

FEDERATED STATES OF MICRONESIA  
NATIONAL SOLID WASTE MANAGEMENT STRATEGY  
2010 – 2014



## **ACKNOWLEDGEMENTS**

1. JICA for technical and financial assistance to develop this strategy
  2. SPREP for technical support and advice in drafting and finalizing the strategy
  3. All stakeholders who were involved in the consultation workshops to develop and finalize the strategy in March 2008 and October 2009
-

# FOREWORD

# CONTENTS

FOREWORD.....	i
ACRNOYMS & GLOSSARY .....	iii
EXECUTIVE SUMMARY .....	1
1.0 INTRODUCTION.....	2
1.1 Vision .....	2
1.2 Mission.....	2
1.3 Strategic Goal and Objectives .....	2
1.4 Strategy Development Process .....	2
1.5 Scope.....	3
1.6 Time Frame.....	3
2.0 BACKGROUND .....	4
2.1 Country Information .....	4
2.2 Strategic Context for Solid Waste Management .....	6
2.3 Current Situation of SWM in FSM .....	9
2.4 Difficult Wastes .....	11
2.5 Hazardous Waste .....	12
2.6 Stakeholders .....	13
3.0 THE WAY FORWARD .....	15
3.1 Guiding Principles.....	15
3.2 Proposed Way Forward.....	15
3.3 Strategic Objective 1.....	16
3.4 Strategic Objective 2.....	21
3.5 Strategic objective 3 .....	26
3.6 Measuring Progress.....	29
REFERENCES.....	30
Appendix 1 – High-level Implementation Plan .....	31
Appendix 2 – NSWMS Monitoring/Reporting Form .....	32

# ACRNOYMS

AFD	French Development Agency
DT&I	Department of Transportation and Infrastructure
DTC&I	Department of Transportation, Communication and Infrastructure
EPA	Environment Protection Agency
ESP	Environment Sector Plan
E-waste	Electrical and electronic waste
FSM	Federated States of Micronesia
FY	Financial Year
GDP	Gross Domestic Product
JEMCO	Joint Economic Management Committee
JICA	Japan International Cooperation Agency
KIRMA	Kosrae Island Resource Management Authority
NIP	National Implementation Plan
NSWMS	National Solid Waste Management Strategy
OEEM	Office of Environment and Emergency Management
OIA	Office of Insular Affairs
PIRRIC	Pacific Islands Regional Recycling Initiative Committee
POPs	Persistent Organic Pollutants
RS2010	Pacific Regional Solid Waste Management Strategy 2010-2015
SBOC	Office of Statistics, Budget and Economic Management, Overseas Development Assistance, and Compact management
SC	Stockholm Convention
SDP	Sustainable Development Plan
SEPA	State Environment Protection Agency
SGOV	State Government
SOPAC	South Pacific Applied Geoscience Commission
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SWM	Solid Waste Management
uPOPs	Unintentional Persistent Organic Pollutants
WHO-WPRO	World Health Organization Western Pacific Regional Office

# EXECUTIVE SUMMARY

This is the Federated States of Micronesia's National Solid Waste Management Strategy (NSWMS) which provides the strategic vision and direction for solid waste management over the five year period 2010-2014. The Strategy has been developed in consultation with key stakeholders from each of the four States, as well as the private sector, NGOs, communities, and municipal and national government representatives.

The overall goal of this NSWMS is to develop, implement, and maintain a system of integrated solid waste management that deals with the solid waste stream and minimizes the negative impacts on the health of the population and environment of FSM. This will be developed through three broad strategic objectives:

- Develop and implement policies, plans, legislation, regulations, and institutional arrangements, which set the right environment to encourage sustainable SWM
- Develop, implement and operate facilities and programs for SWM, which are sustainable and which protect public health and the environment
- Teach, train, and educate the population to facilitate efficient implementation of systems and programs and enable compliance with these systems and programs.

These objectives will be achieved by implementing improvements in seven thematic areas: (1) Policy and Legislation, (2) Planning, (3) Sustainable Financing, (4) Integrated solid waste Management, (5) Medical Waste Management, (6) Capacity Building, and (7) Awareness.

The Strategy is arranged into three main chapters. The first chapter introduces the Strategy, including its vision, mission, strategic objectives, and scope. The second chapter provides background information on the country, and sets the strategic context for solid waste management (SWM) in FSM. It also explores the current waste management situation in each of the four states, and concludes with a provisional listing of key stakeholders involved in SWM.

The third and final chapter contains the strategic elements and begins by setting the underlying principles which will guide the implementation of this strategy. It also explains the way forward in terms of the three strategic objectives and seven thematic areas, by first examining the current situation (where are we now?), identifying achievable targets (where do we want to be?), and finally by detailing the plan to achieve the targets (how will we get there?).

Ongoing monitoring and evaluation of this strategy is an important component of the document and this is reflected in the basic monitoring template which has been suggested and which will be reported annually.

## **1.0 INTRODUCTION**

### **1.1 VISION**

A sustainable Federated States of Micronesia, where the culture and environment are preserved for future generations

### **1.2 MISSION**

To reduce solid waste generation and manage residual waste materials in a way which maximizes opportunities for resource recovery, while protecting the public health and environment in the Federated States of Micronesia, in partnership with all its citizens.

### **1.3 STRATEGIC GOAL AND OBJECTIVES**

The overall goal of this national solid waste management strategy (NSWMS) is to develop, implement, and maintain a system of integrated solid waste management that deals with the solid waste stream and minimizes the negative impacts on the health of the FSM's population and environment. This will be developed through three broad strategic objectives:

- Develop and implement policies, plans, legislation, regulations, and institutional arrangements, which set the right environment to encourage sustainable solid waste management (SWM)
- Develop, implement and operate facilities and programs for solid waste management, which are sustainable and which protect public health and the environment
- Teach, train, and educate the population to facilitate efficient implementation of systems and programs and enable compliance with these systems and programs.

These three strategic objectives are addressed with actions in seven thematic areas: (1) Policy and Legislation, (2) Planning, (3) Sustainable Financing, (4) Integrated Solid Waste Management, (5) Medical Waste, (6) Capacity Building, (7) Awareness. A high-level implementation plan is provided in Appendix 1.

### **1.4 STRATEGY DEVELOPMENT PROCESS**

The following steps were taken to prepare the NSWMS with the assistance of the Secretariat of the Pacific Regional Environment Programme (SPREP) and the Japan International Cooperation Agency (JICA):

- Holding of a 5-day consultation workshop in Pohnpei during August 2008; this was attended by about 30 stakeholders from government ministries and departments, private sector, NGOs, and community groups;

- Preparation of the first draft of the strategy based on consultation workshop by SPREP during May 2009;
- Holding of a 1-day consultation workshop in Pohnpei during October 2009 to finalize the content of the strategy.

## **1.5 SCOPE**

The strategy covers municipal solid waste from residential, commercial, institutional, and industrial sources. It also covers medical waste from hospitals and dispensaries, difficult waste such as used oil and scrap metal.

The following wastes are not covered in this strategy:

- Liquid wastes such as sewage,
- Gaseous wastes
- Hazardous wastes such as POPs, which will be addressed by the Stockholm Convention National Implementation Plan (NIP)

## **1.6 TIME FRAME**

This strategy covers the 5-year period 2010-2014. It will be monitored and evaluated annually by the Office of Environment and Emergency Management (OEEM) using the format proposed in Appendix 2, and updated as necessary. It is expected that a national census will take place in 2010, and this may be an opportunity to collect background information and practices on solid waste management, and also water and wastewater. A review of the strategy should be conducted in 2014 to develop a revised strategy.



