aimed at minimising the level of fly infestation at the facility and ensuring the use of the landfill area is maximised.

Lack of monitoring of actual practises vs. key performance indicators
These programs and policies all have identifiable and measurable key performance indicators. However, due to the lack of sufficient monitoring and recording of actual practises against these key performance indicators, it is difficult to determine how effective these polices and programs have been.

For instance, Audit notes that:

- there was no evidence to suggest that a topographic survey of the landfill had been conducted in the last five years to check the volume of landfill void consumed over the preceding years as required under the RWFMP. The impact of this is that there is no reliable estimate on the expected life of the landfill; and
- there was no evidence to suggest that monitoring of waste collection by T&M Heather Ltd was conducted to ensure compliance with the conditions of their contract.

Conclusion

Audit is satisfied that the draft NWMS and its two supporting legislations currently provide sufficient legal and policy framework for solid waste management in the Cook Islands. However because the NWMS has not yet been formally endorsed by the Cook Islands Government, it is not considered to be a legally binding document.

Generally the translation of objectives set out in the NWMS into policies and programs by key agencies is good. Audit is particularly impressed with the identification of key performance indicators for each of these policies and programs set out by individual key agencies. However due to the lack of sufficient *monitoring and recording of actual practises against these key performance indicators*, it is difficult to determine how effective these polices and programs have been in achieving their set objectives.

As a consequence, Audit is unable to definitively conclude on the effectiveness of the management of solid waste at the Rarotonga Waste Management Facility (RWMF).

Our attached report details our proposed recommendations to further enhance the effectiveness of solid waste management at the RWMF.

We advise that this report requires a written response from all recipients, particularly those where specific recommendations have been addressed to. The PERCA Act Section 32, paragraph 2 requires you reply in writing within 14 days to report your planned action to implement the

recommendations contained in this report. Accordingly we look forward to receiving your comments by the 28 May 2010.

In closing, I would like to take this opportunity to thank those who have assisted my staff during the course of this review.

Paul Allsworth
Director of Audit
Cooks Islands Audit Office

Office of the National Public Auditor – Federated States of Micronesia

July 2, 2010

His Excellency Manny Mori, President
Honorable Members of the FSM Congress
Federated States of Micronesia

Honorable John Ehsa, Pohnpei State Governor
Honorable Nelson N. Philip, Speaker,
Honorable Member of the Pohnpei Legislature
Pohnpei State

RE: Performance Audit of the Solid Waste Management

We have completed a ***Performance Audit of the Solid Waste Management for Fiscal Year 2007, 2008, and 2009***. The audit on Solid Waste Management was undertaken jointly by the Office of the Public Auditor of the Federated States of Micronesia (FSM) and the Office of the Public Auditor, Pohnpei State as part of an initiative developed by the Pacific Association of Supreme Audit Institutions (PASAI) with the support of the Asian Development Bank (ADB) and the INTOSAI Development Initiative (IDI). The purpose of the audit was to assess solid waste policies and practices. Specific audit objectives included 1) determining whether there is a legal and policy framework that governs solid waste management practices; 2) evaluate the process by which the legal and policy framework has been implemented; and 3) determing the extent to which all parties are in compliance with the legal and policy framework, including the monitoring arrangements of activities related to solid waste disposal. We conducted this audit in accordance with Generally Accepted Government Auditing Standards.

At the broadest level, the FSM Infrastructure Development Plan (IDP) serves as a comprehensive strategic plan to guide infrastructure development in the FSM. The IDP addresses the issue of solid waste and includes plans to replace the existing dump at Dekehtik with an environmentally healthy landfill by the year 2011. The IDP identified a Minimization Study and a Landfill Plan as two major planning activities that must occur to guide future actions aimed at replacing the existing dump with a landfill.

The audit revealed that the goal of opening a landfill by 2011 will not be achieved. Strong political leadership and prioritization of the landfill plan is needed in order to achieve the goal. No singular agency has taken the lead in ensuring that progress continues in a timely manner. Other priorities compete for staff and agency attention, involvement of agencies at both the national and state levels creates confusion over jurisdictional authority and project responsibility, and the fact that waste management involves both environmental and land use policy have hindered progress. As a result, though the Landfill Plan was initially established in 2004 with the goal of opening a landfill in 2011, progress is years behind schedule.

As discussed in Findings 1, given the political structure as a federation there are questions regarding jurisdictional authority related to matters of hazardous waste. Similarly, other questions exist regarding the roles and responsibilities of involved government organizations. It is unclear to whether the national Project Management Unit (PMU) for amended compact projects or Pohnpei State is responsible for ensuring that landfill architectural and engineering design studies are completed.

As discussed in Finding 2, the FSM Strategic Development Plan (SDP) identified that legislation and/or regulations are needed to control polluting and hazardous substances. However, because of issues relating to jurisdiction, a lack of expertise on the matter, and competing priorities, neither the FSM Department of Justice (DOJ) nor the Office of Environment and Emergency Management (EEM) have produced draft legislation for Presidential review and Congressional consideration. Additionally, though strategies for reducing waste have been identified, no specific projects have been implemented. Moreover, a comprehensive collection system is needed to ensure garbage is properly disposed of.

As discussed in Finding 3, no effective enforcement efforts are made to ensure storage of garbage at residential and commercial sites, that proper methods of transportation are used, or even that the treatment of hazardous medical waste is done in compliance with Pohnpei State Environment Protection Agency (EPA) regulations.

We recommend the following:

1. That relevant national and state agency with the legal and environmental authority collectively determines roles and responsibilities for all parties and develops appropriate communication protocols.
2. That appropriate individuals at DOJ and EEM need to take action on the jurisdiction issues by producing draft legislation for the Presidents review and submission to congress.
3. That PMU initiate the procurement to hire of contractor who can conduct the Minimization Study.
4. That EPA develops strategies to either enforce or increase voluntary compliance with EPA regulations dealing with storage and transportation.
5. That EPA develops an inspection program to ensure all hazardous waste is incinerated prior to removal from all medical facilities on the island.

