DRAFT STRATEGY FOR SOLID WASTE MANAGEMENT IN PACIFIC ISLAND COUNTRIES AND TERRITORIES

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Glossary Definitions for Draft Solid Waste Management Plan

Waste Industry: Any business, institution or organization involved in the collection, transport, storage or processing (for purposes of export to countries with the appropriate infrastructure) of any solid waste for the purposes of recycling and recovery.

Solid Waste: Any garbage, refuse, or rubbish, sludge from any facility involved in the treatment of air, wastewater, or water supply, and other discarded material, including solid, semisolid, or contained liquid or gaseous material, resulting from industrial, commercial, institutional activities and residential or community activities.

Green Waste: Plant debris such as coconut husk, palm fronds, tree branches, leaves, grass clippings, and other natural organic material discarded from yards or gardens.

Kitchen Waste: Food scraps, either from food preparation or leftovers, from households, restaurants and such.

Sludge: Any solid or semisolid wastes generated from any facility involved in the treatment of air, wastewater or water supply. Septic tank sludge or any other individual point source sludge (e.g. pit toilet, VIP toilet) from institutional, commercial, industrial, agricultural or residential sources must be treated before disposal in a landfill, preferably in a wastewater treatment facility.

Solid Waste Management (SWM): A practice using several waste management techniques to manage and dispose of specific components of solid waste. Waste management techniques include avoidance, reduction, reuse, recycling, recovery, and disposal.

Waste Minimization: The reduction, to the extent feasible, in the amount of solid waste generated prior to any treatment, storage, or disposal of the waste.

Health Care Waste: Any cultures or stocks of infectious agents, human pathological wastes, human blood and blood products, used and unused sharps, certain animal wastes, certain isolation wastes and solid waste contaminated by any of the above biological wastes.

SWM Systems: Any organizational structure adopted for the effective administration of SWM activities, and supported by practical, sound and effective SWM legislation, acts, policies, strategies, and regulations.

SWM Infrastructure: All facilities (e.g. landfills, transfer stations, workshops), equipment (e.g. vehicles, rubbish bins, crushers), and public infrastructure (e.g. roads, electrical substations, SWM education programs) necessary for effective SWM.

Hazardous Waste: A waste with properties that make it dangerous, or capable of having a harmful effect on human health and the environment. These wastes require special measures in handling and disposal due to their hazardous properties (e.g. toxicity, ecotoxicity, carcinogenicity, infectiousness flammability, chemical reactivity) and are generally not suitable for direct disposal in a landfill.

List of acronyms

ADB	Asia Development bank
AusAID	Australian Agency for International Development
BPoA	Barbados Programme of Action
CNMI	Commonwealth of the Northern Mariana Islands
CROP	Council of Regional Organizations of the Pacific
EEZ	Exclusive Economic Zone
EU	European Union
FAO	Food and Agriculture Organization
FSM	Federated States of Micronesia
GEF	Global Environment Facility
GEMS	Global Environment Monitoring System
JICA	Japan International Cooperation Agency
JPOI	Johannesburg Plan of Implementation
MDGs	Millennium Development Goals
MEA	Multilateral Environmental Agreements
MOFA	Japanese Government Ministry of Foreign Affairs
NZAID	New Zealand Agency for International Development
PICTs	Pacific Island Countries and Territories
PET	polyethylene terphthalate (a form of plastic)
PIFS	Pacific Islands Forum Secretariat
PNG	Papua New Guinea
POPs	Persistent Organic Pollutants
SIDS	Small Island Developing States
SOPAC	South Pacific Applied Geo-Science Commission
SPC	Secretariat for the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SWM	Solid Waste Management
TOR	Terms of reference
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Program

USEPA	United States Environmental Protection Agency
USP	University of the South Pacific
WHO	World Health Organization
WSSD	World Summit for Sustainable Development

Executive Summary

Waste Management is widely recognised as a major concern for Pacific Island countries (PICs) with the potential to cause negative impacts on national development activities, including tourism and trade, food supplies, public health and the environment. This Draft Waste Management Strategy sets out a long-term programme for addressing waste management issues in the region, so as to avoid these adverse effects.

The draft strategy has been prepared in response to requests to the Government of Japan to provide assistance to Pacific Island countries and territories in this area. A key element of the strategy allows for consultations with stakeholders in the region, including national governments, donors, inter-governmental and non-governmental organisations, with the aim of producing a final agreed strategy. The proposed programme should then be implemented at both national and regional levels. It is also intended that the Strategy should provide a mechanism for coordination of the future activities of donor agencies with interests in this area. Foreign aid is one of the limited resources available to the Pacific and there are obvious benefits in ensuring the integration of any efforts to get the maximum possible benefit from this resource.

The need for effective waste management

The generation and disposal of wastes has direct and indirect linkages to economic development. Waste materials represent wasted money, in terms of the original cost of the materials, the costs of disposal, and also the potential value of the material as a recyclable and reusable resource. Poorly managed wastes can have negative effects on tourism, by detracting from the "Pacific Paradise" image promoted by most PICTs, and by association with health warnings about infectious and vector-borne diseases. There is the potential for contamination of food supplies, which can have impacts on local markets or revenue from export crops. And there are numerous health and environmental hazards that arise when wastes are poorly managed and disposed.

Conversely, the benefits from good waste management can include reduced raw material costs, enhancement of the tourism experience, reduced health care costs. Effective measures now will also avoid the need for expensive clean-up operations in the future.

Key elements of the strategy

The strategy is based around the following three major strategies:

- Institutional activities by all key stakeholders, including policy development, capacity building, information exchange, public education and awareness.
- Improvement and upgrading of existing waste management and disposal systems
- Development and/or enhancement of waste minimisation activities such as recycling, so as to reduce the quantities of wastes being produced at the national level

The proposed activities are intended to assist PICs in moving towards the development of effective waste management systems within their countries, and in accordance with their specific needs. The programme is intended to be implemented over a period of ten or more years, in recognition of the fact that many of the required changes will only be achieved through gradual improvements over long periods of time. In addition, emphasis has been given to the development of activities embodying some of the key requirements for sustainability, including the use of appropriate technologies and management systems, and with a strong focus on self-help and in-country capacity building.

Coordination Mechanism

It is proposed that the implementation of this plan be coordinated through the Secretariat of the Pacific Regional Environment Programme (SPREP). The key elements of the coordination mechanism will include the provision of technical advice and support, information exchange, and the facilitation of communications between the various stakeholders, including governments, donors and intergovernmental organisations. All of these activities are consistent with the SPREP mandate and its established roles within the region.

Recommendations

Pacific Island governments have all recognised the importance of waste management as an issue for the region, and the need for positive action has been noted on numerous occasions. However, little progress will be made until the issue is acknowledged and actions endorsed at the highest political levels. It is recommended that governments demonstrate their commitment to action through endorsement of the following policy:

> *Pacific Island governments recognise the importance of sound waste management practices to their environmental, economic and social development, and undertake to address current problems through implementation of the proposed Waste Management Strategy for Pacific Island Countries and Territories. In doing so, PICTs undertake to:*
>
> 1. *provide the necessary resources and incentives for development and implementation of national waste management policies and activities;*
> 2. *encourage and support appropriate waste minimisation activities so as to achieve measurable reductions in the quantities of waste that need to be disposed; and*
> 3. *establish or upgrade waste disposal facilities within their countries that comply with minimum agreed regional–performance standard, guidelines and international commitments*

1. Introduction

1.1 Background

The Pacific islands region encompasses a wide variety of geographical features, populations, cultures, economies and politics within its 22 countries[1] and territories[2]. It is spread over an area of 30 million square kilometers; almost one sixth of the earth's surface and three times larger than either the USA or China. More than 98% of the area consists of ocean, with the remaining 2% made up of about 7500 islands, only 500 of which are inhabited. The total population of the region is about 8 million people, with an overall annual growth rate of about 2.2% (SPC, 2002), although of this total 5.1 million are from Papua New Guinea.

Most of the countries were colonised until recently, and this has had lasting effects on the social, cultural, political, economic and development status of each island state. The Pacific Islands often are considered as covering three sub-regions; Melanesia (west), Polynesia (southeast) and Micronesia (north), based on their ethnic, linguistic and cultural differences. The physical sizes, economic prospects, available natural resources and political developments within these sub-regions suggest that the groupings are still useful, although not necessarily ethnically correct.

Just as varied as the geography of the Pacific Islands are the population distributions and demographic trends in the region, with populations ranging between the extremes of Papua New Guinea (5.1 million) and Pitcairn Islands (47). The population of the Commonwealth of the Northern Mariana Islands (CNMI) has been growing annually at 5.5% in recent years, while Niue's population is decreasing at a rate of 3.1%. The current regional growth rate is approximately 2.2%. More than half the region's population are minors. The generally small populations are further affected by international migration. For example, there are more Cook Islanders, Niueans, and Tokelauans living overseas than in their home countries. An increasing number of Tuvaluans are following this trend (SPC, 2002)

Information on land area, EEZs and populations is given in Table 1.1.

Table 1.1: EEZs, Land Area and Population of Pacific Island Countries (SPC, 2002)

Country/Territory	EEZ (km^2)	Land Area (km^2)	Estimated Population (2001)	Population Density (Persons/km^2)

[1] *Countries:* Cook Islands, Federated States of Micronesia (FSM), Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu

[2] *Territories:* American Samoa, Commonwealth of Northern Mariana (CNMI), French Polynesia, Guam, New Caledonia, Pitcairn Islands, Tokelau, Wallis and Futuna.

American Samoa	434,700	197	65,600	333
Cook Islands	1,830,000	240	18,900	79
Federated States of Micronesia	2.978,000	710	111,000	156
Fiji	1,290,000	18,272	820,200	45
French Polynesia	5,030,000	3265	237,500	73
Guam	218,000	541	157,700	291
Kiribati	3,550,000	690	85,900	124
Marshall Islands	2,131,000	180	57,700	320
Nauru	310,000	21	11,800	561
New Caledonia	1,230,891	19,103	221,000	12
Niue	390,000	259	1900	7
Northern Mariana Islands	777,000	471	78,800	167
Palau	629,000	460	19,500	42
Papua New Guinea	3,100,000	462,243	5,100,000	11
Pitcairn	800,000	5	47	9
Samoa	120,000	2935	174,100	59
Solomon Islands	1,340,000	27,556	432,300	16
Tokelau	290,000	10	1500	150
Tonga	700,000	699	100,500	144
Tuvalu	900,000	26	10,100	388
Vanuatu	680,000	11,880	196,500	17
Wallis & Futuna	242,700	255	14,600	57

1.2 Waste Management in the Pacific Islands

Waste Management is widely recognised as a major concern for PICTs with the potential to cause negative impacts on national and territorial development activities, including public health, the environment, water, tourism and trade, and food security. Environmental pollution that comes about due to the improper management of wastes is one of the major threats to sustainable development in the Pacific islands region. The trans-boundary nature of much marine, liquid and hazardous waste pollution requires a coordinated and comprehensive approach to both assessment and control – a truly *integrated* approach. Without adequate measures to combat the growing sources and extent of pollution, the Pacific islands' efforts to maintain healthy societies, to stimulate sustainable development and new investment and to build a sustainable future for its people may be permanently undermined. Immediate concerns to the PICTs include:

- increasing quantities of solid waste

- the limited land areas in small atoll islands
- the population density that exist in some PICTs, especially the atolls
- the limited availability of appropriate infrastructure
- the lack of controls on chemicals imported into the region, and
- the limited capacity to manage the range of pollutants.

In addition there is need to shift long held attitudes and behaviours pertaining to waste generation and management at all levels.

The disposal of wastes continues to be a worldwide problem and the Small Island Developing States (SIDS) of the Pacific increasingly shares in this problem. Waste management was identified as a strategic issue for the sustainable development of Small Island Developing States including PICTs, at the UN General Assembly Special Session on the Sustainable Development of SIDS held in September 1999 in New York and was again identified as a strategic issue for addressing in the Mauritius Strategy for the further implementation of the Programme of Action for the sustainable development of Small Island Developing States (SIDS) in January 2005.

Waste management has also been identified as a priority issue within the region. The architects of the Pacific Plan for strengthening regional cooperation and integration have recognized it as one of the priority regional issue and have included it in the Environment Chapter under the Sustainable Development section. It has also been recognised in the most recent Action Plan for Managing the Pacific Environment, which was produced by SPREP in 2004 after extensive consultations with SPREP member countries. It is also reflected in "The Initiative for the Improvement of Waste Management in the Pacific Region" which resulted from the Miyazaki Initiative endorsed by the leaders of Forum island countries at an Island Summit (PALM 2) held in Miyazaki, Japan on 22 April 2000. Work on the Miyazaki Initiative commenced in 2001 as a joint endeavour between the Government of Japan and Pacific island countries, and has provided a sound foundation for the development of longer-term programmes under this strategy. It was again a strategic issue for addressing at the leaders of Forum island countries at an Island Summit (PALM 3) held in Okinawa in 2003 where a need for a strategic regional approach to the issue was discussed and endorsed.