## 2.0 BACKGROUND

### 2.1 COUNTRY INFORMATION

The Federated States of Micronesia (FSM) is a multi-island sovereign state in free association with the United States, which is wholly responsible for its defense. FSM consists of 607 small islands in the Western Pacific about 2,500 miles southwest of Hawaii. While the country's total land area amounts to only 270.8 square miles, it occupies more than one million square miles of the Pacific Ocean and ranges 1,700 miles from east (Kosrae) to west (Yap). Each of the four States centers around one or more high islands and all but Kosrae include numerous atolls. Basic characteristics of FSM are shown in Table 1.

Table 1: Basic Characteristics of FSM

State	Capital	Land area (sq. miles)	Population	State Characteristics
Pohnpei	Kolonia	133.4	74,685	
Kosrae	Tofol	42.3	9,686	A single island, whose interior is characterized by steep, rugged mountains covered with dense tropical vegetation
Yap	Colonia	45.6	16,436	Made up of 4 large islands, 7 small islands and 134 atolls
Chuuk	Weno	49.2	54,595	Includes 7 major island groups

#### 2.1.1. POLITICS

The Federated States of Micronesia are governed by the 1979 constitution, which guarantees fundamental human rights and establishes a separation of governmental powers. The Congress is unicameral and has fourteen members elected by popular vote. Four senators—one from each state—serve four-year terms; the remaining ten senators represent single-member districts based on population, and serve two-year terms. The President and Vice President are elected by Congress from among the four state-based senators to serve four-year terms in the executive branch. Their congressional seats are then filled by special elections. Elections were last held in March 2007 and, in May 2007, Congress elected Emmanuel Mori as President and Alik L. Alik as Vice-President. The president and vice president are supported by an appointed cabinet. There are no formal political parties.

#### 2.1.2. SOCIO-ECONOMIC SITUATION

Economic activity consists primarily of subsistence farming and fishing. Primary farm products include black pepper, tropical fruits and vegetables, coconuts, cassava, betel nuts, sweet potatoes, pigs and chickens. The islands have few mineral deposits worth exploiting, except for high-grade

phosphate. The potential for a tourist industry exists, but the remote location, lack of adequate facilities and limited air connections hinder development.

In November 2002, the country experienced a further reduction in future revenues from the Compact of Free Association, the agreement with the United States of America by which Micronesia received US\$1.3 billion in financial and technical assistance over a 15-year period until 2001. Under the new compact, the country will receive approximately US\$92 million a year until 2023, including contributions to a jointly managed trust fund. A Joint Economic Management Committee (JEMCO), consisting of representatives of both countries, has been established to manage this compact assistance. Additional funding from the United States totaled US\$57 million in 2004.

Employment declined from 16,119 in 2000 to 15,897 in 2005. Pohnpei had the highest number of employees (7,060) and Kosrae the lowest number (1,366). The three largest employers were the private sector, the state governments and government agencies. Around 43% were in the public sector, 19.8% in wholesale trade and repair and 7% in education. The unemployment rate is 16% and the average real wage rate is US\$6,037.

The country has a severe trade deficit. In 2005, total imports were valued at US\$117.5 million and exports at only US\$1.3 million. The tourism sector is small, with only 13,415 tourists reported for 2005. Private remittances are also limited, especially compared with other Pacific island countries.

The estimated gross domestic product (GDP) for the 2006 fiscal year was estimated to be US\$244.7 million, representing a real growth rate of -0.7% over 2005. GDP is supplemented by aid averaging US\$100 million annually. The nominal GDP per capita was estimated to be US\$2,254 for 2006, an increase of US\$65 or 3% over 2005. The inflation rate is estimated at 1%. [WPRO, 2009]

### 2.1.3. WEATHER

FSM enjoys a tropical climate, with relatively even, warm temperatures throughout the year. Rainfall is generally plentiful, and Pohnpei receives up to 330 inches of rain per year. Nevertheless, drought conditions do occur periodically throughout FSM, especially when the El Niño condition moves into the Western Pacific. At these times groundwater supplies can dwindle to emergency proportions. Tropical typhoons constitute an annual threat, particularly to the low-lying atolls.

### 2.1.4. LAND OWNERSHIP

Special importance is attached to land in the FSM because of its short supply and its traditional importance. Land ownership is limited by the Constitution to citizens only, and most property is

held in family trusts, passing down from generation to generation within extended families. There are no publicly-owned subsurface mineral or water rights in any of the states. Domestic corporations which have non-citizen shareholders may not own land. Individuals and corporations that are not from the FSM may lease either public or private lands.

## **2.2 STRATEGIC CONTEXT FOR SOLID WASTE MANAGEMENT**

### **2.2.1. STRATEGIC DEVELOPMENT PLAN**

The guiding policy for sustainable development in FSM is the Strategic Development Plan 2004-2023 (SDP) which is published in three volumes. The SDP spells out the long-term strategy for achieving sustained growth in a number of key development priorities. The key solid waste management areas addressed in the SDP are:

- Mainstreaming waste into national systems and activities
- Enforcement of legislation
- Solid waste minimization, reduction at source and recycling
- Solid waste collection and disposal
- Education, awareness, and information dissemination
- Sustainable financing
- Capacity building

Volume III of the SDP looks at infrastructure development and specifies three objectives for solid waste management.

- Meet the demand for solid waste infrastructure in an effective and efficient manner;
- Evaluate and institute technologically appropriate solid waste management systems;
- Reduce volume of solid waste for disposal by maximizing recycling and separation opportunities and by extending the life of equipment and appliances that otherwise add to the solid waste quantities, thereby minimizing the land area required.

Specific projects have also been identified for implementation (see Table 2). However at the date of development of this strategy, it is not clear how much of this funding has been accessed to implement projects.

Table 2: Solid Waste Management Projects Funded and Partially Funded (Source: Strategic Development Plan 2004-2023)

Project	State	Available Funding (US\$ '000)	Unfunded Amount (US\$ '000)	Source
1. Closure of Landfill in Dekehtik	Pohnpei	1,018		Compact II
2. Development of new Landfill	Pohnpei	9,682	32,682	Compact/ADB
3. Rehab of Existing Landfill in Weno	Chuuk	500		Compact II
4. Development of Weno Landfill	Chuuk	9,500	13,417	Compact II
5. Development of Kosrae Landfill	Kosrae	7,500	5,836	Compact II
6. Closure of Existing Yap Landfill	Yap	1,333		Compact II
7. Development of new Yap Landfill	Yap	8,838	4,500	Compact II
8. Infrastructure Maintenance Fund	All	503	5,644	Compact II/ State
9. Waste Recycling Support Fund	All	1,975		Compact II
<b>Total</b>		<b>40,849</b>	<b>62,079</b>	

## 2.2.2. FIVE YEAR ENVIRONMENT SECTOR PLAN

The purpose of the Five Year Environment Sector Plan (ESP) is to prioritize activities to be undertaken during the period 2010 to 2014, which will be funded from the amended compact, with the view to improve the attainment of the environment sector's strategic goals as identified in the SDP. The ESP was developed in May 2009, and is expected to be endorsed by the end of 2009. It identifies the following activities relevant to solid waste management:

- National/State Laws & Regulations Review & Development (2010, 2011)
- Identify and implement pilot projects for disposal & collection (2010-2013)
- FSM Biannual Environment Conference (2010, 2012, 2014)
- Annual FSM Environment Speech Contest (2010-2014)
- National water/wastewater analysis training (2010, 2012, 2014)

## 2.2.3. STOCKHOLM CONVENTION

The Stockholm Convention on POPs (SC) is a global treaty “to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, and accumulate in the fatty tissue of humans and wildlife.”<sup>1</sup> This convention was ratified by FSM in February 2005 and requires Parties to take measures to eliminate or reduce the release of 12 different POPs into the environment

Under Article 5 of the SC, FSM is required to implement measures to reduce and eliminate releases of dioxins and furans from unintentional sources (uPOPs), which are generally from the

<sup>1</sup> Stockholm Convention Secretariat (2009), Retrieved 7 October 2009 from <<http://chm.pops.int/Convention/tabid/54/language/en-US/Default.aspx>>

open burning of organic waste (kitchen and yard waste) and other materials containing chlorine (e.g. PVC plastic). FSM is also required to promote the use of best available techniques (BAT) and best environmental practices (BEP), for sources of uPOPs, specifically open burning of waste on landfills and dumpsites, and waste incinerators<sup>2</sup>.