The ONPA and Pohnpei State Public Auditors Office discussed the contents of the report with officials from EEM, PMU, FSM Department of Transportation & Infrastructure (T&I) and the Lt. Governor of Pohnpei State and provided them with draft copies of the report. The organizations were asked to provide written comments which are included in the appendix to the attached report. Their response provides details of how they plan to address the issues discussed in the audit report.

Respectfully yours,

Haser H. Hainrick
National Public Auditor

Annes H. Leben
Pohnpei State Public Auditor

Office of Public Accountability – Guam

Department of Public Works Solid Waste Management Division
Report No. 10-04, June 2010

We found that the government of Guam is unprepared to resume solid waste management and operations and that the legal and policy framework for management is outdated, obsolete, and in need of redevelopment.

The U.S. District Court's 2004 Consent Decree ordered the government of Guam to timely correct violations of the Clean Water Act or face penalties imposed by the U.S. Environmental Protection Agency (EPA). The Department of Public Works' (DPW) Solid Waste Management Division (SWMD) was tasked to comply with the Consent Decree by closing the Ordot Dump and opening a new landfill. However, in March 2008, when deadlines were not met, the U.S. District Court placed the SWMD under federal receivership. Solid waste management consultant Gershman, Brickner & Bratton (GBB) was appointed as Federal Receiver to manage the SWMD and ensure compliance with the Consent Decree. GBB's first task was to assess the condition and space left in the Ordot Dump. Based on GBB's assessment, the Ordot Dump's remaining life is expected to end on or about July 2011.

Legal and Policy Framework Needed for New Solid Waste Authority

The legal and policy framework for solid waste management is contained Title 10, Chapter 51 of the Guam Code Annotated and in the Guam 2006 Integrated Solid Waste Management Plan. This framework was rendered obsolete when the SWMD went into federal receivership. The District Court granted the Federal Receiver authority to supervise all government employees associated with Consent Decree projects, to perform and enter into contracts necessary, and to apply to the Consolidated Commission on Utilities (CCU) for rate increases for collection services and/or tipping fees. When the Federal Receiver's responsibilities are complete, the management of the SWMD will revert to the government of Guam.

Our interviews with the Federal Receiver and key government officials revealed that minimal efforts have been made by the government of Guam to update and clarify the legal and organizational framework for solid waste management, and that the present framework is no longer appropriate.

The Governor through Executive Order 2007-09 established the Solid Waste Law Review Commission (SWLRC) in July 2007, to propose new legislation that would address the legal and organizational framework for solid waste management. The Governor's Legal Counsel indicated that it is the Governor's intent to resolve the issue before the end of his term. In June 2010, the Chairman of the legislative Committee on Utilities, Transportation, Public Works & Veterans Affairs introduced Bill 426-30 establishing a Solid Waste Authority. With the introduction of this bill, we recommend that the SWLRC work with the Legislature to establish the new legal and organizational framework of the solid waste management.

Government of Guam's Involvement

As GBB attends to meeting the requirements of the Consent Decree, due to the nature of Federal Receivership, the government of Guam has had limited involvement in key solid waste management decisions made thus far. According to DPW's former Director, the department was not involved in decisions to institute new systems, such as the roll-out trash carts and the billing software, or in discussions regarding construction of the new landfill.

The government of Guam should be proactive in re-establishing its role by drawing upon the Federal Receiver's expertise in solid waste management. The appointment of a liaison to coordinate and collaborate with the Federal Receiver would enhance the government's ability to resume its proper role in managing solid waste operations.

The Cost and Funding of Modernizing Solid Waste Management

To fund construction of the new landfill and closure of the Ordot Dump, the government of Guam issued bonds totaling $202 million (M), with an average annual debt service requirement of $15M until FY 2035. Essentially, the $202M will cost the government of Guam $423M.

The overall cost for capital funding required for the Consent Decree projects is $160M -- $105.7M for the Layon landfill, $39.4M for the Ordot Dump closure, $14.9M for operations equipment and transfer stations.

The Federal Receiver's average monthly expenses approximate $213,000. As of September 30, 2009, the Federal Receiver has been paid $4.05M. We estimate an additional $4.7M to be paid to the Receiver through July 2011, for a total of $8.7M over 41 months. Until the government of Guam implements the legal framework and designates a management team to lead the new solid waste management organization, and all aspects of the Court's Consent Decree are addressed, including the closure of the Ordot Dump, the Federal Receiver's appointment will not end. How long after July 2011 the government of Guam will fund the Receiver's expenses is unknown.

U.S. Military as a Customer

The Federal Receiver's April 2010 quarterly report to the District Court contained a draft agreement for the military to become a customer of the new solid waste system, as ordered by the District Court. The government of Guam was not involved in developing the draft agreement.

The Federal Receiver provided an analysis of the impact military customers would have on tipping fees. With the military customers, tipping fees are estimated to rise from $30 month in FY 2012 to $36.50 in FY 2022. Without the military, fees would need to rise to $52.81 by FY 2022. While the cost-savings for civilian customers would be significant, the potential impact in other areas, such as the volume and types of military waste -- whether both household and operational waste -- were not addressed. Military waste would considerably shorten the life span of the new landfill based on the volume of military waste, which according to estimates would amount to 38,000 tons, or 27% of Guam's annual waste.

The costs and benefits of having the military as customers should be thoroughly evaluated and elected leaders should set a clear policy direction. Unlike other utilities where the military was a customer, such as power, water, and telephone, the military has not been a customer of Guam solid waste management, hence the importance of having the study of the costs and benefits of adding the U.S. Military as a customer of the new landfill.

Conclusion and Recommendations

When the Federal Receiver completes the Consent Decree projects, Guam should have a new state-of-the-art municipal solid waste landfill, a modern solid waste management system, and the closure of Ordot Dump. These advances can be attributed to actions of the District Court and the court appointed Federal Receiver. If not for their intervention, the government of Guam would remain hard pressed to accomplish such goals. The consequence of the government of Guam's inaction has been that the modernization of solid waste comes at very high cost.