Waste management in the Pacific region was also the subject for a Type-II Initiative presented at the World Summit on Sustainable Development in Johannesburg, September 2002. At that time the Initiative was only presented in a conceptual form, and little work has since been done on developing it further. However, the general principles given in the Initiative have been reflected in the development of this Plan.

This regional SWM strategy sets out a long-term programme for addressing these waste management issues in the region, especially the solid waste issues, so as to avoid these adverse effects.

1.3 Vision

A healthy, and a socially, economically and environmentally sustainable Pacific for future generations

1.4 Goal

The goal of this strategy is ***for PICTs to adopt effective and self-sustaining SWM systems to minimise the negative effects on public health, the environment, the economy and the way of life***.

The importance of maintaining and improving the quality of life in the PICTs both at the national and regional levels is one of the major goals for a healthy and sustainable Pacific and cannot be expressed strongly enough. The region in its efforts is committed to pursuing this goal based on competitive and progressive economies with sustained economic growth, improved and enhanced education and health standards, and strengthened cultural and traditional values.

All categories of waste that exist in the region, immediately pose a threat to the overall well-being and health of the people in the Pacific and its natural environment that support its endeavours for economic growth and prosperity. The region is committed to putting into place effective, manageable and deliverable waste management systems to enable PICTs to reduce the amount of waste that is currently generated on the islands.

1.5 Objectives of the Strategy

The objectives of this regional SWM strategy are to assist PICTs put into place:

- effective and adequate waste management systems and practices
- appropriate waste management infrastructure
- practical, sound and effective waste management policies, legislation, and regulations
- appropriate communication strategies to support effective waste management activities
- mechanisms that will support the SWM systems in a financially and economically sustainable manner
- appropriate mechanisms to support research and development for SWM
- appropriate capacity building mechanisms to assist and enable the Pacific islands' people manage their waste in an environmentally sound manner.

1.6 Guiding Principles and approaches

The regional SWM strategy will be guided by the following principles and approaches:

- Active involvement of all stakeholders through a comprehensive consultative and participatory approach
- Personal and corporate responsibility including the user/polluter pay approach, the extended producer responsibility principle and other economic incentives

- Waste segregation and minimisation both at source and during SWM with the ultimate goal of moving to a zero waste system
- Integrated communications
- Holistic and precautionary approach, mindful of future demographic trends and technological advances.

1.7 Technical and geographical scope and timeframe

This regional strategy is directed at the management of domestic, commercial and industrial solid wastes, including hazardous wastes from public utilities such as hospitals and other health care institutions in the entire Pacific islands' region. It also includes the management of special and difficult waste such as scrap metal and asbestos. It does not address the management of municipal wastewater and other related liquid wastes, which are already being targeted through other regional initiatives, such as the Pacific Wastewater Framework for Action (SOPAC, 2001). Furthermore, it does not address the management of chemical waste, which are addressed through national initiatives such as the Stockholm Convention National Implementation Plans and other existing chemical management policies.

The geographical scope of this regional strategy is the Pacific islands' region, defined as the islands and the coastlines of the 21 PICTs, which are members of SPREP. SPREP island members are generally put into two categories: the 14 independent and semi-independent countries (Pacific island countries) and seven territories (Pacific island territories). In addition to the SPREP island members, there are four metropolitan developed countries[3], which are also members of SPREP. While they do not constitute the Pacific islands region, they play a vital role in supporting the activities of SPREP.

The regional strategy is intended to assist PICTs in progressively moving towards the development of appropriate solutions and their related effective waste management systems and practices within their countries and territories, and in accordance with their specific needs. The programmes are intended to be implemented over a period of ten or more years, in recognition of the fact that many of the required changes, whether individual, institutional or systemic, will only be achieved through gradual improvements over long periods of time. This strategy will be reviewed from time to time where appropriate to accommodate future and changing trends. In addition, emphasis has been given to the development of activities embodying some of the key requirements for sustainability, including the use of appropriate technologies and environmental practices, and management systems, and with a strong focus on self-help and in-country capacity building.

1.8 Process of formulation and management/coordination

At the Pacific Islands Leaders Meeting (PALM) with the Government of Japan in 2003, it was endorsed that the formulation and implementation of this Strategy be coordinated

[3] Australia, France, New Zealand and the United States of America

through SPREP, in collaboration with the Pacific Island Forum Secretariat (PIFS) and the Japanese Government Ministry of Foreign Affairs (MOFA). Key elements of the coordination mechanism included the provision of technical advice and support, information exchange, and the facilitation of communications between the various stakeholders and support for actions to be taken to address national waste disposal cases. This was in recognition that the success of this plan will depend to a large extent on the amount of involvement and participation shown by all stakeholders, the amount of cooperation between PICTs, and the degree to which it is used by donors in guiding their bilateral and regional activities. All of these activities are consistent with the SPREP mandate and its established roles within the region.

It was also envisaged that the formulation process would also include an extensive consultative process throughout the Pacific region in the development of the strategy with sub-regional waste consultative meetings serving as the major avenue or route to engage stakeholder input. These meetings were planned to bring together at least two or three representatives from PICTs to discuss the different components of the draft strategy and in doing so put forward their national and territorial issues that were then captured and included in the final version. These meetings were held during March-June 2005.

SPREP in addition to its coordinating and facilitating roles, also undertook an internal consultation exercise where integrated waste management team meetings were held to allow relevant officer to contribute to the refining and revising process of the draft strategy. These staff members contributed to the sections of the document where they could contribute to in its implementation. Once this was completed, the revised draft strategy was then sent out to all the PICTs for their perusal and commenting before the consultative sub-regional consultation meetings in March-June 2005.

It was recognised that all PICTs do have some form of waste management plans and strategies with some ongoing programmes and activities. The consultative process was an opportunity to for the PICTs to highlight and bring out the major solid waste issues in the Pacific islands region.

More than 60 country and territory representatives participated in a series of four sub-regional consultation meetings to:

- Identify key issues associated with the generation, collection and disposal of wastes at the national levels;
- Consider the management and use of resources in the context of environmental sustainability;
- Identify suitable tools for informing and educating the communities;
- Identify who should be responsible for meeting the cost associated with the generation of waste; and
- Establish and reinforce the role of SPREP and the national and territorial government in waste management.

After all the national and territorial issues were identified and incorporated into the draft strategy, the meeting of the chairpersons of the sub-regional consultation meetings then

agreed on the final document before it was presented to the 16th SPREP Meeting in Apia, Samoa for endorsement and approval.

1.9 Stakeholder Identification

The success of the formulation process of the regional strategy and its ultimate implementation depends very much on the involvement and participation of the stakeholders. The major players in the formulation of this strategy were the political leaders, the lead national Government agencies for waste management, legislators, operators/practitioners of waste managements systems and practices, (including collection and disposal operators, shipping agents, recycling and composting operators), community campaign coordinator, traditional leaders and groups, landowners, business houses and industries, NGOs and CROP agencies, donors and the general public of the PICTs.

Due to the many different aspects of waste management issues addressed in the strategy, a broad based approach focusing on:

(a) Institutional activities, including policy review and development, capacity building, information exchange, and integrated communications
(b) Improvement and upgrading of existing waste management and disposal systems and practices nationally and between countries; and
(c) Development and/or enhancement of waste segregation and minimisation activities such as recycling, so as to reduce the quantities of wastes being generated is recommended.

It is this broad based approach that requires the involvement and participation of the various stakeholders listed above.

2. Waste Management in PICTs – Past to Present

2.1 Background

Traditional waste management practices both within and outside the Pacific Islands' region have evolved from the need to maintain public health. In recent times, this concept has been expanded to include the need to maintain the health of the natural environment as well in recognition of the intricate relationship between the health of the natural environment and the long-term health and well-being of the people. Furthermore, it is also recognised that one of the three pillars for acquiring sustainable development at the national level is *environment* – more specifically a healthy environment.

Waste management has been the subject of a number of national, bilateral and regional programmes in the region over the past 5 to 10 years. However, most of these activities have been carried out in a relatively uncoordinated way, because there has been generally a lack of any overall national or regional strategies. There are numerous examples of projects in the region that have duplicated the work of others, and/or failed to achieve sustainable outcomes. Some of these problems might have been avoided had the programmes been designed and implemented within the framework of an overall national or regional Strategy. Also waste has not appeared to be priority at the national level and has resulted in little participation across agencies. The most recent regional and national waste management activities in the region are summarised in Appendix 1.

2.2 Statement of intent and commitment

The PICTs, in recognizing that improper waste management has the potential to cause negative impacts on national development activities, including public health, the environment, water, tourism and trade, and food security, are committed to taking the necessary steps to address this issue both at the regional and national levels so as to avoid the adverse effects. This regional strategy sets out a long-term programme for addressing waste management issues at the regional level while at the national level, most PICTs are now recognizing waste management as a priority issue and are committed to addressing it by investing national resources into this sector while others are taking the initial steps to addressing this issue. These national commitments are listed in Appendix 1.

2.3 Cross-cutting issues

The management of solid waste involves the use of several techniques to manage and dispose of the specific components of the waste stream. To do this effectively, the different management activities have to be supported by practical, sound and effective SWM legislation, policies, strategies, and regulations and therefore require an integrated and broad based approach. While there are clearly different components of a waste management system, there are elements of the operations of these components that are

common to all: the cross-cutting issues. These cross-cutting elements include economic issues, integrated communication, and capacity building.

There are many programmes and activities that can be developed for all the specific areas in the strategy. This needs to be appropriate, achievable and sustainable in light of the different island situations. Due to their cross-cutting natures, their overall plans have been developed independently and can be applied to the various work areas, where appropriate, in this strategy.

2.3.1 Economic Issues

A critical issue in the waste problems faced by the Pacific is currently a lack of general appreciation of the impacts of waste, not only physically, but also financially and economically in PICTs. Under the International Waters Project at SPREP efforts to improve the regional understanding of the economic impacts of waste are currently underway in some PICTs. For instance, an economic valuation of waste is presently underway in Tonga. Among other issues, the valuation seeks to identify the costs to households, industry and the government of waste generation and related pollution in Tonga. This work, together with an integrated communications strategy, is intended to raise the profile of waste issues and increase appreciation of how sometimes abstract problems of solid waste can genuinely harm household and other stakeholders.

As will become apparent in the following sections, one of the major contributors to the current problem of waste in the Pacific is the limited access to region-specific information that enables use of a range of incentives (policy and institutions) to sustain and manage resources efficiently. For instance, only limited use has been made of:

- 'demand' management tools that deter consumers from purchasing products that generate place an excessive burden on the waste sector; and
- 'supply' management tools that encourage producers and importers to minimise the amount of waste that they generate and/or import.

This general lack of demand and supply incentives across the Pacific has the effect of limiting personal and corporate responsibility to properly manage waste. Equally importantly, they harm the ability of PICTs to finance waste management and disposal in the long term.

2.3.2 Education and Awareness programmes

Waste management programmes undertaken in the region in the past 5 to 10 years were largely comprised of education and awareness activities that resulted in the production of numerous resources for formal and non-formal education. In most cases these materials did not reach the target audience and in cases where they did, it resulted in raising community awareness and understanding of issues related to sustainability. However, these activities were limited in their ability to foster behaviour change. Many of these education programmes are not targeted at different people involved in the different stages of the waste cycle.

It is widely agreed that at all level of society, changes in behaviour are required in order to decrease the amount of waste being generated and disposed of at the landfill. Communication programmes, such as social marketing, focus on changing attitudes and behaviour surrounding waste generation, by addressing perceived barriers to sustainable living habits, and by offering incentives and rewards to stimulate and sustain interest in a particular behaviour. These programmes not only raise awareness of issues (such as unsustainable living practices), but they encourage the adoption of new behaviours that lead to taking responsibility for managing waste.

An integrated communications strategy within a national strategy can provide information on the appropriate communication tools to be used to reach the various stakeholders/audiences. The role of communications is discussed in Section 3.2.

2.3.3 Capacity Building

It is generally accepted that some form of waste management system does exist in all the PICTs but how effectively these systems are operated and managed depend on the capabilities of the personnel in these countries. In many cases, there is a limited pool of qualified or appropriately trained people looking after these systems and consequently they may not be effectively operated or managed. This problem is compounded by the high turnover of trained staff within the relevant agencies at the national level.

In recent times, the issue of Solid Waste Management has been accorded greater attention and recognition by governments of PICTs, but one of the more prominent barriers to realizing effective, efficient and sustainable solid waste management in the region is the limited or lack of capacity existing within national systems, institutions, communities and individuals. Various studies, assessments and reviews have highlighted the different areas of capacity needs and a range of government and donor-funded interventions have been designed and implemented to address these needs. Recently there has been the recognition of the need for the development of national and regional strategies that can be used to plan, implement and monitor future work.

The Government of Japan through the Japan International Co-operation Agency (JICA) has been assisting the region in building expertise in the area of waste management under the JICA/SPREP programme on municipal solid waste management (Miyazaki Initiative, 2001-2005). The programme was designed to allow PIC participants to undergo an intensive training course in waste management, demonstration projects (e.g. composting) and the development of guidelines for landfill design, operation and management, and the incremental improvement at existing landfills. Over the past 4 years since 2001 a total of 52 PIC participants have undergone this course.