Best available techniques and best environmental practices described in the Stockholm Convention include:

- the use of low-waste technology
- the promotion of the recovery and recycling of waste and of substances generated and used in a process
- improvements in waste management with the aim of stopping uncontrolled burning of wastes. Alternatives to incineration such as waste minimization, resource recovery, reuse, recycling, waste separation, and promoting low-waste products should be considered when constructing new waste disposal facilities.

#### 2.2.4. NOUMEA CONVENTION

FSM ratified the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea Convention), which prescribes that Parties “shall take all appropriate measures to prevent, reduce and control pollution in the [South Pacific region] caused by dumping from vessels, aircraft, or man-made structures at sea, including the effective application of the relevant internationally recognized rules and procedures relating to the control of dumping of wastes and other matter.”

The development and subsequent implementation of this solid waste management plan can be considered to be an “appropriate measure to prevent, reduce and control pollution” under the Noumea convention.

#### 2.2.5. THE PACIFIC REGIONAL SOLID WASTE MANAGEMENT STRATEGY

The Pacific Regional Solid Waste Management Strategy 2010-2015 (RS2010), is the region’s guiding document for solid waste management. The implementation of this regional strategy is coordinated by SPREP, and it prescribes actions for SPREP as well as SPREP member countries and territories. In particular it addresses nine priority areas: economic and financial issues; Integrated solid waste management; Legislation; Awareness, communication and education; Capacity building; Environmental monitoring; Policy, planning and performance; Solid waste industry; and Medical waste

---

<sup>2</sup> FSM’s obligations under the Stockholm Convention are wider than those described above, however, only the key ones which relate to the Solid Waste Management Plan have been outlined. Consult the Convention or FSM National Implementation Plan (NIP) for more details.

As a member of SPREP, FSM was widely consulted during the development of RS2010, and committed itself to the implementation of the strategy. FSM also identified three high priority issues as being (1) economic and financial issues, (2) integrated solid waste management, and (3) legislation. The actions identified in the Regional Strategy should be closely aligned with the actions identified in this FSM solid waste management strategy.

## 2.2.6. REGIONAL WASTE MANAGEMENT AUDIT

At a meeting in Palau of the Pacific Association of Supreme Audit Institutions (PASAI) Congress in July 2009, the Auditors-General of a number of Pacific Island countries, including the FSM, agreed that a cooperative performance audit of the management of solid waste in 10 Pacific Island countries would take place. This initiative is a direct implementation of the Pacific Regional Audit Initiative (PRAI)—a Pacific Plan initiative—whose overarching objective is to raise Pacific public auditing to uniformly high standards, which in turn is expected to improve transparency and accountability in managing and using public resources.

This audit of solid waste management in FSM will focus on the solid waste management system in Pohnpei State, and the results—which will be available in June 2010—are expected to be very useful in identifying key areas for improvement.

## 2.3 CURRENT SITUATION OF SWM IN FSM

### 2.3.1. INSTITUTIONAL ARRANGEMENTS

Prior to 2008, responsibility for solid waste management at the national level was split between the Department of Health & Social Affairs, and the Department of Transportation and Infrastructure. The enactment of FSM Public Law 15-09, supplemented by Presidential Order No 1, established the Office of Environment and Emergency Management (OEEM), which now bears responsibility for implementing the FSM Environmental Protection Act at the national level [Rose, 2009]. The general mandate of OEEM is that:

*“The office shall coordinate efforts at the national government to ensure that environmental considerations are integrated into the strategic policy formulation process. It is also responsible for assisting the States to prevent, prepare for and recover from natural and human-induced disasters.”*

Waste management functions within the OEEM are assigned to the Environment and Sustainable Development Division. At the state level, there is a regulatory agency and one agency responsible for delivering the solid waste management services. In some cases, this latter agency may contract with the private sector to deliver those services. These institutional details are shown in Table 3.

In practice, the state governments regulate waste management, whereas the FSM Constitution mandates the national government to provide primary regulatory oversight (especially for toxic substances) [Rose, 2009].

Table 3: Institutional Arrangements for SWM in FSM

State	Regulatory Agency	Agency providing waste services
Chuuk	1. Chuuk EPA 2. Director of Public Safety for enforcement of littering law	Chuuk Department of Transportation, Communication & Public Works (Division of Public Works)
Kosrae	Kosrae Island Resource Management Authority	Department of Transportation & Infrastructure
Pohnpei	Pohnpei EPA	Department of Transport & Infrastructure (Disposal and collection contracted to Pohnpei Waste Management Services)
Yap	Yap EPA	Department of Public Works & Transportation

### 2.3.2. WASTE GENERATION AND COMPOSITION

Very little data exists for waste generation in the FSM. Some data is available for Pohnpei (WHO EHC, 1996), Kosrae<sup>3</sup>, and Yap<sup>4</sup> as shown in Table 4. These figures are compared with the Pacific regional average (Raj, 2000).

The key points to note from this data are:

- The greatest percentage of waste (by weight) is organic waste comprising vegetable or biodegradable (putrescible) material and garden waste. This means that if composting or other means of organic waste treatment can be successfully implemented then approximately half of the waste can be diverted from landfill. This type of waste is mainly responsible for the formation of leachate and landfill gas.
- There is a fairly high percentage of plastics in the waste stream (17-19%). Plastics persist in the environment for over 100 years, and while this stability may be good in a landfill environment, it also means that valuable and limited land space is used up quickly.
- The third largest amount of municipal solid waste generated is metal (aluminum and steel). Container deposit schemes have been implemented in Kosrae and Yap for aluminum cans, plastic and glass bottles, and lead acid batteries. This is a cost-effective way of turning what would otherwise be a waste into a resource and diverting it from landfill.

<sup>3</sup> B. Charley, personal communication, 4 October 2009

<sup>4</sup> C. Fillmed, personal communication, 12 November 2009

Table 4: Waste Generation Statistics

Item	Composition (% by wet weight)			
	Pohnpei, 1991	Kosrae, 2005/2006	Yap	Pacific Regional Average, 1999
Vegetable/ biodegradable	11	12.3	7.9	58.2
Garden waste	32	36.1		
Paper	13	8.6	33.3	12.3
Textile	1	3.4	2.5	2.9
Leather/rubber	1	1.6	Not measured	-
Plastic	17	18.9	23.7	9.7
Metal: mixed	17		18.1	7.6
Metal: Aluminum	-	6.0		-
Metal: Steel	-	9.7		-
Glass/ceramic	8	3.3	10.3	6.2
Potentially hazardous	Not measured	-	0.6	0.8
Construction & demolition	Not measured	-	3.6	1.8
Miscellaneous	0	-	0	0.2
Bulk Density (kg/m <sup>3</sup> )	120	Not reported	Not reported	164
Generation Rate (lbs/capita/day)	0.84	0.54	0.45	1.46

## 2.4 DIFFICULT WASTES

### 2.4.1. SCRAP METAL

The FSM has a large legacy of scrap metal and derelict vehicles which are abandoned at the dumpsite, along roadsides and on vacant lots. At the time of developing this Strategy in 2009, FSM government was soliciting assistance from companies for recycling legacy scrap in the FSM.

In 2009, a feasibility study was conducted at the regional level under the French Development Agency (AFD) Regional Solid Waste Initiative [Ashton and Ricketts, 2009]. The report proposes a two-phase sub-regional approach for scrap metal which focuses on vehicular spare parts. The first phase, which will include FSM, consists of a single round of legacy scrap metal collection and recycling. The second phase is a pilot-self-funded recycling system for imported vehicles in Kiribati. At the time of writing this Strategy, the AFD Regional Initiative was being developed in detail. The price of scrap metal on the open market is also quite low, and this scrap metal project is likely to be more successful when the price increases. Consequently, the project is unlikely to be implemented before 2011, with the hope that the value of scrap metal recovers to 2007 levels in the meantime.