With the deadline to close the Ordot Dump by July 2011, the need to overhaul the legal and organizational framework of the Solid Waste Management Division is vital. The government of Guam should be proactive and attend to the organizational structure of the SWMD. It is also imperative that the government of Guam be allowed a more detailed role in the key decisions that affect the direction of the SWMD. To address these concerns, we recommend the Governor:

- With the introduction of Bill 426-30, work with the Legislature to establish the new legal and organizational framework of the solid waste management;
- Appoint a liaison to coordinate with the Federal Receiver on Consent Decree projects and act as the single point of contact for the government of Guam on solid waste management; and
- Commission a study to evaluate the costs and benefits of adding the U.S. Military as a customer of the new landfill.

Doris Flores Brooks, CPA, CGFM
Public Auditor

Office of the Auditor-General – Marshall Islands

Solid waste is the greatest immediate environmental problem facing the Marshall Islands. The change in lifestyle towards consumption of imported goods with a high degree of packaging has meant that waste has gone from being largely biodegradable in the past to being significantly non-biodegradable. In a mainland nation, the primary way of disposing of waste is through landfill. But in an atoll environment, this may not be feasible.

The objective of the audit is to assess how effective are the operations and activities of the Majuro Atoll Waste Company, Inc (MAWC) management of solid waste collection and disposal, and if MAWC complies with all applicable laws, rules and regulations that have an impact on its operation and activities. To achieve this objective the following issues were reviewed and assessed:

1. The existence of a legal and policy framework for Solid Waste Management;
2. The process by which the legal and policy framework is implemented, including whether the risks to implementation have been considered;
3. Compliance with the legal and policy framework, including monitoring arrangements.

The powers of the Auditor-General to conduct audits and investigations are vested in Article VIII, Section 15 of the Constitution of the Marshall Islands and the Auditor-General Act 1986 (MIRC Title 3, Chapter 9). The audit was conducted pursuant to the Auditor-General Act and in accordance with the *Generally Accepted Government Auditing Standards* issued by the Comptroller General of the United States.

Key Audit Findings

Existence of a legal and policy framework

- The Solid Waste Regulations (SWR) promulgated pursuant to Part III, Section 121 of the National Environmental Protection Act 1984 (MIRC Title 35, Chapter 1), provides the legal and policy framework to manage solid waste in the Republic of the Marshall Islands (RMI). However, the regulations do not address the current situation of solid waste management in the RMI, in that the regulations have been designed for the physical environment of the U.S. mainland, and not for an atoll environment.

- Cabinet has established a National Strategic Committee to develop a National Solid Waste Strategic Plan. The committee has not met regularly and has failed to develop the Strategic Plan. Currently, MAWC is using a draft Environmental Management Plan (EMP) as

a guide for its operation on the Majuro landfill while the process of developing a national strategic plan is ongoing.

Process by which legal and policy framework is implemented

- The audit disclosed that there were residential properties that have no bins and gather their household garbage and leave them outside their houses for collection, attracting animals.
- MAWC maintains a weekly collection schedule for each community in the service area from Rita to the Airport which consisted of 3,000 residential properties. Beyond the airport to Laura, representing approximately 500 residential properties, there is no transport available for solid waste collection.
- Key Risks to Public Health and Environmental Health were identified in the draft Environmental Management Plan that is used as the operational plan for the MAWC management of solid waste. However, due to insufficient funds, limited implementation could be undertaken by MAWC.
- MAWC 2008 operation budget request of US$1.4 million was not approved and MAWC received US$325,000. This seriously affected MAWC operations.
- MAWC recognizes that recycling will never pay for itself completely and will continue to be dependent on international aids.
- Asian Development Bank (ADB) is currently funding a feasibility study into a waste energy incinerator. If constructed, this operation will generate for MAWC annual revenues of around US$6 million dollars.

Compliance with the legal and policy framework

- MAWC failed to comply with occupational health and safety standards and requirements.
- EPA monitoring of MAWC activities disclosed that MAWC failed to be in compliance with 7 of these requirements.

General Recommendation

The responsible agencies should take prompt action to address effectively the specific audit finding and recommendations stated in this report in order to reduce the impact of solid waste management in the RMI.

Conclusion

While there have been considerable improvements in the management of solid waste on Majuro Atoll since the establishment of MAWC, the Office of the Auditor-General (OAG) concluded that for Solid Waste to be effectively managed, more needs to be done. There is a need to prioritize the development and design of a National Solid Waste Strategic Plan addressing the current situation of solid waste management in the RMI.

It is prudent that the Solid Waste Regulations are further revised to take into account the current and local situation, such as our atoll environment, as the current regulations have been designed for the physical environment of the U.S mainland, and not for an atoll environment.

There is also a need to address the situation of the Majuro landfill lifespan. Given the situation of the landfill lifespan and some other health issues raised during EPA monitoring process, the MAWC Board should find ways to persuade the National Government to give them sufficient funding to address all the obstacles preventing MAWC to manage the landfill in the most efficient, effective and economical way, and also to reduce the Health Risks to the people on Majuro.

Office of the Public Auditor – Republic of Palau

August 17th, 2010

Honorable Jackson Ngiraingas
Minister
Ministry of Public Infrastructure, Industry, and Commerce
Koror, Republic of Palau 96940

Subject: Final Report on Cooperative Performance Audit of Solid Waste Management of M-Dock Landfill for the period from October 1, 2007 through September 30, 2009.

Dear Minister Ngiraingas:

This audit report presents the results of the Office of the Public Auditor's (OPA) cooperative performance audit on Solid Waste Management of the M-Dock Landfill for the period from October 1, 2007 through September 30, 2009.

The objective of the audit was to assess the effectiveness of Solid Waste Management (SWM) within the Republic of Palau, in particular the M-Dock Landfill, by auditing (1) existence of a legal and policy framework for Solid Waste Management; (2) the process by which the legal and policy framework is implemented, including whether risks to implementation have been considered; and (3) compliance with the legal and policy framework, including monitoring arrangements.