The second part of JICA assistance has been in undertaking pilot projects to improve solid waste management facilities and practices at the national level. Currently these activities have been limited to the improvements of the Tafaigata and M-Dock landfills in Samoa and Palau respectively using the “Fukuoka Method.”

Capacity building remains an important priority for PICTs and further coordinated support is needed to address PICTs special needs, including the lack of capacity in data/information management systems.

2.4 Policy and legislation

Although a number of PICTs are currently developing appropriate environmental legislation, very few have appropriate policies, legislation, regulations and sound implementation strategies that address waste management from an environmental management perspective. Some laws that address waste originate from outdated and fairly generic legislation, such as Public Health Acts, WHO guidelines and legislation modelled on developed country laws. The regulation of waste is typically spread among a number of agencies whose jurisdictions, roles and responsibilities are ill defined. The lack of a consolidated regulatory approach to waste management results in regulation on an ad hoc, sectoral basis. Some of the existing waste related legislation needs to be reviewed because of the lack of clear and concise mandates. Currently, waste related cases that come before the courts are not effectively dealt with because the penalties are low and therefore insufficient to act as effective deterrents. There is also a lack of clear procedures for sampling and instituting legal proceedings. As a result the enforcers are often reluctant to commit the time and expense of instituting legal proceedings against offenders. On top of this prosecution is made difficult because such cases have to compete with criminal cases for the courts time. This problem is exacerbated in PICTs that are spread out over vast distances and have inadequate transportation systems.

Institutions that regulate waste typically lack the capacity to effectively enforce the regulations. The lack of capacity is due to:

- Insufficient and unsustainable financial resources
- Insufficient staffing,
- Limited appropriately trained staff,
- Limited infrastructure
- Inadequate surveillance, monitoring and enforcement.

2.5 Waste Generation and Minimization

The first step to any waste management strategy is to develop an accurate waste inventory or database on the different types of waste that are generated both at the national and regional levels. This inventory provides the designers the necessary baseline information they need to effectively formulate their plan.

In the Pacific region, the JICA/SPREP training course over the last five years have built in a component that trains the participants on the art of carrying out waste audits or waste stream analysis to investigate the composition of the generated waste at the national level. There is the need for the use of a common methodology for audits and a guide on their regularity. Resources need to be committed to support such activities. Follow up work have shown that while some audits have been carried out to develop or update inventories at the national and community levels the information is not easily accessible. PICTs that

have undertaken waste audits include Kiribati, Marshall Islands, Nauru, Palau, Tonga, Tuvalu, and Samoa.

On the regional scale, the EU/SPREP WASTE project (1998-2001) provided some information on waste composition and generation rates at the national level but these were only done in eight Pacific urban centres and not carried out over a long enough period of time to get a true picture of the situation on the ground. This has been reported by Raj (2000), and is summarised in Table 2.1 below. This data came from surveys carried out in 1999 by a consultant under contract to SPREP. The areas surveyed were Lautoka, (Fiji), South Tarawa (Kiribati), Port Moresby (Papua New Guinea), Apia (Samoa), Honiara (Solomon Islands), Nuku'alofa (Tonga), Funafuti (Tuvalu) and Port Vila (Vanuatu). The data is limited in that only about 30 to 50 households were covered in each area and was conducted carried out over a two-week period. Despite the limited coverage the surveys provide a useful snapshot of the types of wastes being generated within parts of the region, and their overall generation rates.

Two key points to note are the high proportion of organic or biodegradable, materials in the waste stream and the presence of potentially hazardous materials. The proportions of paper, plastics, glass and metals reflect the increasing importance of these materials as disposal issues for the region. Disposable nappies/diapers are another current concern, although these are not specifically shown as they were classified as part of the paper component in the survey methodology. Other problematic wastes such as plastic bags and food wrappers should also be considered as specific categories in a waste survey.

Table 2.1: Composition and Generation Rates for Domestic Solid Waste in 8 Pacific Urban Centres, 1999 (Raj, 2000)

Waste Component	Range (wt %)	Average (wt %)
Paper	5.9 - 31.1	12.3
Plastic	5.2 - 16.8	9.7
Glass	2.7 – 13.6	6.2
Metals	3.2 – 12.3	7.6
Biodegradable	47.2 – 71.0	58.2
Textiles	1.5 – 6.1	2.9
Potentially Hazardous	0.1 – 2.0	0.8
Construction/demolition	0.0 – 7.7	1.8
Other	0.0 – 2.5	0.7
Bulk density (kg/m^3)	120 - 209	164
Generation rate (kg/capita/day)	**0.33 – 1.10**	**0.66**

Based on the countries surveyed the overall waste generation rates varied from 0.33 to 1.10 kg/capita/day, with the highest rates being recorded for Apia, Nuku'alofa and Lautoka. These generation rates are quite comparable with those reported for many other urban centers around the world. However, of greater concern is the fact that they indicate significant increases in generation rates reported previously for the region. For example, the data for Apia shows a 112% increase over measurements carried out in 1993. This increase has been attributed partly to overall increases in prosperity and an increasing

preference amongst Pacific Islanders for imported foods and other consumer goods (Raj, 2000).

The scale of waste generation – and limited funds to manage this – arises in part from the absence of economic incentives on a number of fronts. Critically there is limited use in the Pacific of economic instruments to:

1. Minimise the generation of waste at source so that PICTs can minimise the amount of waste that needs to be recycled and discarded;
2. Maximise the amount of waste transferred to reuse or recycle schemes, thereby minimising the volume of waste having to be sent to landfill etc.;
3. Efficiently and effectively manage residual waste disposal and storage.

Hospitals generate large amounts of waste that fall into different categories. Health-care waste can also originate from other sources, such as emergency medical care services, clinics, transfusion or dialysis centres, laboratories and blood banks. A large percentage of the waste produced is non-risk or general health-care waste, which is comparable to domestic waste. It comes mostly from the administrative and housekeeping functions of health-care establishments and may also include waste generated during maintenance of health-care premises. The remainder of the health-care waste is regarded as hazardous and may create a variety of health risks and thus must be specially treated. A small portion of this hazardous waste is of an infectious nature. Other types of waste include toxic chemicals, cytotoxic drugs, and flammable and radioactive waste. PICTs, especially small atolls have difficulty disposing such waste resulting in stockpiles posing threats to human health and the environment. Therefore there is an urgent need to address this problem.

2.5.1 Segregation and Minimization of waste

Currently very limited information about waste segregation and minimization at source is available in the region and this is attributed to a number of reasons. In line with the goal and objectives statements, solid waste management ideally should be 'self sustaining'. Accordingly, the segregation and minimisation of waste would need to be nested within a policy setting that support alternative methods and creates incentives while funding its management. Unfortunately, the economic instruments and policies needed to generate these incentives are limited in application in the Pacific. This is surprising given that, where they have been used in the region (most commonly in the glass and can recycling arena), they have frequently been successful and contributed to improved waste management funding. The use of economic instruments (and the policy and institutional framework to support them) is an opportunity that needs to be explored in the Pacific.

An obvious technical option for waste minimisation in the Pacific is the use of composting, mulching and other organic waste treatment activities to deal with the high proportion of biodegradable, or green waste. Various forms of composting have been traditional to Pacific Island societies, where historically the only waste produced was biodegradable. Household composting is being widely promoted throughout the region with varying degrees of success. However much work remains to be done to establish this

as the preferred approach for organic waste management in the Pacific. Other options such as worm farming have also been developed but are yet to materialise.

In addition to the limited application of the economic instruments and policies, the region in general lacks the necessary infrastructure support such as transfer and collection stations, and integrated communication strategies that promote and encourage waste minimization activities. These all contribute to the ineffective waste minimization activities at the national level.

2.5.2 Waste recycling

Waste recycling is a long established practice where waste is converted back to reusable material. In the PICTs this practice is limited only to a few waste materials, largely driven by the economic value of the recycled material and other social and technical factors. These materials include aluminium cans, glass bottles, scrap metal, certain plastics and paper

Insufficient funds within the waste management sector limit the development of necessary infrastructure and resources for efficient recycling of waste. Accordingly, two major technical obstacles to effective and efficient waste recycling in PICTs are the lack of in-country recycling and re-processing facilities, and the high cost of shipping recyclable materials elsewhere due to the geographical isolation of many of the PICTs. These obstacles are compounded by the absence of a regionally orientated or coordinated recycling mechanism although some PICTs have successfully "exported" recyclable material to recycling companies in Asia, Australia and New Zealand. The small populations of most PICTs are another significant factor in that most conventional recycling and processing operations are only viable with a much larger population base. In addition, there are a limited number of PICTs with specific or integrated strategies that address waste minimisation activities. The general principles however may be picked up quite effectively in a national waste strategy.
Despite the above, there are a few types of individual waste that have been effectively recycled in the PICTs and these activities are summarised in Appendix 2.

2.5.3 Waste Collection

Most PICTs have organized collection systems for the main urban areas though limited to the rural areas. However, many of the collection systems are uncoordinated and poorly operated due to a number of reasons including:

- Limited availability of appropriate equipment for collection
- Lack of proper guidelines and supervision
- Limited trained and committed personnel to effectively and regularly collect the waste
- Limited availability of supporting infrastructure such as transfer stations
- General lack of awareness and education on the importance of waste segregation at the household level and their collection

In many PICTs, segregation of health care waste at source does occur with the general non-risk waste collected as part of the municipal waste collection system while the hazardous waste is treated by incineration at specially designed facilities usually managed by the health authorities. The residual waste from the incineration process is either taken to the common disposal facility or buried. However in some PICTs, health-care waste is not effectively segregated into solid wastes and consequently all either end up in the incinerators or in the disposal sites.

2.5.4 Waste disposal

Most PICTs have designated disposal sites for household and municipal waste but most of these sites are currently operating well below the standards recognized internationally as the minimum requirements for sanitary landfills. (Sources for minimum requirements) The availability of suitable land is a major limitation, especially on coral atolls, where disposal on the edge of the reef or lagoon is usually the only available option. This is less of an issue in the high island countries but even here the land is not well suited to waste disposal because of the porous nature of the soils, and the high dependence in most countries on ground and surface water supplies. Availability of suitable land is also a problem throughout the region because of the customary approaches to land tenure, which places ownership in the hands of individuals or tribal groups. In addition obtaining suitable land is also problematic due to negative perceptions over past operations of solid waste disposal sites.

Some PICTs are implementing programmes to improve their disposal facilities by upgrading existing one or closing sub-standard dumps and developing new improved facilities. For example, the open dump at Tafaigata on Upolu Island in Samoa was successfully converted and upgraded recently into a sanitary landfill using the semi-anaerobic system which is also referred to as the Fukuoka method, while on Funafuti in Tuvalu, an AusAID project has achieved the remediation of an old burrow pit and planning is underway for the development of a new improved landfill site under an ADB project. In Fiji a European Union project recently completed a new landfill facility at Naboro while CNMI now has a fully compliant municipal solid waste landfill. Cook Islands recently commissioned their newly built landfill and are in the process of closing down the old dump while Tonga is in the implementation phase for the building of their sanitary landfill.

Despite these developments however, landfill disposal will remain as problematic for the region, and real progress will only be made when PICTs begin to find ways of drastically reducing their waste generation rates as well as diverting the generated waste to alternative processes such as recycling and composting rather than landfilling them.

In many of the PICTs, waste management responsibilities are spread across multiple agencies, in many cases overlapping each other's responsibilities. These generally create confusion over who is responsible for what and results in the services being ineffective – the coordination and enforcement mechanisms become very difficult to administer and/or look after. In nearly all these cases, the individual national agencies simply administer

their components of the waste management system in isolation and do not generally coordinate their work with other government agencies for the effective management of all aspects of waste management operations. The need for a more coordinated approach for waste management at all levels is essential and highly recommended.

One of the key problems in the matter of waste disposal in PICTs is the lack of economic incentives for waste separation and landfill/disposal management. The lack of demand and supply management means that more waste goes to the waste stream than is absolutely necessary and less finance is generated to manage that excessive waste load. Some countries do apply some demand management tools to limit waste but they form a minimum and the tools are used sparingly.

2.6 Waste Industry

The waste industry in the Pacific region is very much in its infancy but is likely to develop in the near future. With the involvement and participation of donors and the private sector, the region is slowly developing the requisite infrastructure that is needed for such industries like recycling of aluminium cans, glass bottles, lead from wet-cell batteries, certain plastics like PET, paper etc. However, most of the PICTs in general lack the requisite legislation or the incentive mechanisms to support an industry of this sort. The private sector is also very instrumental in putting in place the mechanisms that are needed to export the recyclable materials to overseas markets. Like any national activity, building legitimacy through rulemaking supported by data is critical to establish the legal foundation needed to build a sustainable waste management program.

In addition to the above, there is also limited specialised waste management companies or personnel that can operate and administer the overall waste management systems in the countries in an integrated manner. In spite of this, there are some individual PICTs, and in some cases sub-regional areas like the North-West Pacific, who have put in place coordinated and planned activities that are progressing the work of waste management and recycling but these efforts are generally conducted in collaboration with their local private sector and partners overseas where an advanced waste industry does exist. These activities usually involve local collection of the recyclable material, which are then packed into containers that are shipped to the recycling partners overseas for recycling. Some of these activities are outlined in Appendices 1 and 2.