### 2.4.2. USED OIL

Unfortunately no information on the quantity of used oil generation are available, however, the main sources of used oil generation are from the mechanic shops and the electricity company.



Currently, waste oil is stockpiled in a banded area at the Dekehtik dumpsite. Some waste oil is usually sold to a dive ship (SS Thorfinn), and in the past large volumes were shipped to Nauru for use in phosphate processing.

Waste oil is also proposed to be addressed in the AFD Regional Solid Waste Initiative. The proposal is to establish a system of waste oil recycling whereby waste oil from the region is shipped to Fiji where it is burnt for fuel in steel mills. This recycling system will be supported by extended producer responsibility to make it sustainable. It is anticipated that work on implementing this proposal will begin in 2010.

## **2.5 HAZARDOUS WASTE**

Hazardous waste in the FSM includes POPs, and electrical and electronic waste (e-waste). The management strategy for POPs is covered by the Stockholm Convention National Implementation Plan (NIP) which was being finalized at the end of 2009. It is expected that there will be some overlap in the area of organic waste management, since the burning of organic waste produces uPOPs.

E-wastes are a growing problem for FSM, and an assessment was completed in 2009 [FSM Department of Health and Social Affairs, 2009]. None of the four FSM states currently have specific procedures to properly handle e-waste and none of the three levels of government in FSM (national, state, municipal) have plans to initiate actions to address the e-waste situation. The report proposes a system for managing e-wastes in FSM, and notes that the POPs in PICs project was successful in removing a large volume of hazardous materials, including some e-waste substances. The quantities of estimated by the report are shown in Table 5.

Table 5: Estimate of E-Waste Generation in FSM [FSM Dept. of Health and Social Affairs, 2009]

E-waste Category	Approx. Total Imports (Units)				Estimated cumulative number of units at end-of-life in:				
	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>2-year life span</b>									
Communications - Line Telephony Apparatus	561	472	614	58	1647	1705	n/a	n/a	n/a
Communications - Radio Apparatus	215	450	186	12	851	853	n/a	n/a	n/a
<b>4-year life span</b>									
Entertainment - Sounds Recording Apparatus	228	328	299	46	228	556	854	900	n/a
Entertainment - Televisions	823	829	745	966	823	1652	2398	3384	n/a
Entertainment - Video Monitors/Projectors	76	326	246	5	76	404	650	655	n/a
<b>5-year life span</b>									
Computing - Calculating Machines	628	1217	1152	19	n/a	628	1845	2997	3015
Computing - Cash Registers	58	49	53	1	n/a	58	107	160	161
Computing - Data Processing Machines	1099	1250	1800	1889	n/a	1099	2349	4149	6038
Computing - Digital Processing Units	59	19	119	8	n/a	59	78	197	205
Electric/Automatic Typewriters	3	24	18	0	n/a	3	27	45	45

## 2.6 STAKEHOLDERS

There are many stakeholders involved in SWM in FSM as shown Table 6. This list is not exhaustive and should be revised as new information becomes available to ensure that the relevant people are consulted and included in solid waste management activities.

Table 6: Major Stakeholders for Waste Management in FSM

Major Stakeholders	Level of Participation	Reasons for level of participation
<b>Solid waste management</b>		
Chuuk Women's Council	High	Public awareness on SWM, community cleanups
Communities	High	Waste generators
Conservation Society of Pohnpei	High	Community outreach, cleanups
Dept of Agriculture	High	
Dept. of Public Safety	High	SWM Law enforcement
DTC&I	High	Delivers waste management services
Division of Environmental Health (Yap)	High	Awareness
Island Paradise Metal Company (Yap)	High	Recycling
JICA	High	Donor/development partner
Kosrae Conservation and Safety Organization	High	Public awareness on SWM, community cleanups
Kosrae DT&I	High	Delivers waste management services
Micronesia Eco Inc.	High	Recycles aluminum cans, batteries
Municipal Governments	High	Collection, litter removal

<b>Major Stakeholders</b>	<b>Level of Participation</b>	<b>Reasons for level of participation</b>
OEEM	High	Coordinates SWM in FSM
PIRRIC	High	Recycling initiative for western pacific
Pohnpei Waste Management Services	High	Private contractor (disposal & collection)
Public Auditor's Office	Medium	Performance audit of SWM
SOPAC	Medium	Covers integrated water resources management
SPC	High	Organic production (recycling of organic waste)
SPREP	High	Policy advice, technical assistance on SWM
State EPAs/ KIRMA	High	Regulate waste management
State Public Works Offices	High	Deliver waste management services
Tourism Offices & visitor bureaus	Medium	Beautification
UN Joint Presence Initiative	Medium	UNDP-funded recycling projects
<b>Medical waste management</b>		
State Health Departments	High	Service delivery
State Health Services (hospitals, dispensaries)	High	Medical waste generators and managers
<b>Difficult Wastes</b>		
Automobile repair shops	High	Used oil and scrap metal generators
FSM Petro Corporation	High	Oil importer
Oil product retailers	High	Oil importers
SS Thorfinn	High	Used oil consumer
State power utility companies	High	Used oil generators

## 3.0 THE WAY FORWARD

### 3.1 GUIDING PRINCIPLES

The following guiding principles are used as the foundation on which to build the actions that will transform current solid waste management practices.

#### **Polluter-pays Principle**

Those responsible for causing pollution or generating solid waste should pay the cost for dealing with the pollution, or managing the solid waste (collection and disposal) in order to maintain ecological health and diversity.

#### **Precautionary Principle**

Lack of scientific data/information certainty should not be used as a reason for not acting to prevent serious or irreversible environmental damage or degradation.

#### **Proximity Principle**

Waste should be dealt with as close to the source of generation as possible. This reduces transportation costs, and also reduces risks of contamination of the environment during transport.

#### **Consultation Principle**

All levels of Government should consult and work with people and organizations throughout the development and implementation of waste management strategies and action plans.

#### **Waste Hierarchy**

The Waste Hierarchy is a strategic tool which prioritizes actions for SWM. The general hierarchical model is a 4R model consisting of Refuse, Reduce, Reuse, and Recycle.

*Refuse:* avoid generating waste in the first place

*Reduce:* reduce waste that must be generated and which goes to the landfill (this includes composting)

*Reuse:* repair goods that can be repaired, or find alternative uses for wastes

*Recycle:* return wastes with recoverable value for re-processing

### 3.2 PROPOSED WAY FORWARD

The overall goal of this NSWMS is to develop, implement, and maintain a system of integrated solid waste management that deals with the solid waste stream and minimizes the negative impacts on the health of the FSM's population and environment.

There are three broad strategic objectives as follows:

- Develop and implement policies, legislation, regulations, and institutional arrangements, which set the right environment to encourage sustainable solid waste management
- Develop, implement and operate facilities and programs for solid waste management, which are sustainable and which protect public health and the environment
- Teach, train, and educate the population to facilitate efficient implementation of systems and programs and enable compliance with these systems and programs.

These three strategic objectives will be achieved by implementing improvements in seven thematic areas: (1) Policy and Legislation, (2) Planning, (3) Sustainable Financing, (4) Integrated Solid Waste Management, (5) Medical Waste, (6) Capacity Building, (7) Awareness.

The next sections address each of the strategic objectives and thematic areas by first looking at the current situation (where are we now?), setting targets (where do we want to be?), and finally by specifying the plan to achieve the target (how will we get there?). The numbering of the actions in the plan is continuous from one thematic area to the next.