Discussed below are audit issues and deficiencies the OPA found and the recommendations, which OPA believes, if implemented, will correct these deficiencies:

Line of Enquiry (LOE) 1: Legal Framework for Solid Waste Management

Criterion 1 *- There should be regulation(s) and plan in place to direct SWM and entity who takes full responsibility for management and operation of the M-Dock Landfill.*

Finding 1.1.1: Solid Waste Management Plan

The Solid Waste Management office of the Bureau of Public Works has been operating the M-Dock Landfill without approval by the Environmental Quality Protection Board (EQPB) of its Solid Waste Management Plan in violation of Section 2401-31-34 of Solid Waste Regulations.

Recommendation

The OPA recommends the SWM office takes full responsibility and comply with SWM regulation 2401-31-34 by submitting the draft National Solid Waste Management Plan (NSWMP) to the EQPB for review and approval.

Finding 2.1.1: Performance Bond

The EQPB did not impose a performance bond on the SWM Office and, as such, the Office has never had a performance bond in place to guarantee proper operation and closure of the M-Dock solid waste facility.

Recommendation

The OPA recommends the EQPB impose a performance bond on the SWM office in order to provide guarantee for the proper operation and closure of the M-Dock Landfill.

Finding 3.1.1: Discretionary Requirement

The OPA found that the M-Dock Landfill is not properly fenced and gated to provide controlled access to the dumpsite in accordance with SWM regulation Section 2401-31-16.

Recommendation

The OPA recommends the SWM office construct a security fence with gates around the perimeter of the M-Dock Landfill to provide controlled access to the facility in accordance with SWM regulation.

Criterion 2 *- There should be a legal framework to address recycling activities in Palau.*

Finding 4.1.2: Delay in Implementation of Recycling Act

The Recycling Act (RA) 2006 does not have enabling regulations in place to implement the act, which regulations are pending review and approval by the President of the Republic.

Recommendation

The OPA recommends the Director of Bureau of Revenue, Customs and Taxation and the SWM Office meet with the Minister of Finance and Minister of Public Infrastructure, Industry, and Commerce to advise the Ministers of the status of the Recycling Program and the urgency by which the Recycling Program Regulations awaits review and approval by the President in order to implement the Recycling Program.

Criterion 3 *- There should be an established Initial Redemption Center for the Republic, as required by the Recycling Act.*

Finding 5.1.3: Initial Redemption Center

The recycling facility established by Koror State Government (KSG) as an Initial Redemption Center is unable to proceed to collect or receive recyclable containers as set out in the objectives of the Act without approval of the Recycling regulations by the President of the Republic.

Recommendation

The OPA recommends the Director of Bureau of Revenue, Customs and Taxation and the SWM Office meet with the Minister of Finance and Minister of Public Infrastructure, Industry, and Commerce to advise the Ministers of the status of the Recycling Program and the urgency by which the Recycling Program Regulations awaits review and approval by the President in order to establish and operate a redemption center.

LOE 2: Effective Implementation of the Framework

Criterion 1 *- Sufficient funding is critical to support the proper operation and management of solid waste disposal facility.*

Finding 6.2.1: Insufficient Funding for Operation of M-Dock Landfill

Funds appropriated by Congress in FY 2008 and 2009 for the management and operation of the M-Dock Landfill were inadequate to sustain an environmentally-safe and well maintained facility.

Recommendation

The OPA recommends the Solid Waste Management Office and the Steering Committee meet with the Minister Public Infrastructure, Industry, and Commerce to discuss the operations of the M-Dock Landfill, its proposed budget, and the NSWMP to familiarize the Minister of its operations, the urgency to fund operations at a level that assures upkeep of the facility, and the future of solid waste management outlined in the NSWMP. In addition, the Steering Committee should meet with the President of the Republic and the appropriate Committees of the Congress (Senate and House of Delegates) to address similar concerns.

Criterion 2 *- A self-financing fee structure will subsidize the cost of operations of the Landfill*

Finding 7.2.2: Fee System

The audit revealed that the Solid Waste Management Office, which operates and manages the M-Dock Landfill, is under-funded and the Draft NSWMP, which includes a proposal to charge a tipping fee for dumping rubbish at the landfill, has not been approved by the EQPB.

Recommendation

The OPA recommends the President of the Republic reviews and approves the Beverage Container Recycling Regulation to enable the Act to take effect and fully achieving its objectives set out in the Recycling Act. Furthermore, the Office of the Attorney General should consider an immediate review of the Tipping Regulation for legal matters and submit the regulation to SWM Office for finalization.

Criterion 3 *- Public Awareness is an effective tool to educate public on waste management to enhance the quality of the environment.*

Finding 8.2.3: Public Awareness

Public awareness on Waste Management (WM) of M-Dock Landfill is not in a suitable approach to educate the public. Because of insufficient funding, the SWM educator cannot develop effective community outreach programs to inform commercial and residential establishments of the challenges in SWM and also develop and coordinate programs that enhances quality of SWM.

Recommendation

The OPA recommends the Palau National Congress to appropriate sufficient funds to the SWM office to enable the office to effectively deliver public outreach programs to educate public on solid waste management of the National landfill.

LOE 3: Monitoring and reporting of compliance with the legal framework

Criterion 1 *– Inspections and reporting for environmental and public health risks.*

Finding: 9.3.1: Environmental Inspections – EQPB

According to the EQPB Assistant Executive Officer, the EQPB conducts two (2) types of inspections at the Landfill; namely visual and testing for pollutants. The official stated that the last visual inspection conducted by the EQPB was during the rehabilitation of the Landfill, some fours years ago, however, test of contaminants in the seawater is routinely conducted since 2006. In addition, the EQPB did not conduct leachate inspections as called for in the M-Dock Operations Manual.