The limited availability of the necessary infrastructure to support recycling of course reflects in part the lack of an integrated waste management system that combines funding needs, compliance and enforcement, with incentives to change behaviour. Some countries do make use of integrated strategies (Kiribati's recent recycling bills is a good example) although these countries are in a minimum and the integration is currently only used to a limited extent. More use could be made of economic incentives to recycle.

In the case of waste oil, there have been instances where the waste oil from some countries in the region have been successfully transported to another country in the region where they are used locally as a supplementary fuel in power stations, and until

recently, some countries were sending their waste oil to Fiji for use as a supplementary fuel in a steel mill. French Polynesia has recently started to ship waste oil to New Zealand. There are high costs involved in shipping waste oil to other countries for disposal, consequently other options should be investigated. PICTs should be encouraged to put in place arrangements for transportation, storage and disposal of such waste. Another current limitation in general is the limited awareness of the oil-recovery services and any organized in-country collection systems. Some countries are considering introducing a system of import levies to pay for the cost of shipping and disposal.

2.7 Funding requirements and mechanisms

In line with the goal and objective statements, waste management in the Pacific should ideally be self-sustaining both economically and financially. However, waste management is a costly affair. It involves the funding of:

- Physical waste management – collection of waste, conversion of waste (recovery, reuse, recycling) and ultimately, disposal of waste and its oversight;
- Institutional waste management – establishment and implementation of rules and processes by which to manage waste – creation and enforcement of legislation, monitoring, coordination by different agencies, education and so on.

There have been recent moves to introduce systems in the Pacific that enable governments to better fund certain types of waster management. In Kiribati, for example, the national government has recently introduced new legislation to impose tariffs on the import of containers for soft drinks and used lead acid batteries. The revenue raised is intended to financially maintain recycling systems while at the same time acting as a deterrent or disincentive for the demand of plastic packaging. Similarly there have been a number of moves to enable local communities to better manage their own waste. For instance, the IWP at SPREP works in a number of countries to establish processes for local communities to learn to minimise waste through composting.

Despite these efforts, most solid waste initiatives in the PICTs are substantially assisted by donors. This is particularly in the case of the establishment of large infrastructure projects by landfill construction. However, this reliance on overseas funding is not reliable in the long term as it hinges on the continued support and interest of donors.

On the other hand, it is difficult for many PICTs to fund their own waste management initiatives, due to budget shortfalls, particularly in order to finance major solid waste construction projects. The establishment and operation of waste collection services, for instance, requires funding that is limited in the government. However, users are frequently reluctant to pay for services that have hitherto be provided for free. Alternatively, where waste management services are poor, many governments face a ‘catch 22’ situation where consumers (firms and residents) despair of poor collection services and refuse to pay more for improvements while governments cannot improve systems without more money.

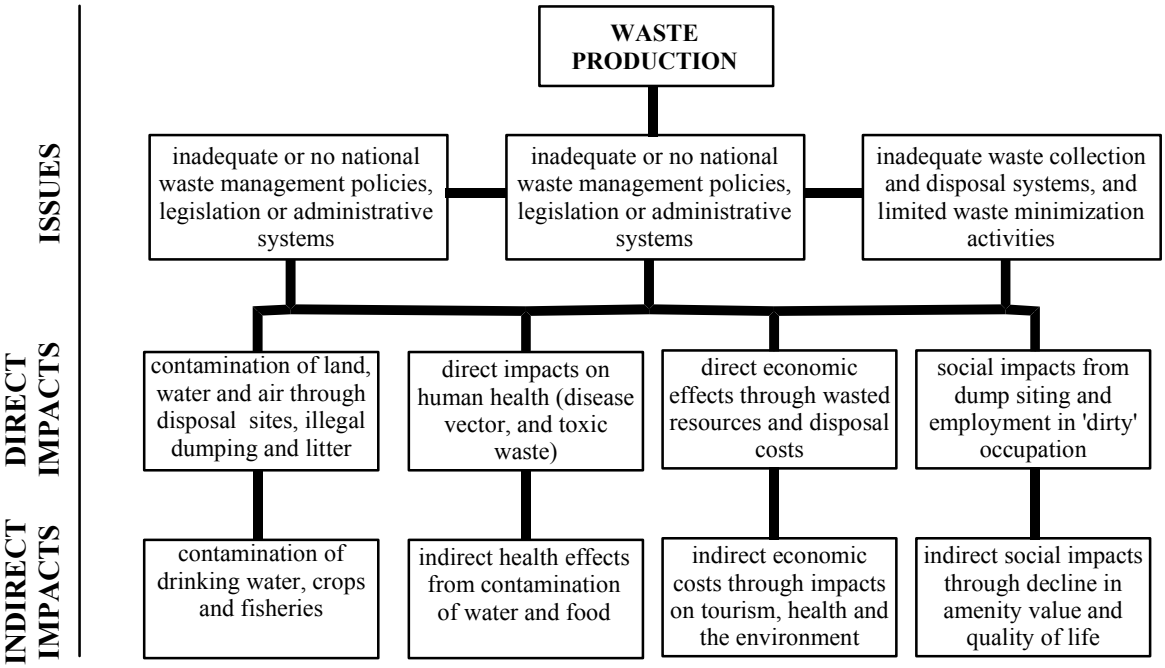
2.8 Summary and overview

The key aspects of the information provided in the preceding sections are summarised in Figure 2.1 below. This shows the actual and potential impacts from waste generation and disposal activities within the Pacific Islands region, and the three key contributing issues of:

1. Increasing waste generation rates,
2. Inadequate waste management policies, regulations and administrative systems, and
3. Inadequate or ineffective waste collection, minimisation and disposal systems.

It should be apparent from the information provided in section 2.6 that while some PICTs have made significant progress, most have a lot of work to do before they can fully address these issues and the concomitant direct and indirect effects.

Figure 2.1: Overview of SWM Issues in PICTs



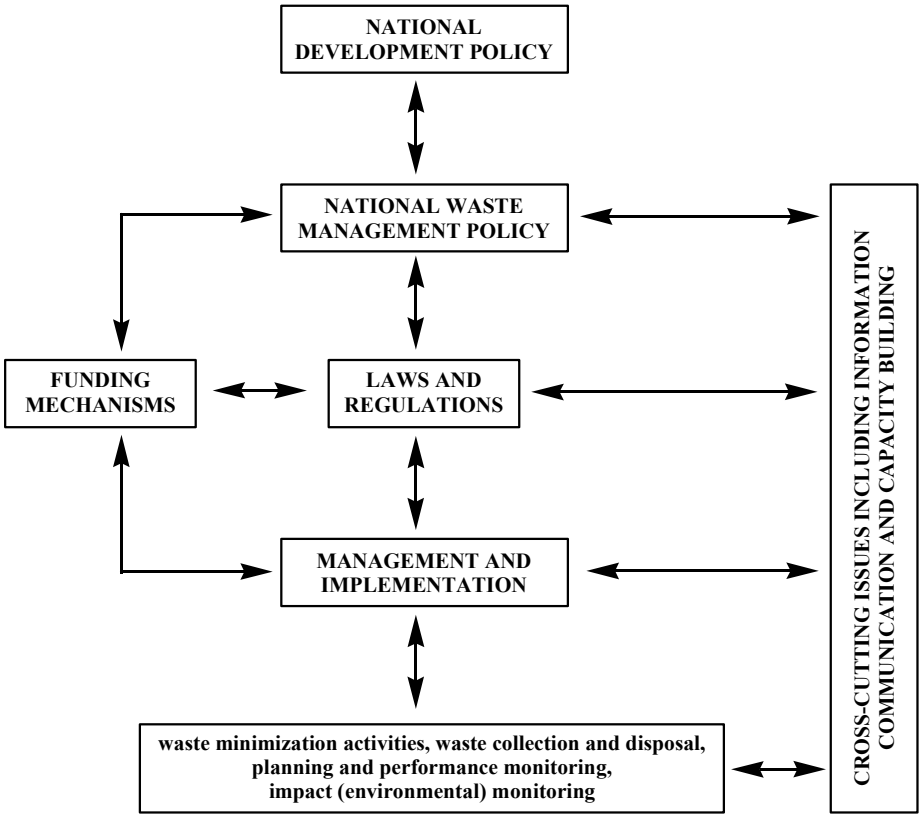
3 Recommended Waste Management Strategy

3.1 Waste Management Model

A national waste management plan should be developed from and be consistent with the national development plan. The possible components of a national waste management programme are summarised in Figure 3.1 below. As shown, the starting point is a national development plan out of which the national waste management policy is developed, which in turn is supported by relevant laws and regulations. The policy should then be implemented through an appropriate management system. Depending on the policy, supported by appropriate legislation, implementation will include waste segregation and minimization activities, collection and disposal, planning and performance monitoring, impact monitoring programmes, and cross cutting issues such as funding mechanisms, integrated communication and capacity building. In all the components cross cutting issues should be considered and incorporated where appropriate.

The detailed requirements for each component of the proposed model are discussed below.

Figure 3.1: Waste Management Model



3.2 Cross-cutting Issues

3.2.1 Economic Issues

As was seen in the previous chapter, the lack of use of economic instruments to create incentives for personal and corporate responsibility in waste is a weakness in the Pacific that could be exploited to our benefit. Generally, there are substantial benefits to be made from the wider introduction of economic tools (support by policies and institutions) that:

- Create incentives for consumers to minimise their purchases of waste generating products, while creating incentives to reuse and recycle and minimise the amount of waste they send for disposal (landfill, incineration etc.);
- Create incentives for producers and importers to take more responsibility in the production and importation of goods so that they minimize the amount of waste they generate and import, and more actively manage and recycle waste generated.

As will be indicated below, the wider application of economic instruments cannot only minimise waste but can be used to increase the financial sustainability of waste management.

At the same time, greater use of economic information – including the selective use of economic valuations – may assist PICTs to increase their understanding of how integral waste management is to a healthy economy.

3.2.2 Integrated communications

Communications can play an important role in supporting the development and implementation of strategic objectives of national strategies. An integrated communications strategy within a national strategy, and regional initiatives can highlight the appropriate communication tools to be used to reach the various stakeholders/audiences.

Around the region a number of countries have shown that communications can be an effective way to help individuals, communities and businesses to reduce their waste. For example, the Kaoki Maange work in Kiribati and the awareness raising work in Samoa are having the desired effect on what they would like to achieve. However, these communications programmes are only successful when part of a broader strategy that incorporates other elements of waste management such as new public services, new policies, and economic incentives.

In order to achieve the objectives of the regional SWM strategy, PICTs in collaboration with SPREP advocates the use of a simple seven-stage approach to communications.

i. Clarify goals and objectives

Before undertaking any communications activities, it is crucial that the national strategies present clear and quantifiable goals and objectives. For example, reducing the level of organic waste going to landfill by 50% before September 2009. In order to encourage people to adopt specific waste reduction behaviours, the national strategies must provide very clear information on what will be achieved, within a certain timeframe.

ii. Raise awareness of the problem

Raising awareness about waste issues is a very important goal. Target audiences may be unclear about exactly what the problem is. They may lack the information or the personal motivation they need to change the way they currently manage their waste. Raising awareness will strengthen support of the national strategies, and constitutes an important part of a broader communications strategy.

iii. Focus on specific behaviour(s)

Communications can play a very important role in clearly highlighting the link between individual behaviours and accumulative impacts. It promotes the benefits of certain actions, and acts as a prompt for other people to adopt behaviours.

iv. Understand your audience

To be effective, communications activities must be designed around the needs of the stakeholders or target audiences. Individuals, communities, businesses and organizations must understand the role that they can play in supporting the objectives of the national strategies. Communications activities need to be tailored to ensure that the appropriate messages reach the appropriate target audience. The communication strategy must determine the most appropriate communications tools and activities to meet the specific needs of each audience.

v. Use appropriate communications tools

There are numerous communication tools that can support the goals and objectives of the national strategies. These include, regular newsletters or briefings (government), innovative and creative use of mass media e.g. radio, television, newspaper etc, forums or briefings (private sector), community based programmes that look at long-term behaviour change (communities). Strategies should highlight the communication goals and objectives, the capacity of PICTs to undertake the communication process, the target audience and ensure the appropriate communication tools to be employed are accessible and appropriate to communities.

Target Audience: Government/key agencies

Communications can ensure that key agencies are consulted and kept informed in the development of national strategies. This can provide invaluable support at an early stage by fostering a sense of ownership and encouraging continued participation through to the

implementation phase. Regular newsletters or updates to key stakeholders provide useful information about the national strategies. Radio programmes or media releases to regional and international media highlight best practices to other countries, while promoting the progress of the implementation of national strategies.

Target Audience: Private sector

Communications can play an integral role in informing people and maintaining interest in the development and implementation of national strategies. Partnerships between government agencies and the private sector can be used as promotional opportunities in the media. In many of the major initiatives that require changes at the national level, the private sector should be engaged in the development process of the national strategies so as to have greater participation from them before any implementation can occur.