### 3.3 STRATEGIC OBJECTIVE 1

#### DEVELOP AND IMPLEMENT POLICIES, PLANS, LEGISLATION, REGULATIONS, AND INSTITUTIONAL ARRANGEMENTS, WHICH SET THE RIGHT ENVIRONMENT TO ENCOURAGE SUSTAINABLE SOLID WASTE MANAGEMENT

##### 3.3.1. POLICY AND LEGISLATION

###### Where are we now?

A summary of the existing solid waste legislation and policies in all four states is shown below.

Table 7: Policies and legislation in each State

State	Policies and Legislation for Solid Waste Management
Chuuk	<ul style="list-style-type: none"> <li>- CSL Public Law 02-94-01</li> <li>- Littering Law CSL- 191-33</li> <li>- Recycling Law (<i>aluminum cans</i>)</li> </ul>
Kosrae	<ul style="list-style-type: none"> <li>- Kosrae State Constitution, Article 2: <i>Every person has the right to a healthful, clean and stable environment, while providing for the orderly development and use of natural resources, the state government shall by law protect the states environment, ecology, and natural resources from impairment from the public interest.</i></li> <li>- Littering Law: Kosrae State Code, Title 13, Section 13.506</li> <li>- Pollution: Kosrae State Code, Title 13, Section 530</li> <li>- Kosrae Recycling Program: Kosrae State Code, Title 7, Chapter 22</li> </ul>

State	Policies and Legislation for Solid Waste Management
	- Bill to end the importation of non-recyclable plastic bags ( <i>successful 1<sup>st</sup> reading</i> )
Pohnpei	- Constitution of Pohnpei, Article 7, Section 1 <i>on Resources and Environment which requires establishment and execution of plans for conserving natural resources and protection of the environment.</i> - State Law No 3L-26-92, Pohnpei Environmental Protection Act - Solid Waste Regulations 3/30/95 - Pohnpei State Law No 6L-66-06 <i>provides for litter abatement and solid waste disposal, shipping container and motor vehicle waste disposal fee, and establishes Environmental Quality Fund and Litter Reward Fund</i>
Yap	- YSL #4-4 Yap State Public Service Corporation ( <i>Utilities Company's mandate for 'refuse collection and disposal'</i> ) - Recycling Program Law (2008) - Recycling Program Regulations (Dec 2008) - Recycling Finance Law (2009)

In cases where legislation has been enacted, non-compliance is common due to lack of awareness and carefree attitudes. There is also limited human and financial capacity to enforce the legislation. This is compounded by (a) absence of consolidated legislation, (b) lack of infrastructure and programs to support compliance (e.g. waste collection service to support proper waste disposal), and (c) social pressure exerted in small communities, where enforcers are related to offenders. This is sometimes made worse where the legislation is in conflict with traditional cultural values.

#### Where do we want to be?

- At least 1 environmental violation for illegal dumping or other waste management infraction successfully prosecuted in each State for the first year, and increasing thereafter.
- Roles and responsibilities for hazardous waste management at State and National levels clearly defined
- Roles and responsibilities for solid waste management at State level clearly defined and institutionalized

#### How will we get there?

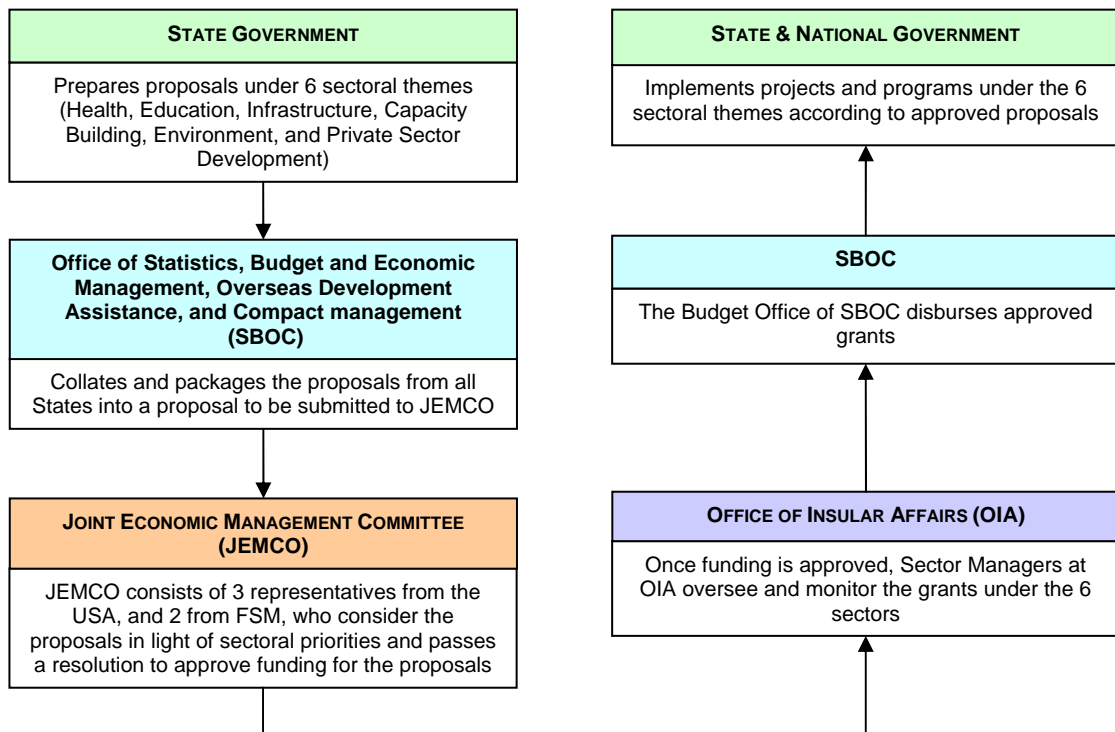
Action	Lead Agency	Time Frame
1. Recruit one lawyer/prosecutor in the national government to support each State EPA	SEPA	FY 2011
2. Review existing legislation and institutional arrangements for solid waste management and hazardous waste management and make recommendations	SEPA	FY 2012

Action	Lead Agency	Time Frame
3. Develop and implement enforcement plans in each country. These plans should contain activities that help to internalize policies in government departments, and address training, education, and awareness, culturally-sensitive communication, and community empowerment, using existing traditions, religious groups and governance structures	SEPA	FY 2012
4. Double the EPA staff in each State designated as fulltime enforcement officers out of existing EPA staff	SEPA	FY 2012
5. EPA enforcement officers in all States trained in legal procedures, evidence handling, case development, etc.	SEPA	FY 2013
6. Create awareness within the judiciary about the seriousness of SWM issues by holding advocacy meetings	SEPA	Annually
7. Implement recommendations	SEPA	Start in 2013

### 3.3.2. SUSTAINABLE FINANCING

#### Where are we now?

Funding for solid waste management in the FSM is obtained under the Compact of Free Association (CFA) Agreement with the United States of America. The process for obtaining this financing is outlined below.



The estimated annual expenditure for solid waste management programs (collection, disposal, recycling, etc) in the 4 states for 2008 and 2009 are given in Table 8. With the exception of the container deposit legislation in Kosrae and Yap, a soft-drink tax in Chuuk, and private collection fees, there are no sustainable financing mechanisms in place for solid waste management, and the majority of the funding for waste management programmes is obtained under the CFA or through development assistance.

Table 8: Estimated SWM expenditure for 2008 & 2009

State	2008 Expenditure (US\$)	2009 Expenditure (US\$)
Pohnpei		
Kosrae	61,000	48,500
Yap	30,000	25,000
Chuuk	75	150

Where do we want to be?

- At least two States launch a fund financed by a tax on vehicle importers to finance the cost of removing abandoned vehicles by 2013
- Funds secured to sustainably support SWM activities in FSM

How will we get there?