Recommendation

The OPA recommends the EQPB conduct both visual inspections and seawater testing at the designated locations at the Landfill. Visual inspections are necessary to ensure the SWM personnel at the Landfill are not permitting prohibited waste into the Landfill and to ensure the proper maintenance of the facility. Seawater inspection is critical in order to monitor the impact of runoff contaminants on the quality of seawater in the surrounding area.

Finding: 10.3.1: Public Health Safety Inspections

Lack of inspections by the Division of Environmental Health (DEH), Ministry of Health, creates a potential risk for vectors and other deceases to spawn inside the landfill, and without timely detection and containment, could pose a health threat to the workers, facility users, and the public.

Recommendation

The OPA recommends the Division of Environmental Health reconsider conducting regular inspections at the M-Dock Landfill. Only proactive inspection regimes will effectively detect and contain potential dangers to public health safety.

Criterion 2 *- Waste inspection at the gate of M-dock Landfill is critical to enhance their proper disposition.*

Finding: 11.3.2: Inspection of Waste Hauled to Landfill

Although waste is inspected and recorded at the gate entrance, the actual dumping of waste in the Landfill is not visually inspected to ensure proper segregation of waste, detection of illegal waste that may be concealed, and bulky waste that should be dissevered.

Recommendation

The OPA recommends the SWM Office establish and enforce a system whereby wastes are segregated according to different types within the landfill. Further, landfill attendants should observe the actual dumping of waste to ensure that prohibited wastes are not being concealed and dumped illegally.

Criterion 3 *- Performance Report should be submitted no later than April 15th of each year.*

Finding 12.3.3: Performance Reporting

The SWM office of the Bureau of Public Works failed to prepare and submit Performance Reports as required by the Republic of Palau Public Law (RPPL) 6-11, section 371.

Recommendation

The OPA recommends the SWM office prepare and submit a Performance Report annually in accordance with RPPL No. 6-11 and related amendments thereto. In addition, the Director of Bureau of Public Works should perform the necessary supervision to ensure that Performance Reports and related responsibilities of the SWM office are timely performed.

Finally, Office of the Public Auditor would like to thank the staff and management of the Solid Waste Management Office of National and Koror State Government, Division of Environmental Health, Ministry of Health, and the Environmental Quality Protection Board for the professional courtesy and cooperation extended us during the audit.

Sincerely,

Satrunino Tewid
Acting Public Auditor

Office of the Auditor-General of Papua New Guinea

Introduction

Waste is a product that is no longer suited for its intended use. It may either be worn out or an unwanted by-product of a process. The different categories of waste are listed below:

- *Non-hazardous (Solid Waste) "or garbage."*[7] which can cause harm or damage to people and environment;
- *Hazardous waste* has inherent chemical and physical characteristics (toxic, ignitable, corrosive, and carcinogenic), and can cause significant adverse effects; and

7 Garbage includes household and commercial waste, glass materials, aluminum cans, scrap metal and 'green' waste, that is, waste that can be re-used for other purposes.

- *Radioactive waste* is highly toxic; exposure to radiation can cause illness and even death.

Various types of waste require different treatments and final handling due to both the physical and the chemical composition of the waste and associated levels of hazards. The composition of the waste will have an impact on the collection processes and on whether the waste can be reused, for example, for energy production and composting.

Waste management is the practice of using several techniques to manage and dispose of specific components of solid waste. Waste management techniques include avoidance, reduction, reuse, recycling, recovery, and disposal.

Waste management, including *Solid Waste Management (SWM)* is widely recognised as a major concern for Pacific Island Countries (PICs) as the generation and disposal of waste has direct and indirect linkages to economic development as well as the health and welfare of the community.

Waste materials could represent wasted money in terms of the original cost of the materials, the costs of disposal, and the potential value of the materials, as a recyclable and reusable resource. Poorly managed waste can have a negative impact on the health, welfare and general wellbeing of the community including economic impacts on tourism, as a result of infections and vector-borne diseases.

There is also the potential for contamination of food supplies, which can have an impact on local markets or revenue from export crops. There are also increased risks associated with health and environmental hazards that arise when waste is poorly managed and disposed of.

Conversely, the benefits of good waste management can include reduced raw material costs, enhancement of the tourism experience, reduced health care costs and maximizing the value of expensive infrastructure such as engineered landfills. Further timely effective waste management measures now will also avoid the need for expensive clean-up operations in the future.

The Papua New Guinea Government has passed several legislations which in general refers to term of waste management. The various stages of the waste stream consists of the following:

(i) ***Prevention*** - Information/education that is available to the community and businesses to increase awareness of how they can limit the amount of solid waste that is produced;

(ii) ***Generation*** – *This refers to the* generators of waste, households, businesses and government and the measures that are in place to minimize the generation of solid waste;

(iii) ***Recycle, Reuse and Recover*** - This refers to policies and/or procedures that are in place to assist waste generators to recycle waste products. It also includes what processes there are, as part of the collection process, to maximize opportunities for recycling and reuse of components of solid waste;

(iv) ***Collection*** - This includes the process of waste collections from the generators, the means of collection, the fee structure established and the frequency of collection;

(v) ***Transport*** - This aspect of the waste stream refers to the transportation of waste once collected from the generators;

(vi) ***Treatment/Disposal*** - This covers the treatment and disposal of waste and the suitability of areas designated for these activities. Disposal at landfills is the most common solution for handling either all of the waste or the residual waste that cannot be treated as a part of other waste-processing methods, such as composting, incineration, or recycling. There is a wide range of landfills varying from open, uncontrolled dumps to sanitary landfills that are a fully acceptable environmental solution. The main differences are in the way they are operated and the level of adverse environmental effects they produce;

(vii) ***Illegal dumping*** - Waste that is illegally dumped, which may occur at waste disposal sites, on private or public land or in the sea. This may involve the large-scale dumping of inert wastes, such as medical or chemical waste, or litter in the form of small quantities of non-hazardous waste; and

(viii) ***Contaminated sites*** - Illegal dumping and the incorrect disposal of waste can often result in. contaminated sites. These sites may still be in use or they may have been used for dumping of waste at some earlier time.