Target Audience: Communities

Communications can engage people in the development and the implementation of national strategies. Public meetings or workshops involve communities in planning processes, encourage a sense of partnership and ownership that fosters a commitment to adopt introduced policies. Existing community structures could also be used to involve people in communication processes. Formal education teaches children about sustainable living practices that can have a flow on effect into families and communities. Social marketing programmes can be developed to encourage people to adopt behaviours to reduce waste. NGOs can implement elements of the national strategies by undertaking activities such as paper recycling activities that involve local women's groups. Awareness and promotional activities inform communities about new waste disposal services, policies and any proposed financial costs. Articles in local newspapers, television, or on the radio can also be a significant factor in creating or reinforcing the political will for future developments.

vi. Find ways to measure your success

Set realistic objectives and measurable targets that can highlight to the stakeholders the effectiveness of the national strategies and establish mechanisms for feedback on progress to continue to motivate people.

vii. Funding

To ensure long-term behaviour change, funding for communications needs to be factored into national strategies.

3.2.3 Capacity Building

Waste management programmes require input from a wide range of skilled personnel, including environmental educators, managers, engineers, landfill operators, environmental management and public health specialists, planners and policymakers.

Some of these skills are already available in PICTs, but others will need to be developed, or obtained through technical assistance programmes. This latter approach has been commonly used in the past. However, for long-term sustainability, it is preferable that the expertise be available in-country, or on a regional basis at least. This can be attained by the incorporation of the relevant technical solid waste management training programs through existing training institutions around the region and offering them as part of an academic programme or as a short course. These components could be developed collaboratively with institutions including but not limited to the United Nations University (UNU), University of Guam (UOG), University of Papua New Guinea (UPNG), and University of the South Pacific (USP).

In addition to the human resource requirements, adequate institutional and systemic capacities must also be in place for waste management programmes to be effectively functioning. Capacity building programmes that are developed for waste management activities should by as integrated as possible due to the importance of the roles that the different components play and this include the strengthening of institutional and systemic capacities as well as the human resource capacities.

There are numerous aspects to the individual capacity building programmes, including ensuring a supply of people with appropriate qualifications and experience, on-the-job training to develop appropriate work practices and skills, and continuing education programmes to ensure that staff remain up to date with developments in their chosen field. Most of these will be achieved through formal training programmes. However, it is important to recognise the value of informal mechanisms as well, such as mentoring, attendance at conferences, continuing contact with other professionals working in the same and related areas, such as the SPREP Waste Information Network (Activity B5). Other relevant sources may include technical journals.

Capacity building requirements should be considered and addressed in the development of any waste management programmes. One of the ways to achieving effective, efficient and sustainable solid waste management in a country is to:

1. Identify national and regional benchmarks guided by international standards to measure capacity against,
2. Assess for capacity gaps that exist,
3. Determine their root causes and
4. Identify ways to establishing or strengthening capacities.

Essentially an initial needs assessment should be carried out, and programmes designed to address and monitor these needs, along with the provision of appropriate funding.

For SWM this can be a complex and challenging task given the social, economic and environmental considerations that need to be taken into account. However difficult this may seem, there will always be the potential for wastage of scarce resources and further realization of wider negative impacts if attempts to build capacity for solid waste management are not preceded by an assessment of what the capacity constraints are, their root causes and a valid assessment of options for addressing the constraints.

3.3 Policy and legislation

PICTs need to review and develop sound and appropriate policies on SWM that can be translated into legislation. PICTs need a regulatory framework that promotes compliance because the small size of their administrations mean that enforcement capability is limited and therefore needs to be focussed. In order to have effective compliance there needs to be a consultative process to allow for industry, government/municipal agencies, intergovernmental organisations, universities, NGOs, traditional leaders and community participation in the development stages of legislation. While advocating compliance, legislation needs to empower the authorized regulatory institutions enforcement powers to impose appropriate penalties on those who do not comply to serve as a deterrent.

Regulatory instruments should be consistent with relevant regional and international multilateral environmental agreements (MEAs) and best management practices where practicable but also consider the situation in PICTs such as the availability of equipment, protocols, qualified personnel and access to laboratories. If these are not readily available then other enforcement provisions must be considered and written into the legislation. The authorized regulatory institutions should be empowered to impose fines and to deal with the matter using such other alternative dispute resolution mechanisms and using the court as the last resort.

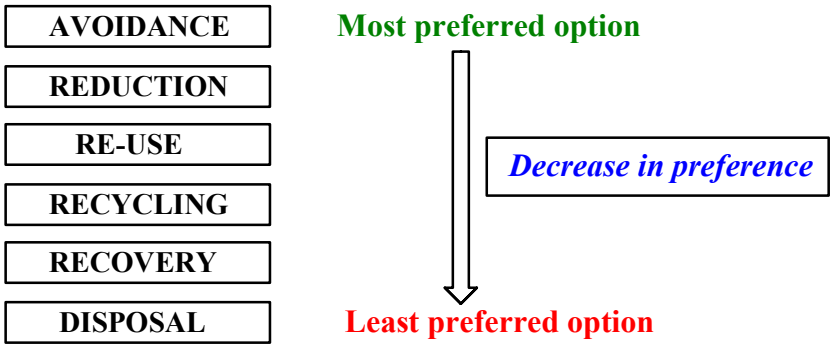
3.4 Waste minimisation, segregation and recycling

Waste disposal will in the short to medium term continue to be problematic for PICTs because of the limited provision of an appropriate waste management system due in part to the following:

- Limited availability of appropriate and suitable disposal sites and associated costs
- Limited availability of land
- Limited skilled personnel

For these reasons, waste minimisation should be a primary focus of any national strategy. Significant reductions in the quantities of waste that need to be disposed will have corresponding benefits in reducing the costs of disposal, and the continuing need for development of new disposal facilities. Effective waste management, including waste minimization and segregation at the source, is essential, however, proper infrastructure must be in place in order to achieve desired objectives.

There is an established hierarchy for waste management, which has a preferred option of avoiding waste and a least preferred option of disposal.



Waste minimisation programmes are typically based around this hierarchy and are usually referred to as the 4 "R's" of waste management; i.e. reduce, re-use, recycle, recover. These refer to the following activities:

Reduce: reduction of waste at the source by for example, the purchase and use of bulk goods rather than those with a high packaging content;
Reuse: repeated use of a product in the same, similar or different ways, for example the reuse of glass drink bottles and used tyres;
Recover: refers to the use of waste materials so as to recover some residual value, for example the use of waste oil as a supplementary fuel, and composting of green waste
Recycle: this is done with materials such as aluminium cans, lead from wet-cell batteries, cupboards and paper and glass, which can be reprocessed, back to their original form;

There are many practical barriers to effective waste minimisation programmes in PICTs. However, these are not insurmountable, and a key aspect of any national strategy should be activities directed at identifying opportunities for waste minimisation, barriers to implementation, and ways of overcoming these barriers.

There are various mechanisms that could be employed in the Pacific to support the development and implementation of recycling schemes. This could include incentives, such as container deposit schemes, social marketing programmes (that look at the barriers and opportunities of recycling), and schools based recycling programme.

Strategies to support waste minimisation, segregation and recycling throughout the Pacific will almost certainly require the wider introduction of economic instruments that increase personal and corporate responsibility for waste generation and thereby reduce waste generation. In so doing, economic instruments, supported by the appropriate institutional activities and infrastructure, will be critical to integrate waste management with financing and funding mechanisms to ensure the continued feasibility of waste management services.

The recent Kiribati initiative is a good example of the kind of integrated economic strategy that can reduce waste, increase recycling and increase funding. In this case new tariffs on the import of containers for soft drinks increases the ability of the government

to financially maintain recycling systems while at the same time acting as a deterrent or disincentive for the demand of plastic packaging.

3.5 Waste Management

In many PICTs, the responsibility for administering and coordinating waste management activities is spread over several government agencies and at times causes confusion over who is responsible for what. There is a need for a designated government lead agency and a better coordinated approach to manage all waste management activities in the countries so as to minimise the conflicting responsibilities that currently exists.

3.5.1 Waste Collection

Waste collection together with waste disposal are the components most demanding of resources, especially finance, and therefore the components that requires the most intensive assessment of funding requirements and financial mechanisms. There are numerous examples around the region of collection and disposal services that fall short of the desired performance levels, because of:

1. Inadequate funding,
2. Limited trained and skilled personnel,
3. Inadequate regulations and management, and
4. Limited infrastructure support.

There are two key funding components to consider; the initial capital investment, and the on-going costs for operation and maintenance. The latter is just as important as the former, because without continuing support, the value of the initial investment will simply be lost.

Waste collection systems should be designed to provide a regular collection service from residential, commercial and industrial areas, including rubbish bins placed in public areas. There are numerous guidelines available on the design and operation of collection services in developing countries, However, in general terms, the basic requirements are for the use of inexpensive waste bins or bags of a manageable size (eg. 40-gallon [or 200L] drums are too large), protection against scavenging by animals through the use of stands or cages, and collection in accordance with a regular programme using appropriately sized trucks (i.e. large enough to handle the waste volumes but not too large or heavy for the roads). The use of modern compactor vehicles should not be considered until there is a clear need for the efficiency improvements that these can bring, and also only after it has been shown that the costs of operation and maintenance can be met through the funding for the collection service.

On this score, it will be critical for PICTs to integrate waste collection and disposal services of all kinds including government and privately operated services, to funding systems in order to be sustainable in the long term. Depending on the country or item under consideration, integration of funding (see also section 3.7) may include the use of user charge for improved waste systems. Although these may be unpalatable in the short

term, they will be essential if governments are to have the funds to establish, support and maintain the waste collection and removal service they desperately need. In so dong, they can provide an opportunity to restore public faith in government removal service and speed the clean up of our countries while reducing reliance on overseas aid.

3.5.2 Waste disposal

Waste disposal by burial in a landfill is currently the preferred method in most PICTs, and will likely remain so for the immediate future Other options such as incineration or waste digestion may be appropriate in some situations (such as the treatment of hospital waste and other putrescible waste) but will need careful evaluation on a case-by-case basis, so will not be considered here.

One of the most fundamental requirements is for the identification and use of suitable disposal sites using established siting criteria, which allow for efficiencies in collection and transport, while at the same time minimising the potential for adverse off-site effects. The site should be designed and engineered, at a minimum, to allow for the efficient movement of vehicles, the control of surface water run-off, ground water protection and an acceptable control of leachate, and possibly landfill gas. These requirements should be clearly outlined in the planning phase of construction of the disposal facility, which should also include the undertaking of an environmental impact study (EIS). The information obtained from such studies should form the basis of the monitoring programme of the disposal facility during both the operation and port-operation periods. Furthermore these need to be in line with relevant national guidelines and regulations.

Operational procedures should address the requirements for controlled placement, compaction and regular covering of the wastes, monitoring and recording of waste quantities, and general site maintenance. There should be provision for staff facilities, site security and equipment maintenance. A range of appropriate heavy machineries and equipments are needed for efficient landfill operations, including but not limited to bulldozers, excavators, compactors and weighing bridges. However, it is often not realistic for these to be provided on a full-time dedicated basis. This aspect must be given careful consideration during the design phase for a new landfill facility, to ensure that an appropriate level of service can be provided, and that the costs of the service will be fully funded.

Mention should also be made here of the recently-completed JICA/SPREP landfill development programme in Samoa, using the Fukuoka method or the semi-aerobic system, which was aimed to demonstrate ways in which the design and operation of existing landfill facilities can be gradually improved over time. An identical programme for the upgrading of the M-Dock dump is currently being planned for implementation in Palau. This should be a much more cost effective approach than development of a new landfill, and is likely to be a more sustainable strategy for the provision of effective waste disposal systems in PICTs. The design and operational requirements for the landfill are exactly the same as those noted above. However, they are only gradually put in place through a process of incremental improvement, in accordance with available funding and

demonstrated needs. This design is not applicable to atoll countries and territories and there is a specific need of disposal systems to suit them.

There is also a need for the provision of special purpose disposal systems for dealing with those wastes that are not suitable for disposal by landfill, for example some hazardous wastes. The most common example of these is health-care wastes, which are generally being dealt with by incineration. This is an appropriate approach for the Pacific islands region, although many existing facilities fall well short of the minimum operating standards recommended by agencies such as WHO. Consideration also needs to be given to the use of new emerging technologies, such as steam sterilisation, which have the potential for providing alternative methods for effectively dealing with these wastes. Special facilities may also be required for dealing with other hazardous waste streams. However the need for these should be assessed on a case-by-case basis, including the potential for shipping to specialized facilities that may already be available inside and outside the region.

3.5.3 Planning and Performance Monitoring

Planning and performance monitoring are essential components of most government activities, and waste management is no exception. There is a need for regular collection of information on waste generation and disposal rates, and for this to be linked with information on changes in population, economic growth and development, including tourism, and any other factors with the potential to impact on waste generation rates. This information will provide a basis for planning of future waste management needs, such as the development of new landfill facilities and other supporting infrastructure. It should also provide useful input to the assessment of other development proposals, such as new tourist facilities. Perhaps one of the key points to stress here is the need for clear and effective linkages between the government agencies involved with waste management and those with a more central planning role.