Action	Lead Agency	Time frame
8. Formulate a plan to implement an economic instrument for vehicles which would finance the cost of removing abandoned vehicles	SEPA	FY 2013
9. Formulate a plan to implement other appropriate economic instruments, based on reliable and accurate information of the costs and benefits of available economic instruments – this could include the development of container deposit legislation. Development and implementation of the plan could be a responsibility of a SWM Taskforce.	SEPA	FY 2013
10. Establish management systems to ensure that waste management revenues are used for waste management activities	SGOV	FY 2013
11. Identify full/partial funding sources with seed funding provided from State or National Government, and develop resource mobilization strategy to secure these resources to support waste management activities. This will involve developing capacity for proposal writing and project implementation	OEEM	FY 2013



### 3.3.3. PLANNING

#### Where are we now?

Solid waste management plans should be based on accurate and reliable information of the waste stream; however, there is a lack of this information. Several analyses have been conducted, although the data does not cover the different areas of FSM (urban, rural areas, atolls, etc).

- Kosrae (KIRMA) completed a household waste survey in 2005/2006;
- Pohnpei completed a landfill survey in 1991 (WHO EHC, 1996);
- Yap undertook a limited waste characterization survey;
- Chuuk completed a survey in collaboration with WHO/University of Hawaii

Furthermore, planning for solid waste management is undertaken separately to planning for hazardous waste, which may result in some duplication and overlap of efforts. For example, the Stockholm Convention NIP was developed separately to this Solid Waste Strategy.

#### Where do we want to be?

- Establish a waste stream analysis program (e.g. at dump, household, or customs) for all States
- Establish and maintain a database for waste management information
- Integrated planning for solid and hazardous wastes to take advantage of any synergies

#### How will we get there?

Action	Lead Agency	Time Frame
12. Design and conduct a waste stream analysis in each State using the WHO methodology, and updated types of waste (e.g. e-waste). This should include providing the necessary training and instruction to conduct the analysis.	SEPA	FY 2011
13. Establish a database at the State level, which will be compiled by National Government	SEPA OEEM	FY 2013
14. Create SWM Taskforce at the State and National levels to develop SWM	SEPA/OEEM	FY 2012
15. Develop, update and/or complete the State solid waste management plans. State solid waste management plans will give the vision and direction for SWM and will help the State in identifying the financial and human capacity resources that are needed to achieve that vision.	SEPA	FY 2010

## 3.4 STRATEGIC OBJECTIVE 2

### DEVELOP, IMPLEMENT, AND OPERATE FACILITIES AND PROGRAMS FOR SOLID WASTE MANAGEMENT, WHICH ARE SUSTAINABLE AND WHICH PROTECT PUBLIC HEALTH AND THE ENVIRONMENT

#### 3.4.1. INTEGRATED SOLID WASTE MANAGEMENT

##### Where are we now?

In this strategy integrated solid waste management refers to a collection of activities that can be applied to manage a waste from the moment it is generated until it stops being a waste. It includes waste avoidance, reduction at source, reuse, recycling, waste collection, waste treatment (such as energy from waste incineration) and sanitary disposal for residual wastes which cannot be converted into resources. Addressing these areas in a combined integrated approach recognizes the interconnectedness of the solid waste issues.

##### **Waste Minimization (Refuse, Reduce, Reuse, Recycle)**

With the assistance of key development partners, and with the involvement of the private sector, several initiatives have been undertaken for waste recycling. These are summarized in Table 9.

Table 9: Recycling and related activities in FSM

State	Waste Recycling (and related) Activities
Pohnpei	<ul style="list-style-type: none"><li>Scrap metals (junk cars, batteries, etc) are collected by two private companies and shipped off island. Kolonia Town Government collects aluminum cans, bales and ships them off island. Waste oil from the power plant is collected by a dive boat (Thorfinn) from Chuuk State</li></ul>
Kosrae	<ul style="list-style-type: none"><li>UNDP provided financial and technical assistance to revive the State's recycling program in October 2006, through a deposit/refund system for vehicle batteries, cans, plastic and glass bottles. This program is being implemented by KIRMA.</li><li>800 tonnes of scrap metal and bulky wastes have been collected and shipped off-island</li><li>Over 20,000 gallons of used oil have also been shipped off-island to Nauru</li></ul>
Yap	<ul style="list-style-type: none"><li>Technical assistance has been provided by UNDP to improve the state's Recycling Program to (1) ensure sustainability by matching deposits and increasing refund rates and (2) to be able to take in more recyclable materials i.e. Glass, PET #1 plastics, and Lead Acid Batteries</li><li>One private company, Island Paradise Metal Co., is the State Recycling Operator taking in aluminum cans only and shipping off lead acid batteries and other materials when possible through buyer arrangements</li></ul>
Chuuk	<ul style="list-style-type: none"><li>Chuuk Visitors Bureau started a recycling operation, but this ceased due to financial constraints</li></ul>

Composting is a means of minimizing the amount organic or biodegradable waste that ends up at the dumpsite or landfill, and some households practice backyard composting. In addition, the

Secretariat of the Pacific Community (SPC) Land Resources Programme (LRD) has provided support for compost field work in FSM and this receives ongoing support from the Development of Sustainable Agriculture in the Pacific (DSAP). The GEF-Funded and UNDP-implemented Sustainable Land Management (SLM) project will also aim to establish practical demonstration sties on composting with relevant training for farmers, and awareness-raising to promote organic production.

## Collection

A regular, reliable, and efficient waste collection service is a key aspect to proper solid waste management, as it can often account for up to 60% of the waste management costs. In FSM, the waste collection service is often irregular and varies from state to state mostly due to the inadequate budget allocation. Most states do not have an organized door-to-door collection service and lack appropriate equipment. The predominant collection vehicles in use are dump trucks; however, there is a move towards compacting trash vehicles. Yap state has recently procured a new compacting trash truck, and Kosrae state is expecting the arrival of four compacting trash trucks.

Collection service, if available, is provided by municipalities (free of cost to the residents), and also by private contractors who may be directly hired by single households or groups of households to provide the service. Where this private collection service is provided, the cost is considered high, which results in a lack of participation from households and businesses. For example in Pohnpei, only about 50 households participate in the collection service.

The following table highlights some of the main features of the collection service in the four states of FSM.

Table 10: Main features of the waste collection system in the FSM

State	Waste Collection Service (frequency and characteristics)
Pohnpei	A waste collection service is not provided by the government except in Kolonia Town. The relevant regulations only require residents to get their waste to the dumpsite and do not directly address waste collection. Pohnpei Waste Management Services (PWMS) provides a collection service to interested parties for a fee.
Kosrae	Of the four municipalities, only Lelu has a collection system in place. DT&I is proposing to implement a collection system for all municipalities.
Yap	The waste collection service is delivered by a combination of the government (PW&T) and private waste collectors. Collection frequency varies from three times weekly for Colonia, which is the main business area, to twice monthly for other areas.
Chuuk	Department of Transportation, Communication & Public Works is mandated to provide waste collection services at least three times a week.

## Disposal

The methods of waste disposal in FSM vary from state to state and ranges from open dumps to semi-aerobic Fukuoka Landfill. The main waste disposal facilities in each state are shown in Table 11. Many of the existing dumpsites are almost full, but new sanitary disposal sites have not yet been finalized.

Land acquisition is a major problem, especially in states where there is very little public or government-owned land available, and there is often a lack of land use plans which take into account the need for landfills. Furthermore, there are often no landfill management plans, monitoring capacity or equipment, as well as supporting funds for operation and maintenance.