At each of these eight stages, the government may intervene to ensure sound management. A good waste management policy should include all of the stages through which waste passes.

Audit objective

The objective of the waste management performance audit was to assess how efficiently, effectively and economically the operations and activities were over the management of solid waste in PNG, by auditing through three lines of enquiries:

- *the existence of legal and policy framework for solid waste management;*
- *the process by which the legal and policy framework is implemented, including whether risks to implementation, had been considered; and*
- *compliance with the legal and policy framework including monitoring arrangements.*

Audit scope and focus

The audit examined the existence of legislation/regulations, policies and strategies for the management of solid waste in the country and the regulatory roles played by key Government Agencies in relation to various aspects of the solid waste streams represented which ranged from the waste generation, collection to disposal and illegal dumping;

The audit focused mainly on the Department of Environment and Conservation (DEC) since it is the lead agency of the Government of Papua New Guinea responsible for planning, coordinating and providing the national legal/policy framework in relation to the environmental protection at all sectors, national, provincial and Local Level Governments level; and

In respect of implementation and management of solid waste at the provincial levels, Port Moresby was selected as a case study, focusing primarily on the role of the NCDC and the operations of Port Moresby's major Open Dump at Baruni.

The audit also focussed on the Department of Health's waste management processes as the Department plays a key role at the national level in developing policies and formulating laws for waste generation through the health sector and the adverse impacts of waste to human health. The Department is also responsible for collection, incineration and disposal of

medical waste produced by the public hospitals, clinics and medical centres in Port Moresby and at the Provincial and Local Level Government level.

Key Audit Findings

Existence of Legal/Policy Framework for Solid Waste Management

(Chapter 2)

Applicable Legislation and responsible agencies

At the national level

The Environment Act, 2000 is administered by the DEC. Other government agencies, including provincial and local level governments are also responsible for implementation of the referred Act.

Section 39 of the *Act* gives powers to the Provincial Governments to make Provincial Environment Policies and by-laws in relation to environmental issues, including waste management.

The *Public Health Act 1973* and the *Public Health (Sanitation & General) Regulation 1973* are managed and implemented by the Department of Health. The Department of Health, using the *Act* and the Regulations, deals with the management of medical waste produced by the hospitals and clinics.

At the provincial level

At the provincial level, the National Capital District Commission (NCDC) is the lead agency for the management of solid waste in the National Capital District (NCD). In accordance with *Section 39* of the *Environment Act 2000*, NCDC is responsible for making policy and the management of waste. The Commission has a Waste Management Section which has adopted the *Public Health Act, 1973* and the *Public Health (Sanitation & General) Regulation, 1973* to guide management of waste in the absence of a clear law and approved waste management policy.

Process by Which the Legal/Policy Framework is implemented

(Chapter 3)

The DEC, the national lead agency for environmental issues, has established a Division that deals with waste management. No specific budget lines or accounts have been established specifically to fund waste management activities undertaken by the Department. Any waste

management activity that warrants funding through the Department would currently be allocated through the recurrent budget.

The NCDC also has a Waste Management Division. Its main function is to manage the collections and disposals of waste in Port Moresby including the Baruni Dump. It was evident that the Waste Management Division is inadequately funded or staffed to manage all elements of the waste stream.

Prevention of waste

The issue of public awareness and public education on solid waste management at all levels have not been given prominent status to convince decision makers to allocate more funds for prevention waste disposal. There are neither proper plans nor provision of sufficient funding in the budget for waste management prevention or awareness programs.

Generation of waste

An important step in any waste management strategy is the development of an accurate waste inventory or database on the different types of waste that are generated by all sectors.

The NCDC does not have complete data about the various kinds of waste being generated by the city. The data on waste generation held by the Commission at the time of audit were not accurate because the information system was not comprehensive enough to capture all the waste placed in or outside the designated dumps. For example, collection of waste gathered from the settlements around Port Moresby.

Collection

Collection means the collection of waste from generators, fee structure established and the frequency of collection.

NCDC, as the local authority in Port Moresby, is responsible for the collection of all waste generated within the city area and the three electorates. However some properties and premises have privately arranged collection and disposal services.

Private contractors are engaged through contractual arrangements to collect and transport waste to the Baruni Dump site and to manage the Baruni Dump.

Recycle, Reuse, Recover

The NCDC has no policy on recycling of waste material. However the draft *Solid Waste Management Policy* provides for the Commission to regulate the recycling industry and the export of recycled materials to overseas countries. The only recycling activity taking place in Port Moresby is scrap metal, tin cans, plastics and glass bottles. Scrap metal is crushed and shipped overseas for recycling.

Recycling of waste can either be done at source by the waste generator or at a central waste processing facility. There is no segregation of waste at point of generation or at the dump site in Port Moresby. All waste, regardless of whether it is green waste, medical waste, or hazardous waste, is dumped at the Baruni Dump site thus causing damage to the environment and impacting the health and welfare of the surrounding population.

NCDC formally approves the dumping of waste, especially building materials, into the sea at designated spots and as provided for by the *Dumping at Sea Act, 1979*. However, there are no controls around the amount of waste material dumped so the volume or type of waste dumped in this way cannot be determined.

Illegal dumping and contaminated sites

A lack of policy for the management of waste and the inadequate approach to waste prevention, collection and treatment and disposal, and the lack of adequate services in the settlements, means that, there is indiscriminate dumping of refuse in all parts of Port Moresby into waterways, drains, roadsides and other public places.

The NCDC waste management section posts environmental inspectors in certain hotspots for illegal dumping to apprehend the offenders but the offenders now dump their waste at night. The NCDC waste management section has insufficient funds and resources to combat illegal dumping done at night times.

Compliance with Legal/Policy Framework including Monitoring Arrangements (Chapter 4)

Compliance with Public Health Act/Regulation

Although there is no legislation in Papua New Guinea that specifically deals with solid waste management, the *Public Health Act, 1973*, the *Public Health (Sanitation & General) Regulations, 1973*, and the *Environment Act, 2000* cover some aspects of waste management.