The procedures for collecting and recording waste information are well developed and established at the international level, and include estimates of total waste volumes delivered to the landfill, and regular surveys of the composition of these wastes. This information should be made available to PICTs and be used for evaluating the effectiveness of other components of the waste management programme. For example, an effective waste minimisation programme should be reflected in overall reductions in waste quantities and changes in waste composition.

3.5.4 Impact Monitoring

The most direct effect of improperly managed wastes is environmental contamination. However, there are numerous other direct and indirect effects as well, many of which are important aspects of national development such as public health, tourism, water and food security. The economic impact of improper waste management can also be significant through wasted resources and disposal cost.

Waste disposal facilities have the potential to cause significant adverse effects on the surrounding environment, and it is therefore important that these be properly managed and controlled. Environmental monitoring is a key component of this control system and should be fully integrated into the design of any new disposal facilities. It should also be undertaken for existing disposal sites, so as to assess the effects of past activities, the need for remedial actions, and possible future impacts as well.

Impact monitoring of waste disposal sites need not be very expensive. There are a few essential parameters, such as biological and chemical oxygen demand (BOD and COD), pH, conductivity, and a range of trace elements, which can provide basic information about impacts on water quality. These analyses should normally be available through existing laboratories in most PICTs, such as the water supply authorities. More sophisticated analytical services may need to be obtained from overseas laboratories, but these should only be required in the case of special investigations, such as responding to concerns over the presence of specific toxic chemicals at a dump or disposal site. PICTs that do not have the institutional and human resources capacity to test these parameters should establish a long-term plan to address these needs while at the same time make interim arrangements to have these parameters analyzed by an appropriately accredited laboratory in the region.

3.6 Waste Industry

As mentioned earlier, the waste industry in the Pacific region is in its infancy and as such, efforts to build this industry should be focussed initially on setting up the local reuse and "recycling" activities such as putting in place collection and processing mechanisms for the recyclable materials. The involvement of the local private and business sectors is essential and must be encouraged.

Strategies to support the development of a waste industry throughout the PICTs will require the wider introduction of institutional and economic instruments that make it conducive for the relevant stakeholder to participate. In so doing, these economic instruments, supported by the appropriate institutional activities and infrastructure, will be critical to making sure that this industry develops into a viable economic and financial one.

Other activities that would progress the development of the waste industry in the region should include development of partnerships between governments and recycling companies or individuals in countries where the recycling waste industry is more advanced and sophisticated. These partnerships should be able to facilitate for the smooth transportation or trans-boundary movement of the recyclable materials from collection points in-country to the recycling companies overseas.

3.7 Funding requirements and mechanisms

In line with the goals and objective statements, the objective of this Strategy is to target a management system that is economically and financially sound. To do this, there is a need to introduce institutional change to secure funding. Funding must be strategically integrated into all facets of the waste management systems established from those initiatives used to minimise the generation of waste at source, through to those initiatives used to manage the disposal of waste that cannot be reused or recycled.

However socially unpopular it might appear, there is a need for PICTs to introduce some form of charging system to recoup waste management costs if they are to reduce their current financial reliance on overseas aid and avoid the failure of domestic waste management.

A well-designed charging system can have positive effects in reducing the amount of waste generated by producers, importers and consumers in the long run. For instance, increases in the cost of waste collection and disposal can create financial incentives for consumers to avoid charges by reducing the amount of waste they put out for collection. These can, when accompanied by appropriate education, legislation and marketing, provide incentives to recycle glass, plastic or paper waste or compost green waste. In the longer term, such mechanisms can also create incentives for consumers to reconsider the purchase of items that produce waste. For instance, tariffs on imported plastic bottles raise the cost of bottles to consumers, which can reduce the demand for the good. Lower demand for bottles acts as a signal for producers to reduce their production level to meet alternative demand. The combined result can be a reduction in the import of waste to a country.

Well-designed funding mechanisms may alternatively create financial rewards for consumers and producers to reduce or recycle waste and reduce the level of waste to be disposed in landfill. For instance, some local bottlers in the Pacific (such as Samoa Breweries Ltd) already encourage bottle recycling by offering refund for bottles returned to the bottler. The value of the deposit is covered in the price of the bottle of beer. These incentives to encourage waste minimisation and recycling enable greater cost recovery in beers and soft drink bottle waste management.

Realistically, the introduction of any new user charges is likely to be a medium term activity and full cost recovery on any large scale is probably unachievable. (Even many developed country waste management programs operate at a loss.) Nevertheless:

- The groundwork to prepare for even partial funding systems can be established early on. For instance, it may be possible for governments to calculate waste management costs for different services and identify those areas where service charges have been accepted, and how; and
- Elements of cost recovery might be applicable at a limited level. Already, private waste removal systems, for instance, in Tonga and Fiji, are being introduced on a small scale in the region. More importantly, it may be possible to introduce some elements of cost recovery or financing to certain waste sectors. For instance, the soft drink container legislation in Kiribati enables a greater level of financial sustainability in the recycling and disposal of soft drink containers. This approach

may be more favourable to industry and consumers than the outright ban of certain types of materials while offering the advantage of increasing waste revenue at the same time.

A key aspect of funding will be the extent to which government and the private sector (households and industry) share the costs of waste management to ensure financial feasibility. Given the public problems associated with waste (use of scarce private land for landfill, generation of disease vectors etc), there may be a case for continued public (government) support in establishing waste management systems. Donors should continue to play a supporting role here in the wider public interest. However, specific stakeholder groups may be expected to contribute to the cost of waste management that specifically benefits them. Examples might include the introduction of economic and tax incentives for stakeholders (including the government and industry) to recycle waste as well as user charges for household collection and disposal of waste and charges to government and industry agencies for waste management.

Economic tools for waste management (demand and supply management tools) should be considered as a way to integrate waste reduction and recycling efforts to financing. Some countries may also want to consider assigning revenues for waste management to specific waste management activities although this is often difficult to manage administratively.

The introduction of better funding strategies will result in a number of positive outcomes including but not limited to:

- Reduced reliance on both domestic funds and overseas aid in the short term – or the improved ability to focus overseas aid on other aspects of development need;
- Increased public faith in domestic waste management. For instance, a better funded waste collection system is less likely to break down (avoiding the 'catch 22' situation where consumers (firms and residents) refuse to pay for improved waste collection services because they are unreliable while governments cannot improve systems without the money); and
- A more sustainable waste management system in the long term.

Improved information about waste management will be needed to support improved funding of waste management in the Pacific. Information will be needed on the benefits of waste management and customer willingness to pay for services. There will therefore be a role for economic analysis to underpin funding as a result.

4 Proposed Waste Management Activities

4.1 Overview

There is a clear need for development efforts in most PICTs in all of the components of the waste management model discussed in the preceding sections. Obviously it will not be possible to address all the issues immediately, and therefore a well-organized plan, and coordinated approach is required. It is proposed that in the first instance priority be given to three specific areas as follows:

- Key institutional aspects, including policy development and planning, information exchange, and public education and awareness.
- Improvement and upgrading of existing waste disposal systems
- Development and/or enhancement of waste minimisation activities such as recycling, so as to reduce the quantities of wastes being disposed

The proposed activities are intended to assist PICTs in moving towards the development of effective waste management systems within their countries, and in accordance with their specific needs. The programme should be implemented over a period of ten or more years, in recognition of the fact that many of the required changes, whether individual, institutional or systemic, will only be achieved through gradual improvements over long periods of time. In addition, emphasis should be given to the development of activities embodying some of the key requirements for sustainability, including the use of appropriate technologies and management systems, and with a strong focus on self-help and in-country capacity building.

Information on the proposed activities is summarised below, while more detailed descriptions are presented in Appendix 3. The activities are presented on the basis of the different waste management programme components referred to in chapters 2 and 3, rather than in any priority order. The question of priorities is discussed in section 4.8 along with some suggested timelines.

The proposed programme contains many connected components and will involve a wide range of stakeholders. There is a clear need for some mechanism to ensure that the activities are implemented in a coordinated and efficient way.

4.2 Cross-cutting Issues

4.2.1 Public Education and Awareness

Public education and awareness activities are a prerequisite and vital component of any national waste management programme. However, the implementation of these activities would be given an initial boost by participation in the Year of Action Against Waste.

Activity A1: Pacific Regional Year of Action Against Waste

The Year of Action Against Waste campaign is based around a range of national activities within each PICT, with SPREP serving a regional facilitation and coordination role. Governments have been encouraged to support the campaign through appointment of National Coordinators/Contact Points, and NZAID has supported this initiative by funding a preparatory workshop for these people in collaboration with SPREP. Additional funds have been secured for other regional initiatives to promote the campaign, while most national activities could possibly be and are funded by governments and through local sponsorship arrangements.

Activity A2: Integrated Communication Programmes

Significant changes in community attitudes and behaviours towards waste generation and disposal will generally only be achieved over long periods of time. This process should be assisted through on-going integrated communication programmes. These should be designed and implemented within each PICT in accordance with national goals and activities. However consideration should also be given to some form of regional support for the programmes through SPREP and other relevant CROP agencies. This work should build on the materials already produced under the SPREP/EU WASTE project, and materials produced in support of the Year of Action Against Waste.

Special effort should be added to ensure that sufficient awareness and information is made available to the public and specific stakeholder groups on planned or scheduled changes to legislation, institutions or management tools. This will be particularly important for the introduction of any economic and financial tools, including charge and incentives for waste reduction (minimisation at source and recycling) or disposal.

4.2.2 Capacity Building

There are many requirements for capacity building activities in PICTs in support of waste management and other programmes. However, many of these are quite generic in nature, and best addressed under much broader capacity building programmes. The activities proposed below are those with a specific focus on waste management programmes.

Activity B1: Annual Training Course in Municipal Waste Management

This is an existing activity, which earlier this year, completed its five-year cycle under the Japan Miyazaki Initiative. The course extended over a four–week period, with the venue alternating between Okinawa and Apia, and about 10 to 15 participants each year drawn from the Pacific Island Forum countries. The course will be continued for another 5 years beginning 2005, however further training will need to be based on country priority needs and likely implemented at the national or sub-regional level. It is intended that information developed from the JICA course be extended through distribution of a course video, and maintenance of the information network described under ***Activity B6***.

Activity B2: Training for Atoll Countries and Territories

It is widely recognized that the waste management issues and requirements of the atoll settings are distinctly different and in many cases are more challenging that the high island counterparts. The very limited availability of land is a major issue when it comes to designing programmes that deal with waste disposal. This activity would allow for atoll-specific training to be put in place to train personnel in all components of the national waste management programmes including policy makers to waste disposal facility workers.

Activity B3: Assessment of National Capacities in Waste Management

This activity should be carried out by each PICT in conjunction with ***Activities E4, H1*** and ***H3***. Most of the work should be carried out internally, but could also benefit from external assistance from an organisation such as SPREP. Links should also be made with the Pacific Type II Capacity Building Initiative, which was announced at the WSSD meeting in Johannesburg, and with current UNDP activities in this area as well. The assessment should be carried out within the first year or two of implementation of the waste management programme, and then revisited every three to five years.

Activity B4: National Capacity Building Activities

This activity follows on from ***Activity B3***, and is intended to implement the findings of the assessment. This work should be done as a national initiative with assistance from external sources as necessary. Capacity Building activities should include a focus on skill building for institutional and systemic management including the skills to develop sound and appropriate policies and integrated strategic management of waste that incorporates funding and incentive for waste control.

Activity B5: Country Attachments

There is a country attachment scheme managed by SPREP, which aims to boost national capacities by supporting country-to-country attachments between Pacific island countries. Activities of this sort should provide an excellent vehicle for capitalising on some of the work being done under other parts of the waste programme, such as the landfill demonstration project in Samoa. There is the potential for waste management personnel to be included in the current project, but consideration should also be given to obtaining additional funds to allow a continuation of the programme beyond its current timeframe and scope (to broaden the skills base).

Activity B6: Maintenance of a Waste Information Network

This activity would aim to enhance the existing skills and knowledge of waste management personnel through participation in a regional information network. Participants from the Municipal Waste Training Courses (***Activity B1***) are already nominal participants in this network, but the operation of the network needs to be boosted through regular input from a moderator, and extension to other practitioners. It is

envisaged that the moderator activities should be provided by SPREP, as part of its coordination mechanism and needs to cover a wider range of stakeholders at the national level.

4.3 Policy and legislation

It is important to recognize the difference in the administrative systems that are practised in the Pacific region when drafting model legislation – some PICTs use predominantly US systems while others use the British or French system. Some of the general or common activities that can be included under this area are:

- Looking at using and enforcing regulations and codes of practice
- Mechanisms for getting stakeholder participation and buy in to policy and legislation (adopting compliance approach)
- Enforcement powers vested in regulatory authorities to minimize cases brought to court i.e. –power to issue improvement notice, power to issue stop work until improvement made, power to close a site.