Table 11: Location and characteristics of disposal facilities in FSM

State	Disposal Facilities (location and characteristics)
Pohnpei	<ul style="list-style-type: none"><li>• Only 1 official open dump exists for the main island and it is located in Dekehtik in a mangrove swamp close to the Pohnpei International Airport with negative environmental impacts on surrounding area.</li><li>• A proposal is being considered to develop a new semi-aerobic landfill site in Palikir</li></ul>
Kosrae	<ul style="list-style-type: none"><li>• Semi-aerobic Landfill with plastic liner, was constructed in Tofol with assistance from the Embassy of Japan</li><li>• Open dumpsites in other municipalities</li></ul>
Yap	<ul style="list-style-type: none"><li>• One public site (open dump) located close to Colonia Town servicing Colonia area and surrounding areas. Compaction and cover soil when possible; primary issues include leachate runoff, burning of waste, and segregation. Rehabilitation of current site is being focused on to expand use. Several smaller, municipal dump sites/areas have been established by rural communities.</li></ul>
Chuuk	<ul style="list-style-type: none"><li>• There is one open dump located at Neauo village on Weno Island about 100 km from the town center. Additional funding is provided to maintain the open dumpsite, while a new landfill site is being identified.</li></ul>

## Where do we want to be?

### **Waste Minimization (Refuse, Reduce, Reuse, Recycle)**

- The amount of solid waste generated and disposed of, reduced by at least 10% in all states through reduced imports, recycling, and other methods
- Local and community based waste reduction related industries created

### **Collection**

- Cost-effective solid waste collection and transportation services serving 30% of the population in all State centers
- 50% of solid waste collection and transportation services privately managed

- Hazardous [or difficult] waste (waste oil, batteries, etc.) collection services or centers established in at least one State

## Disposal

- Safe solid waste disposal sites designated, established and serving at least 75% of the population in the four State center islands (Yap proper, Weno, Pohnpei, Kosrae)
- 50% of the remaining areas of the country (other than the 4 State center islands) improve or establish and properly manage a designated waste disposal site
- Private entities (community, company, etc) will manage 50% of waste disposal sites
- All abandoned vehicles removed from public areas and safely disposed of (including use as artificial reefs) in all States

## How will we get there?

Action	Lead Agency	Time Frame
<b>MINIMIZATION (Refuse, Reduce, Reuse, Recycle)</b>		
16. Collect baseline data on waste generation	SEPA	FY 2010
17. Divert and isolate green waste from landfill by encouraging mulching or composting, first at source, and then at the landfill	SEPA	FY 2012
18. Provide economic incentives to encourage local and community-based recycling and waste reduction. (For example: provide space and equipment for scrap metal recycling; provide tax breaks/reductions to encourage private sector involvement in recycling; provide start-up grants, implement advanced disposal fees for appliances, vehicles, etc)	SEPA	FY 2013
19. Identify and target potential sources of funding support for recycling programs (e.g., FSM Infrastructure Sector funds, and external donors)	OEEM	FY 2010 - ongoing
20. Improve and enhance current recycling programs	SEPA	FY 2011
21. Develop long-term contractual arrangements with the private sector, which will encourage private sector investment in long-term infrastructure	State DT&I	FY 2011
<b>WASTE COLLECTION</b>		
22. Improve waste collection services and private sector engagement, by contracting out to the private sector	DT&I	FY 2013
23. Examine an equitable user pay system for waste collection as a pilot project considering ability and willingness to pay	DT&I	FY 2012
24. Implement collection service for bulky waste	DT&I	FY 2013
25. Introduce hazardous waste collection services into atolls	DT&I	FY 2014
<b>WASTE DISPOSAL</b>		
26. Implement a vehicle removal project to clean public areas of abandoned vehicles	DT&I	FY 2014

Action	Lead Agency	Time Frame
27. Develop and implement landfill plans for: <ul style="list-style-type: none"> <li>- dumpsite improvement and upgrade to more sanitary facilities</li> <li>- construction of new landfills using semi-aerobic (Fukuoka) method and/or transfer stations (appropriately located)</li> <li>- Closure of dumpsites and landfills</li> <li>- Monitoring and maintenance of existing landfills</li> </ul>	DT&I	Start by FY 2010

### 3.4.2. MEDICAL WASTE MANAGEMENT

#### Where are we now?

Responsibility for medical waste at the national level lies with the Division of Health Services in the Department of Health and Social Affairs.

The medical waste on Pohnpei is generated from the main Pohnpei State Hospital as well as 10 dispensaries (5 located on the main island and 5 on outer islands). At the main hospital, medical waste is disposed of in a wood-fired, single-chamber incinerator donated by the Government of Japan in 2009. This incinerator is operated by hospital staff, once or twice per week on a 2-hour cycle. The resulting ash is then taken to the Dekehtik dumpsite. Prior to this incinerator, medical waste was often burnt at the dumpsite under controlled conditions.

The situation varies in the other states. In Yap, the Department of Health Services treats medical waste by incineration, while in Chuuk, medical waste is disposed of at the dumpsite.

#### Where do we want to be?

- Cost-effective systems for treatment and final disposal of medical wastes which complies with applicable standards (WHO, or others), and obligations under international conventions such as the Stockholm Convention
- Trained operators in place to operate medical waste systems

#### How will we get there

Action	Lead Agency	Time Frame
28. Develop a national medical waste management strategy, which may be a stand-alone strategy, or which may be ultimately incorporated as an element in the national waste management strategy	SEPA	FY 2012

### 3.5 STRATEGIC OBJECTIVE 3

**TEACH, TRAIN, AND EDUCATE THE POPULATION TO FACILITATE EFFICIENT IMPLEMENTATION OF SYSTEMS AND PROGRAMS AND ENABLE COMPLIANCE WITH THESE SYSTEMS AND PROGRAMS.**

#### 3.5.1. CAPACITY BUILDING

##### Where are we now?

In general, there are not enough technical and trained people available for planning and implementing SWM projects and activities, and this is made worse by the high overturn of skilled people who often migrate overseas to seek better opportunities. Furthermore salaries are considered very low and do not help in attracting qualified people to fill vacant positions.

Current educational scholarships and programs do not prioritize SWM and are limited in their ability to develop future capacity. Consequently, training in general areas such as financial management, project management, proposal development, etc is needed. In addition legal expertise is limited.

##### Where do we want to be?

- Increased technical capacity of staff of State government and non-government environmental organizations to deal with solid waste management issues (e.g. through attachments, fellowships, etc)
- Government and non-government organizations throughout the country linked together in strong networks and actively sharing best practices/successes, lessons learned, and opportunities for assistance
- Enhance current, existing capacity through clarification of roles, trainings, certifications, incentive award programs, etc
- Develop future capacity through supporting educational programs
- Engage at least 2 traditional and/or church leaders in each state for SWM issues

### How will we get there?

Action	Lead Agency	Time Frame
29. Assess capacity gaps for solid waste management in FSM against regional benchmarks. Assessment of the capacity constraints, their root causes, and options for addressing the constraints is an essential component to avoid wastage of scarce financial resources. The results of this assessment should help to determine national training priorities.	OEEM	FY 2011
30. Implement capacity building programmes, to address capacity gaps. These programmes should promote research and scientific analysis, mainstream capacity building into national plans, and recognize that awareness is a tool for building capacity, and should therefore use cultural practices, and various tools and media for information, education, and communication. They should also include: <ul style="list-style-type: none"> <li>- Specific educational scholarships and programs for environment and SWM</li> <li>- Enhanced incentive award programs for existing capacity</li> <li>- Learning exchange opportunities between States for SWM personnel</li> <li>- Capacity development at the institutional level</li> <li>- Technical on-the-job training, and short-courses for SWM</li> </ul>	OEEM	Start by FY 2012
31. Develop a waste management network in FSM (e.g. through email listserv, online discussion forum, database, etc)	OEEM	FY 2012
32. National government to develop and implement comprehensive training program in partnership with US Government agencies and SPREP	OEEM	FY 2014
33. Offer at least two internships in State waste management agencies to FSM students at the College of Micronesia or studying abroad from 2011	SEPA, OEEM, DT&I	Start FY 2011

### 3.5.2. AWARENESS

#### Where are we now

Some waste education and awareness initiatives have been undertaken in the various states, however, these have been ad-hoc, and were done without the guidance of any overarching communications strategy. In addition, waste management education is not integrated into the existing school curriculum

Waste awareness messages are often delivered to the public in various forms in FSM, such as posters, signs, newsletters, banners, leaflets, audio-visual materials (DVDs), radio programs, school visits, and community meetings. The table below shows the work that has been done in each state to raise the level of awareness and education of the public.