Provision/maintenance of refuse bins

Section 40 of the Public Health (Sanitation & General) Regulation stipulates that the owner or occupier of premises must provide sufficient or specified number of water-tight bins for the reception of the refuse arising from, or existing on the premises.

No proper garbage bins are provided by the households or premises in the city as the law requires, although the NCDC provides proper wheelie-bins for some residents, premises and common public places. Public places, such as shopping centres, parks, road sides, flats, beach fronts, sports stadiums, barracks, and other institutions, in most parts of the city are provided with 44 gallon drums, painted green/yellow and labelled, "NCDC".

Illegal dumping

Section 68 of the Public Health Regulation also stipulates that; a person who deposits any '...empty or partly empty tin, bottle, or other receptacle, on a street, road, foreshore or other public place is guilty of an offence and can be fined K50.00.' Despite the provisions of the above laws, there continues to be illegal dumping of garbage into drains, roadsides, waterways, backyards, in front of beaches, sea, buildings, sports fields and other public places in most areas of Port Moresby. Many of these areas are littered or dumped with beer and soft drink cans, bottles, plastic soft drink containers, plastic bags, beetle nut skins, and tyres.

Further, no regular educational and awareness programmes are carried out by NCDC.

The current Governor of National Capital District is trying to improve the beautification of the city by seeking to reduce the level of littering and the volume of waste produced by the city's inhabitants. The Governor has declared a Zero Waste Concept to be achieved by 2020, which would mean

that by 2020, there will be no waste going into landfills as all waste will be recycled. While this is a worthwhile aspiration, the AGO could see no tangible efforts made by the NCDC to start work on this concept.

Monitoring compliance activities

There are significant weaknesses in the current systems and arrangements that are in place for ensuring proper monitoring of compliance requirements of municipalities' responsibilities for the management of solid waste.

Provision of contractual services

The NCDC has recently outsourced the waste management and disposal operations with the intention of improving service quality and reducing costs. There are no written contracts in place which means that it is difficult for the NCDC to control and monitor the contractor's performance and ensure compliance with the requirements of the terms and conditions of the respective contracts for the collection, transportation and disposal of solid waste, including proper management of the landfill.

Although there were no proper control systems to adequately monitor the compliance requirements of the contractors, the NCDC has used other practices, such as physical inspections of the contractor's work, to monitor and assess their performance.

Operation of Landfill – Baruni Dump

(Chapter 5)

Operation of landfill

Port Moresby does not have a modern landfill with proper facilities for the disposal of the city's large volume of solid waste. As a result, the Baruni Dump, where the City's waste disposal takes place, is an open dump managed by NCDC through a private contractor. The dump is uncontrolled and waste is disposed of in the dump without proper segregation or treatment. Scrap metal, bottles or tin cans are collected by foragers or scavengers and sold to recycling companies.

Because it is an uncontrolled dump site, the Baruni dump creates a number of serious public health and safety problems including adverse environmental impacts.

Future dump site planning

Although the NCDC and other stakeholders, including DEC, have recognised the need for a new modern facility to cater for disposal of waste in the city, there is a lack of information to make timely decisions on future planning. As a result, there is no formal plan for the closure of the Baruni dump or the opening of a new dump site.

The NCDC is currently trying to identify a location for the construction a new dump site but this will take some time, given issues surrounding the purchase of land.

Monitoring & inspection of dump site

There are no specific provisions in any of the legislations or regulations for the management of the dumpsite. Since it is an open dumping site, formal procedural compliance monitoring and checking requirement of various environmental and health parameters have not been developed and implemented.

The landfill is inspected by inspectors on a daily basis and the dump supervisors are stationed at the dump site every day. The inspectors" reports are prepared on a weekly and monthly basis. Should an incident occur it is usually reported on the same day.

Medical waste/incineration

In addition to the general waste disposed at the Baruni Dump, the AGO observed that medical waste from the hospitals and clinics is also disposed of there.

Due to the high risk of danger to human health, hazards, Infectious medical waste is best disposed of by incineration or sterilisation. Up until 2006, segregation of medical care waste occurred at source with general non-risk waste collected as part of the municipal waste collection system and medical waste burnt in specially designed incinerators which were generally managed by the health authorities. The residual waste from the incineration process was either taken to the common disposal facility or buried.

However, since 2006 medical waste is no longer incinerated but is disposed of in areas allocated specifically for it within the Baruni Dump because the designated incinerators are no longer functioning.

Dump operators, nearby residents and inhabitants of the Baruni Dump are exposed to high health risks, specifically the community who live adjacent to the medical waste disposal site. Indiscriminate dumping of medical waste and the practice of burying it in shallow pits, partially burning it with kerosene, and partly covering it with soil (some of the pits were left exposed as shown in the slides below) is considered as a serious health hazard..

Summary of Agency's Formal Responses on the Proposed Report

The proposed report containing the audit findings and the recommendations was forwarded to the three audited entities in a draft form for their comments. All the audited entities had an opportunity to respond to the AGO findings and have since provided their formal responses.

The AGO has taken into account their management's responses in the preparation of the final report where considered appropriate.

The detailed formal responses to the recommendations from the respective entities are included in the body of the report while the respective entities summary versions are reproduced in the subsequent paragraphs.

Department of Environment & Conservation

Firstly, on behalf of the Department, I want to acknowledge the efforts and close co-operation of DEC management and staff in contributing to developing this Performance Audit Report. I note the importance of this report in terms of it's contribution to improve the efficiency and effectiveness of solid waste management in the country. While the report provides a status of waste management activities including initiatives at national level, it further identifies problems and makes recommendations which stakeholders such as DEC and NCDC who should develop short to long term measures to effectively and timely address the key waste management issues at the National Government level.