Another general activity that should be undertaken should be targeted at the development of a region-wide Toolkit for Regulatory procedures:

- Techniques for stakeholder consultation to set compliance standards, codes of practice etc.
- Monitoring and sampling techniques and equipment
- Evidence collection techniques and equipment
- Prosecution procedures and techniques for providing evidence to courts

Activity C1: Review of Laws and Regulations

Existing laws and regulations should be reviewed to ensure that departments have the necessary mandate to carry out their designated duties within the national strategy. The review should also consider the existence of, or need for, enforcement powers, as well as methods for implementing the possible funding mechanisms considered under ***Activity K1*** below. This review should be carried out in parallel with ***Activities K1*** and ***E4***. It should be possible for this work to be carried out using existing resources within each PICT, although external assistance may be required for the drafting of new legislation if this is considered necessary.

4.4 Waste minimisation, segregation and recycling

Waste minimisation activities should be a major component of most PICT waste management programmes, because these can achieve significant reductions in future disposal requirements and therefore costs. The main emphasis of the activities proposed below is on enhancing and extending existing recycling activities, and identifying new ways of dealing with other more difficult wastes.

Activity D1: Development of National Waste Minimisation Strategies

This activity should be done in parallel to, but separately from the work on a national strategy and should involve a review of opportunities to minimize waste at source from the introduction of economic and other incentives. It should be linked to activities under K1 and K2. The strategy should lay out a framework for implementation of some or all of the other minimisation activities listed below.

Activity D2: Development of National Waste Recycling Strategies

Information will be required on quantities of recyclable material currently being produced (see ***Activity H2***), current recycling activities, and potential markets for recyclable goods, and an assessment of other opportunities for waste minimisation. The strategy should then lay out a framework for implementation of some or all of the other minimisation activities listed below. Most PICTs will require technical assistance to carry out the necessary assessment work. This strategy must also include a comprehensive communication strategy, highlighting how these activities will be promoted to the target audiences.

Activity D3: Enhancement of Existing Recycling Programmes

There are numerous recycling activities currently operating in the region, especially for aluminium cans, PET bottles, scrap metal and to a lesser extent, paper and batteries. Many of these operations are being carried out by NGOs or the private sector, but most are only marginally viable. Most of these operations would benefit from external technical assistance directed at upgrading of equipment, implementation of more effective business practices, regulations and promotional activities to improve participation rates. One possible approach is that used in the Cook Islands, with NZAID support. This involved the establishment of a recycling programme with technical assistance from an experienced New Zealand operator.

Activity D4: Assessment and Demonstration of New Recycling Methods

Conventional recycling programmes for materials such as paper, tyres, plastics and glass require collection and transport of the materials to large scale processing facilities, often in other countries. This is not a viable proposition for most PICTs, mainly because of the low waste volumes coupled with high shipping costs. There is a need for development of alternative recycling methods for these wastes, which are suitable for small-scale, local use. This could include small scale paper recycling, manufacture of plastic lumber, and the use of crushed glass in construction materials or ceramics. These are all established technologies, but there is a need for demonstration and assessment of their application within PICTs, through technical assistance programmes.

Activity D5: Promotion of Community Composting Activities

Community composting programmes have been demonstrated successfully in several PICTs, and this work should now be extended to other PICTs through further technical

assistance projects and the production of information sheets, videos and other promotional materials with technical assistance from SPREP and other relevant organizations. On–going promotion of the techniques should be incorporated into the national waste integrated communication activities suggested below.

4.5 Waste Management

4.5.1 Waste Management Policy Development

The key requirement here is for the development of a National Waste Management Policy in each PICT, where these do not already exist. A lead agency for waste management should be designated as part of the policy development covered under ***Activity E4***. This agency should then set up an appropriate coordination mechanism (e.g. an interdepartmental committee) to ensure input from all relevant agencies. Local government and the private sector should also be involved where appropriate, especially in the waste industry sector. The lead agency should be tasked with development of a National Action Plan for the implementation of the national strategy.

This policy should be endorsed at the highest levels of government, thereby demonstrating government intent and commitment to the development and implementation of a national waste programme. The policy should include designation of a lead agency to coordinate waste management activities, a stated intention to review the relevant laws and regulations, and commitment to the development of a national strategy for waste management. Also included here is a proposed process for finalising this regional Strategy, which is another opportunity for governments to demonstrate their commitment to the overall waste management programme.

Activity E1: Sub-regional Waste Forums and Finalisation of the Pacific Strategy

This Strategy was prepared on the basis of numerous national and regional reports, and knowledge of the current situation in most PICTs. However, there is a need for further consultation on the proposed activities to ensure buy-in by all possible parties and stakeholders. It is proposed that this be achieved through sub-regional waste forums, which should include wide representation from all key stakeholders in the region. The key focus of the forums would be sharing of experiences and concerns in waste management, and finalisation of the Strategy with expected outcomes to be based around:

- Identification of key issues associated with the generation, collection and disposal of wastes at the national levels;
- Consideration of the management and use of resources in the context of environmental sustainability;
- Identification of suitable tools for informing and create awareness amongst communities;
- Identification of who should be responsible for meeting the cost associated with the generation of waste; and
- Establishment of the roles of SPREP and the national and territorial government in waste management.

These sub-regional forums were held during March-June, 2005. It would also be appropriate for the sub-regional forums to be repeated in about five year's time, to allow for a review and modification of the Strategy.

Activity E2: Establishment of a Regional Coordination Mechanism

The setting up of a regional coordinating mechanism is imperative for the regional implementation of this strategy. While emphasis is placed on the implementation at the national level, the regional coordination of the individual PICT achievements is important in the overall implementation of the strategy. SPREP's role as the lead agency is consistent with its established role in the region.

Activity E3: Establishment of a National Coordination Mechanism.

The role of the lead agency specified in the national strategy should be to ensure coordination of all activities, to monitor the effectiveness of the programme, and to ensure that the necessary financial resources are made available. One of the first steps is to establish a coordinating mechanism, which would most likely be a National Coordinating Committee, plus other subsidiary bodies as required. This work should be carried out using existing resources within each PICT.

Activity E4: Development and preparation of a National Waste Management Strategy

The development and preparation of a national waste management strategy should be undertaken by the lead agency but with input from other relevant governmental agencies, other stakeholders and special interest groups as appropriate. This is an essential first step in clearly defining a country's goals for waste management and how it intends to achieve them. The policy should be endorsed at the highest political levels and should be consistent with the national development goals or plans, including their links to regional and global initiatives such as the Pacific Plan, MDGs, BPoA, JPOI and the outcomes of the Mauritius meeting. The policy should further specify which agency or agencies will be responsible for specific activities, and especially the lead agency responsible for overseeing policy implementation and ensuring and ensuring coordination with others.

It should be possible for this work to be undertaken by governments within existing resources, although some PICTs may require technical assistance from outside when considering some of the more technical aspects of the programme. The methodology used will vary within each PICT, depending on the approach normally taken for policy development.

Activity E5: Development of National Management Plan for Disaster Debris

PICTs are vulnerable to natural disasters and at times experience civil disturbances. In the aftermath of such sudden and unplanned events PICTs usually have to deal with the large volumes of debris. There is currently a limited number of disaster debris management plans in any of the PICTs to prepare for such events. This work involves stakeholder

consultations and the development of a disaster debris management plan. Guam is currently working on their plan that other PICTs could consider using as a guide.

4.5.2 Waste Collection

Most PICTs have established waste collection systems for urban areas that may need improvement and extension to the rural areas. Limited specific activities have been proposed for the upgrading or development of these services.

Activity F1: Incremental Improvement of Existing Collection Systems

The collection system is an integral component of any waste management programme. This along with waste disposal are the components most demanding of resources and therefore need special attention. In order for the other operational components to function adequately, an efficient and effective collection system needs to be in place. This activity is to assist PICTs in assessing their respective collection systems and identify ways in which they can be improved to make them more efficient and effective.

4.5.3 Waste Disposal

The emphasis in this section is on the development of new disposal facilities, the upgrading of existing disposal sites, and methods to address the regional problem of difficult and hazardous wastes. In addition, this section will address closure and post-closure activities associated with new landfills and existing disposal sites. , It is envisaged that the need would be first reflected in the planning activities listed under ***Activity H3*** below, and that funding aspects would also be considered under ***Activity K1***. Any need for external assistance, if required, would then be addressed through the national and bilateral planning processes that are normally used for substantial infrastructure developments.

Activity G1: Incremental Improvements at Existing Disposal sites

This activity will build on the work already being carried out under the Japan Miyazaki Initiative (see Appendix 1) involving a demonstration project to upgrade the Tafaigata landfill in Samoa. Similar work will be carried out at other landfills in the region. Some initial technical assistance will be required for feasibility studies, design and implementation work at each site. However, it is envisaged that over time, governments will undertake these activities within their own resources, especially for smaller disposal sites within each PICT. The work will be supported by regional Landfill Guidelines, which are expected to be published during 2006. In addition, some sites will be used for demonstration purposes as part of the capacity building activities listed below.

Activity G2: Development of landfill and other appropriate waste disposal techniques for Atoll Environments

The landfill improvement work carried out in Samoa is relevant to most high island situations in the region. However, a modified approach is needed for atoll environments because of the limited land availability and close proximity to marine and freshwater resources. A development project should be planned for the atoll setting, and this should be implemented over the next two years. Extension to other islands should then be considered, using the same approach to funding as noted in ***Activity G1***.

Activity G3: Development of new sanitary landfill

In some PICTs, the existing disposal facilities are unable to be upgraded due to their location, condition, and other reasons. In some cases, new disposal facilities have to be developed, which would require careful planning and implementation.

Activity G4: Closure and post-closure of existing disposal sites

In the event that an existing disposal facility is unable to be upgraded, then a proper closure plan with its appropriate post-closure monitoring programme needs to be put in place. This is important in making sure that the closure work is undertaken properly and that the disposal facility is monitored well after its closure. These activity would be undertaken parallel to ***Activity G3***.

Activity G5: Assessment of Regional Options for Managing Difficult Wastes

Some waste in the region present special problems for PICTs because of the lack of any viable recycling or disposal options. These include but not limited to; car bodies, tyres, domestic whitegoods, computers, low-grade scrap metal, dry– and wet–cell batteries, non-recyclable plastics, and disposable nappies/diapers. The work under this activity would be most effectively carried out on a regional basis, possibly as a technical assistance consultancy to SPREP, although national initiatives should also be encouraged either through private or official bilateral arrangements. The work should involve an assessment of the size of the problem, an evaluation of disposal options, and possible mechanisms for addressing the issues, such as advance disposal fees on imported goods, and promotion of the principle of Extended Producer Responsibility.

Activity G6: Regional and sub-regional clean-up of difficult wastes

This activity has been previously proposed by SPREP, to be carried out in association with the proposed Year of Action Against Waste (***Activity A1***). Implementation of this activity will depend to some extent on the work carried out under ***Activity G5***, but the clean-up should also provide useful input to that work through demonstration of some of the possible disposal options. It is not intended that the clean-up activities will deal with all difficult wastes in all countries, and the availability of funding is most likely to be a significant limitation. Multi-national companies should be targeted for participation in the work, as an example of Extended Producer Responsibility. The work would be organised and coordinated at a regional level, although national initiatives should also be encouraged.

While clean-ups may be necessary in some cases they should not take the place of on-going environmentally responsible waste management

4.5.3 Planning and Performance Monitoring

These activities are linked to many others in the programmes in that they provide the mechanisms for on-going monitoring and review. They should generally be carried out within existing national resources, with little or no requirement for external assistance.

Activity H1: Establishment of Planning and Monitoring Systems

This activity follows on logically from ***Activities D1, E1*** and ***E4***. The work would be coordinated by the designated lead agency, with input from others as required. The main requirement is to establish a system for collating information and reporting on the implementation of activities under the national strategy. These processes should be used for identifying and responding to issues in strategy implementation, as well as the need for changes to the strategy in response to changing circumstances.

Activity H2: Collection and Analysis of Waste Data

It is essential for PICTs to regularly collect reliable information on their waste generation rates, waste composition, effectiveness of waste management programmes and economic value of waste. This is required for the planning of future disposal requirements, for identifying and assessing waste minimisation opportunities, and for monitoring the effectiveness of some of the other activities carried out under the national strategy. Data on waste quantities should be collected on a continuing basis, while waste composition surveys should be carried out regularly where appropriate

Activity H3: Long-Term Planning

This activity should be undertaken within a few years of implementation of the national strategy, and then revisited about once every five years. Long-term planning should be based around an assessment of future infrastructure requirements, including equipment for collection and disposal, and new landfill sites. The planning should take into account expected changes in waste quantities as a result of strategy activities, population growth, and national development activities

4.5.4 Impact (Environmental) Monitoring

As noted previously, there is currently only a limited amount of impact monitoring being done in the region. This is an important activity in terms of identifying waste disposal sites most in need of upgrading, remediation or closure. There is also a need for on-going monitoring, to detect any changes in landfill performance and other environmental indicators of waste management over time.

Activity I1: Routine Landfill and disposal site monitoring programmes

Basic monitoring programmes should be established at all operational disposal sites and landfills in each PICT. External advice may be needed for the design of the monitoring programmes, but in most PICTs all routine inputs including laboratory services should be available. In designing monitoring programmes consideration should not only be given to monitoring during the operation of the disposal sites and landfills but also for the post-operation or closure period.