Table 12: Waste education and awareness activities in FSM

State	Waste Education/Awareness Activities
Pohnpei	<ul style="list-style-type: none"> <li>• Awareness campaign (clean up) 3 times a year</li> </ul>
Kosrae	<ul style="list-style-type: none"> <li>• School visits to dump site for solid waste education</li> <li>• Annual <i>Cleanup the World</i> Campaign (local Cleanup efforts on urban and residential areas)</li> <li>• Annual underwater and coastal areas cleanup for two municipalities.</li> <li>• Vital ecosystems cleanup (mangrove, swamps, watershed, etc...) proposed for FY 2011.</li> <li>• Proposed compost kit proposed to be developed and distributed freely</li> </ul>
Yap	<ul style="list-style-type: none"> <li>• General waste education and clean up activities are intermittent. There has been a renewed focus on recycling and SWM as of 2006</li> </ul>
Chuuk	<ul style="list-style-type: none"> <li>• Monthly clean campaign with village communities, schools and youth groups/NGO</li> </ul>

Stakeholders consulted also indicated that there was often very little communication among the various stakeholders, not enough budget assigned to waste awareness programs, limited human resources (in some cases only volunteers were available), and limited equipment to facilitate awareness programs.

#### Where do we want to be?

- Ongoing waste management and reduction campaigns conducted in all States [ongoing, SEPA]
- Resource management and environmental studies are integrated into all levels of the nation's education curricula
- Sharing and transfer of environmental information between government, private sector, communities and NGOs through website or online discussion groups
- To have a public which disposes of its waste properly
- Improved mode of communication between all stakeholders

#### How will we get there?

Action	Lead Agency	Time Frame
34. Integrate environmental education into curriculum	SEPA	FY 2014
35. Develop a specific communication plan for informing politicians, judiciary, policy makers to increase awareness of SWM	OEEM	FY 2012
36. Develop a communication strategy for SWM which will identify and use the best communication methods and tools (e.g. contests, posters, ads, community groups, community meetings, etc) to achieve the SWM strategic objectives (i.e., Integrated Waste Management, Capacity Building, Public & political support etc)	OEEM	FY 2012

### **3.6 MEASURING PROGRESS**

Measuring the implementation success of this strategy should be based on national key performance indicators such as the amount of waste generated, amount of waste diverted from landfill (reused, recycled, or composted), number of dumpsites and landfills, level of illegal dumping and littering, number of people qualified in certain areas of waste management, etc. However, there is a lack of baseline data in many of these indicative areas, and very few mechanisms to enable this information to be collected. One of the goals of this strategy is to change this situation and implement these improvements. Until this can be done, a yearly monitoring form (Appendix 2) will be used by relevant lead agencies to report on any initiatives undertaken at the State level.

## REFERENCES

- Ashton, M., and Ricketts, M. (2009) *Regional Initiative for Solid Waste Management in the Pacific Region, Feasibility Study (Phase II, Component 2)*, l'Agence Française de Développement.
- FSM Department of Health and Social Affairs. (2009). *The E-waste Situation in the FSM – Country Report* (Report prepared for SPREP). Pohnpei, FSM: FSM Department of Health and Social Affairs.
- Raj, S. (2000). *Regional Waste Awareness and Education Programme (WASTE)*. Apia, Samoa: SPREP.
- Rose, J. (2009). *Environmental Law in the Federated States of Micronesia: A Review* (Report prepared for SPREP). Retrieved 13 November 2009 from <<http://www.sprep.org/att/irc/ecopies/countries/fsm/62.pdf>>
- WHO EHC. (1996). *Guides for Municipal Solid Waste Management in Pacific Island Countries* (Healthy Cities - Healthy Islands Document Series No. 6). Kuala Lumpur, Malaysia: WHO EHC.
- WHO-WPRO. (2008). *Country Health Information Profiles*. Retrieved 8 December 2009 from <<http://www.wpro.who.int/countries/2009/mic/>>

## Appendix 1 – High-level Implementation Plan

ACTION	LEAD AGENCY	TIME FRAME
1. Recruit one lawyer/prosecutor in the national government	SEPA	FY 2011
2. Review legislation and institutional arrangements for solid & hazardous waste management	SEPA	FY 2012
3. Develop and implement enforcement plans in each country	SEPA	FY 2012
4. Double the EPA staff in each State designated as fulltime enforcement officers	SEPA	FY 2012
5. EPA enforcement officers in all States trained in legal and other procedures	SEPA	FY 2013
6. Create awareness within the judiciary about the seriousness of SWM issues	SEPA	Annually
7. Implement recommendations	SEPA	Start in 2013
8. Formulate a plan to implement an economic instrument for vehicles	SEPA	FY 2012
9. Formulate a plan to implement other appropriate economic instruments	SEPA	FY 2013
10. Establish management systems to ensure that waste management revenues are used for waste management activities	SGOV	FY 2013
11. Identify full/partial funding sources with seed funding from State/National Govt	OEEM	FY 2013
12. Design and conduct a waste stream analysis in each State	SEPA	FY 2011
13. Establish a database at the State level, compiled by National Government	SEPA/OEEM	FY 2013
14. Create SWM Taskforce at the State and National levels to develop SWM	SEPA/OEEM	FY 2012
15. Develop, update and/or complete the State solid waste management plans	SEPA	FY 2010
16. Collect baseline data on waste generation	SEPA	FY 2010
17. Divert and isolate green waste from landfill by encouraging mulching or composting, first at source, and then at the landfill	SEPA	FY 2012
18. Provide economic incentives to encourage local and community-based recycling and waste reduction	SEPA	FY 2013
19. Identify and target potential sources of funding support for recycling programs	OEEM	FY 2010, ongoing
20. Improve and enhance current recycling programs	SEPA	FY 2011
21. Develop long-term contractual arrangements with the private sector	State DT&I	FY 2011
22. Improve waste collection services and private sector engagement	DT&I	FY 2013
23. Examine an equitable user pay system for waste collection as a pilot project	DT&I	FY 2012
24. Implement collection service for bulky waste	DT&I	FY 2013
25. Introduce hazardous waste collection services into atolls	DT&I	FY 2014
26. Implement a vehicle removal project to clean public areas of abandoned vehicles	DT&I	FY 2014
27. Develop and implement landfill plans	DT&I	Start by FY 2010
28. Develop a national medical waste management strategy	SEPA	FY 2012
29. Assess capacity gaps for SWM in FSM against regional benchmarks	OEEM	FY 2011
30. Implement capacity building programmes to address capacity gaps	OEEM	Start by FY 2012
31. Develop a waste management network in FSM	OEEM	FY 2012
32. Develop and implement comprehensive training program	OEEM	FY 2014
33. Offer at least two internships in State waste management agencies to FSM students	SEPA, OEEM, DT&I	Start FY 2011
34. Integrate environmental education into curriculum	SEPA	FY 2014
35. Develop a specific communication plan for informing politicians, judiciary, policy makers to increase awareness of SWM	OEEM	FY 2012
36. Develop a communication strategy for SWM	OEEM	FY 2012

## Appendix 2 – NSWMS Monitoring/Reporting Form

ACTIONS (as listed in the Strategy)	DESCRIBE PROGRESS	DATE OF PROGRESS
2. Review existing legislation and institutional arrangements for solid & hazardous waste management	SEPA developed the terms of reference for a legislative review of solid and hazardous waste and hired a consultant. The consultant's report is expected at the end of 2010	Dec 2009
25. Examine an equitable user pay system for waste collection as a pilot project	Baseline survey was completed in order to prepare for this pilot project. The Baseline survey looked at the socio-economic conditions of the residents in the pilot area and conducted a survey of residents' willingness and ability to pay for waste collection service. The results of this survey are available at OEEM office	Nov 2009
	<p style="font-size: 48px; margin: 0;">SAMPLE ONLY</p>	