It is in my view that the Report identifies key recommendations for DEC as one of the key government agencies that is involved in environmental protection, and as Focal Point to the Stockholm and Basel Conventions, to firstly ensuring that a review of appropriate laws and regulations including

By-Laws are conducted to ensure that they are consistent, and complementary while recognizing the need for an overarching law.

Further, the report recommends DEC as lead agency, takes a more proactive lead role in coordinating waste management related activities at national level, working together with key stakeholders. In addition, the need for appropriate mechanisms to be established for monitoring and compliance is further noted, including provisions for internal institutional strengthening and capacity building.

The need for allocation of proper resources, including financial and human resource for waste management, as well as developing systems for monitoring and compliance are key aspects of this Performance Audit Report.

We look forward to working together with stakeholders in implementing the attached recommendations highlighted in this Report.

National Capital District Commission

We have reproduced your recommendations and our responses to your recommendations below. However, please note that the recommendations are included in good faith without prejudice with the primary objective of facilitating the improvement of solid waste management in the Capital City. As any other Government agencies, we also experience similar resource constraints and as such we will prioritize them for implementation.

We thank you for your initiatives and selecting NCDC to conduct the performance audit.

Department of Health

Thank you for providing the Department of Health with the opportunity to comment on this first performance audit report on solid waste management in this country by the Auditor General.

We fully agree with the findings that although the DoH has existing legislations in place that is managed by different sectors that influence the management of solid waste, there is an urgent need to have a single consolidated, uniform and dominant legislation that deals with solid waste management in the country. In this regard, we fully support recommendation 2.1 which calls for legislation to be developed by DEC in consultation with other sectors which the Department stands ready and willing to be part of that process.

The DoH also understand that DEC has a draft policy on solid waste management in place and once this policy is approved, we will adopt this policy as a basis for developing our sectoral strategies particularly with regard to medical waste management in this country. As you have noted that the Department has started working with hospitals and clinics in the country in effectively managing medical waste but the momentum needs to be maintained and this is an area that we will be focusing our efforts into in the next 10 years.

Our other comments are contained in the report under the heading "management comments" particularly in relation to recommendations 4.1, 4.4, 5.3 and 5.4.

Office of the Auditor General – Tuvalu

Introduction

This is the Office of the Auditor General of Tuvalu's first Performance Audit Report. The audit was conducted on the Management of Solid Waste in Tuvalu as part of the Pacific Association of Supreme Audit Institution (PASAI) cooperative performance audit initiative.

The Audit Office's mandate, as per Part 3 section 25 of the Tuvalu Audit Act 2007, permits the Auditor General to conduct an audit of all or any particular activities of a public sector entity that may be considered appropriate and to report findings accordingly to Parliament.

Waste Management Department (WMD), Environment Department (ED), Public Health Unit (PHU) and Kaupules are the key agencies involved in the Solid Waste Management (SWM).

The objective of the audit review is to assess the effectiveness of management of solid waste at the Waste Management Department and the Funafuti Kaupule by determining the following:

1. The existence of a legal and policy framework for solid waste management;
2. The process by which the legal and policy framework is implemented, including whether risks to implementation have been considered; and
3. Compliance with the legal and policy framework, including monitoring arrangements.

Key Audit Findings

- *Existence of a legal & policy framework*

The following audit findings were noted during the review process:

- The Wastes and Operations Services (WOS) Act 2009 which was enacted in July 2009 provides a clear institutional legal framework for the management of solid waste in Tuvalu. The WOS Act requires a national waste management strategy and specifies the roles and responsibilities of key agencies. Monitoring arrangements are required by the WOS Act 2009.
- The National Solid Waste Strategy (NSWS) have not been formulated and developed as required by the WOS Act 2009;
- Key agencies are adopting Asian Development Bank (ADB) Integrated Solid Waste (ISW) Plan, which is for Funafuti only and that was endorsed by Tuvalu Government in 2005
- The roles and responsibilities of Key Agencies set out in the legal and policy frame work have not been adequately disseminated or are not accessible to them.

Process by which the legal & policy framework is implemented

- The solid waste management practices and procedures specified in the ISW Plan were found to be adequate

- The ISW Plan must be revised and amended to meet the changing environment and the new requirements of the WOS Act 2009
- Environmental and Public Health Standards and monitoring arrangements have not been developed by the relevant agencies as required by the WOS Act 2009
- The WOS Act is vague in clarifying key agency's roles and responsibilities in addressing 'green wastes' which have been covered by the ISW Plan
- There are no written procedures for Funafuti Kaupule in terms of waste collection
- The collection service fees charged by the Funafuti Kaupule have been below adequate and have not contributed significantly to the operational cost of collection
- Unstable and inadequate funding available to improve waste management services
- Under qualified of key agencies staff in effectively operating and managing the solid waste equipments and facilities.

Compliance with the legal and policy framework, including monitoring arrangements

- There is poor documentation and maintenance of statistical data regarding the volume of waste collected and disposed by waste management operators
- There is little and lack of regular reporting by the Kaupule to the waste management department on the volume of waste collected and disposed
- There is irregular monitoring of the level of waste going into composting, recycling and to the landfill
- The disclosures of volume estimates stated by the waste management department cannot be substantiated because of the lack of available data

Conclusion

To support the full implementation of the WOS Act 2009, a national waste management strategy needs to be developed to coordinate the roles, responsibilities and functions of key agencies involved with solid waste

management to ensure that solid waste management is effectively carried out. Audit concludes that the Waste Management Department should address the following issues when updating the National Waste Management Strategy:

- Responsibilities for the provision of waste management in Funafuti needs to be rationalised
- There is need for stable and adequate funding of waste management services
- New operational approaches need to be implemented
- Community awareness on waste issues needs to be raised
- Appropriate monitoring mechanism need to be established
- Capacity building programmes need to be in place for staff involved in solid waste activities.

General Recommendation

The concern key agencies should take prompt measures in addressing effectively the specific audit findings and recommendations stipulated in this report in to order to minimise the negative impacts of Solid Waste Management in Tuvalu.