4.6 Waste Industry

Activity J1: Establishment of local "recycling" system

Because the waste industry is still in its infancy, there is a great need to put in place a local "recycling" mechanism that will stimulate efforts for the development of the waste industry at the national level. These set ups would then be easy to use by regional organizations to accentuate mechanisms to enhance the recycling component of the waste management process.

Activity J2: Assessment and Development of partnerships with the recycling industries

Although conventional recycling programmes for recyclable materials such as paper, PET plastics and glass are not viable in most PICTs, several PICTs have shown that if coordinated and planned out properly, these materials can be shipped off-island for recycling with partners in countries where the waste industry is more developed. In many of these successful cases, there has been the involvement of partners from within and outside the PICTs. There is an urgent need for involvement of the business and private sector in making this happen. This could include making arrangements with individuals or companies in countries where there is a waste industry to facilitate the transportation and selling of the recyclable materials to recycling companies.

4.7 Funding requirement and mechanism

Activity K1: Review of Funding and Resources Requirements and Possible Mechanisms

Adequate funding and resources are an essential requirement for the development of a sustainable waste management programme. These funds may be provided from the consolidated or general accounts/funds but would be more appropriately obtained through other mechanisms such as user-charges where the revenue collected is directed towards waste management. This review should be carried out in conjunction with the work on a national strategy ***(Activity E4)*** and may benefit from external assistance for those PICTs with little or no experience in the use of user-pays systems.

Activity K2: Assessment of Financial Mechanisms to Assist Recycling or Disposal Costs

This activity should be carried out in conjunction with ***Activities D1, D2, D3, D4*** and ***K1***. Opportunities should be examined to integrate funding requirements to economic incentives for waste minimisation, recycling and disposal. The institutions and regulatory framework needed to support these options should be reviewed and assessed. Possible items to consider as a means of enhancing existing recycling programmes, and/or covering the cost of waste disposal include but not limited to:

- Cost sharing for waste management
- Charges for waste management and disposal including:
    - The use of container deposit schemes
    - Advance collection and disposal fees, and
    - Other similar financial mechanisms

Some technical advice may be required as to the range of potential mechanisms, but most of the assessment should be able to be carried out within existing resources.

4.8 Overall Work Plan and Timetable

Many of the activities proposed above will extend over many years. However, there are others, which need to be undertaken at specific stages in the implementation of this Plan. The key elements of timing are summarised in Table 4.1 below.

Table 4.1: Proposed Timetable for Implementation of the Plan

May 2003	Endorsement of the Draft Strategy at PALM III
Mar 2004	Preparatory workshop for Year of Waste (SPREP, activity A1)
Mar-Jun 2005	Sub-regional Forums to finalise Regional Strategy (activity E1)
2003 – 2005	Continuation of the JICA waste management workshops (activity B1)
2005	Pacific Regional Year of Waste (activity A1)
2005-2006	Development and endorsement of National Waste Policies (activity E4)
2005 – 2007	Assess regional options for disposal of difficult wastes (G5) and Regional clean-up programme for difficult wastes (G6)
2006-2015	Review laws and regulations (C1), reviewing funding needs and mechanisms (K1), establish regional and national coordinating mechanisms (E2 and E3), prepare national strategies (E4), develop national waste minimisation strategy (D1), establish national planning and monitoring processes (H1), and assess national capacities (B3)
2008	Repeat of Regional Forum to review Strategy
On-going activities	All other activities to commence in accordance with National Plans

References

Raj, S. Pacific Regional Waste Awareness and Education Programme (WASTE), Final Report. South Pacific Regional Environment Programme SPREP, Apia, 2000.

SPREP, 2001. Action plan for managing the Pacific environment (2001-2004). South Pacific Regional Environment Programme SPREP, Apia, 2001.

SPC, 2002. (SPC). Annual population data report. Community of the South Pacific, Noumea, 2002.

UNEP, 2001. Overview on Land-based Pollutant Sources and Activities affecting the Marine, Coastal and Freshwater Environment in the Pacific Islands Region, United Nations Environment Programme in cooperation with SPREP, UNEP Regional Seas Reports and Studies No 174.

UNEP, 2004, Guidelines on best available techniques and provisional guidance on best environmental practices relevant to Article 5 and Annex C of the Stockholm Convention on Persistent Organic Pollutants (Advance draft)

Appendix 1: Regional and national waste management activities

Regional Activities

Most regional waste management programmes have been delivered through SPREP, in accordance with its overall mandate for the region. Other organisations active in the region include FAO, WHO, and UNEP. Current and recently completed activities are as follows:

- The EU/SPREP WASTE project (1998-2001), which has provided regional information on waste compositions and current levels of waste awareness. It has also assisted in the development of some national waste management strategies, and materials for use in waste education and awareness programmes.
- The JICA/SPREP programme on municipal solid waste management (Miyazaki Initiative, 2001-2005), which is supporting intensive training courses in waste management, demonstration projects (e.g. composting) and the development of guidelines for landfill design, operation and management, and the incremental improvement at existing landfills.
- The AusAID/SPREP POPs in PICs project (1997-2006), which aims to address existing problems and strengthen national capacities for the management of hazardous chemicals, contaminated sites and hazardous wastes. This programme is also being supported through UNEP, and currently includes a major initiative for clean up and disposal of existing hazardous waste stockpiles and contaminated sites.
- The SPREP/NZAID HazWaste project (2000-2002), which is developing a set of regional guidelines on the management of difficult wastes, including asbestos, waste oil, scrap metal, and glass.
- The SPREP 2005 Pacific Year of Action Against Waste and Regional Waste Clean-up programme. This proposed programme is to include waste education and awareness activities in each country and regional clean-up activities directed at difficult wastes, such as car bodies, whiteware, wet-cell (car) batteries, glass and plastics. NZAID have agreed to support a preparatory programme for National contact points and the implementation education and awareness component of the programme but funding is still being sought for the regional clean up work.
- The GEF/SPREP International Waters project (2000-2006), which is to include demonstration projects on community-based waste management, and an assessment of regional recycling programmes for waste oil.
- WHO health-care waste management programme (2001-2005) to support the development of national guidelines and strategies and the training of key personnel.
- FAO composting programmes (on-going). This work has a primary focus on improving agricultural productivity, but will also assist in increasing the amount of green waste, which is diverted to more beneficial uses.

- Previous UNEP activities have included the preparation of *Guidelines for Municipal Solid Waste Management Planning in Small Island Developing States in the Pacific Region*, and *A Directory of Environmentally Sound Technologies for the Integrated Management of Solid, Liquid, and Hazardous Waste for Small Island Developing States (SIDS) in the Pacific Region.* Both of these documents were prepared in collaboration with SPREP.

National Activities

All Pacific Island countries have on-going activities in waste management, at both national and local levels. However, many of these are simply directed at the continued operation of existing waste collection and disposal services. The activities noted below are those, which aim to achieve significant changes in the existing services and facilities.

American Samoa: a new landfill opened several years ago is designed and operated to a good standard. Basic recycling programmes in place for cans, scrap steel and batteries, but much more remains to be done in this area

Cook Islands: have recently commissioned their new ADB-funded (loan) landfill and waste management facility in Rarotonga. In addition, recycling programmes for aluminium, paper and glass have been established under an NZAID-funded project. This has augmented some existing recycling programmes carried out by community groups and several small businesses.

Fiji: have recently commissioned their new EU-funded landfill at Naboro just outside Suva city, and possibly remediate the existing one. The Fiji government is also quite active in promoting waste recycling programmes, anti-litter campaigns, and other waste awareness activities. Health-care waste management is being addressed through a WHO programme, while JICA has provided assistance through the building of a number of incinerators around Fiji.

FSM: some health-care waste facilities have recently been upgraded through the provision of incinerators under a Japan/WHO programme. Basic operational improvements were made to the main landfill site on Pohnpei several years ago, but the disposal facilities in this and all other States still require significant improvements.

Guam: an existing landfill has significant problems with leachate and internal fires and is near capacity. Work has been under way for several years to confirm a site for a new facility, but this continues to be problematical. Well-established recycling programmes are in place, mainly through private sector operators.

Kiribati: existing rubbish dumping sites are to be upgraded through the ADB-funded SAPHE project, and health-care waste facilities have been enhanced through the provision of new incinerators by Japan/WHO. Composting and other waste awareness activities were promoted extensively under a Kiribati Environmental Education Project

(KEEP) supported by NZAID and SPREP. Community-based waste management has been selected as the focal area for a pilot project under the SPREP International Waters programme.

Marshall Islands: Community-based waste management has been selected as the focal area for a pilot project under the SPREP International Waters programme.

Nauru: community-based waste management has been selected as the focal area for a pilot project under the SPREP International Waters programme.

Niue: a National Waste Strategy and associated Action Plans were developed in 2001 with AusAID assistance and these have lead to an overall improvement in rubbish collection and disposal operations, although further improvements are needed at the disposal sites.

Northern Marianas: work is under way on the development of a new landfill to replace the existing dump site, which is poorly sited and has been extended well beyond its original capacity.

Palau: an Integrated Solid Waste Management Plan was developed in 1999 with AusAID assistance, and work is expected to begin shortly on a new landfill facility for Koror. Health-care waste management was addressed during 2003 under the WHO programme. Community-based waste management has been selected as the focal area for a pilot project under the SPREP International Waters programme.

Papua New Guinea: national guidelines for the design and operation of landfill sites were recently produced with support from Australia. The government is moderately active in promoting waste awareness activities. PNG is also participating in the WHO health-care waste programme.

Samoa: improvements to the Tafaigata landfill was completed in 2004 with support from Japan, along with a community-based composting project. NZAID is supporting a pilot project on anaerobic digestion of wastes to generate fuel gas, while health-care waste management is being upgraded as part of a World Bank Health Services project, with additional support from Japan.

Solomon Islands: a national Action Plan was developed in 2001 with NZAID and SPREP assistance, but is yet to be fully implemented. Operational improvements at the Honiara dump have been implemented as part of this Plan, but much work still remains to be done.

Tokelau: NZAID funding recently approved for a community-based waste management project, which will assist in improving existing dumpsites and developing waste minimisation activities.

Tonga: a new landfill and waste management facility is to be constructed on Nuku'alofa with assistance from AusAID. Community-based waste management has been selected as the focal area for a pilot project under the SPREP International Waters programme.

Tuvalu: a recently completed AusAID project has resulted in the upgrading of the existing landfill site, rehabilitation of old dump sites and the development of a composting service on Funafuti. Community-based waste management has been selected as the focal area for a pilot project under the SPREP International Waters programme.

Vanuatu: a National Waste Management Strategy was developed under the EU/SPREP WASTE project, along with significant support for community recycling programmes and waste awareness activities. Health-care waste facilities have been upgraded with support from Japan/WHO. A new Port Vila landfill, which was opened in 1994, was well designed and constructed but the on-going operation is suffering from inadequate funding.

Appendix 2: Effective recycling activities in PICs

These are the recycling activities that have been effectively coordinated in the Pacific Islands region:

Aluminium cans: The resale value of scrap aluminium fluctuates in accordance with world prices but is generally well above the cost of shipping. Aluminium collection recycling systems have been established in most of the PICTs. However, many of these are marginal operations at best, usually because of a failure to capture enough of the resource and/or sub-standard baling equipment.

Lead-acid batteries: Old car batteries are a significant concern throughout the region because of the associated hazards from lead contamination. The batteries have significant value as scrap, although the financial return is usually quite marginal after covering for shipping costs. Nonetheless several PICTs are now successfully shipping their batteries offshore for recycling, and more are expected to follow.

Waste oil: This is sometimes being used locally as a supplementary fuel in power stations, and until recently, some countries were sending their waste oil to Fiji for use as a supplementary fuel in a steel mill. French Polynesia has recently started to ship waste oil to New Zealand. There are costs involved in shipping waste oil to other countries for disposal, but this is likely to remain the only available option for most PICTs. Another current limitation is the lack of any organised in-country collection systems. Some countries are considering introducing a system of import levies to pay for the cost of shipping and disposal.

Glass Bottles: Glass bottles are being effectively recycled in several countries in the region, thanks to the existence of local breweries and soft drink companies with associated bottle washing plants. However, this option is only applicable to beer and soft drink bottles. The production of crushed glass for use as aggregate and as a sand substitute is another option that is being successfully applied in a limited number of situations.

Office Paper and Cardboard: These are being baled and shipped from a few PICTs for recycling, but the viability of the operation depends on having reasonably large waste volumes and direct access to international shipping routes.

Plastics: Small volumes of PET plastics are being recycled from some of the larger PICTs such as Fiji and PNG. However, other than that there are no viable recycling programmes for plastic wastes. Plastic bags are a particular concern throughout the region. These have recently been prohibited in Port Vila, Vanuatu, but the desired outcome of this regulation may suffer from a lack of effective enforcement.

Other problem wastes in the region for which there are currently no viable management and disposal options include: low-grade scrap metal (especially whiteware and old car bodies), computers and other electronic goods, dry cell batteries and disposable nappies.

Appendix 3: Outline Descriptions of the Proposed Activities

Cross-cutting Issues

Activity A1: Pacific Regional Year of Action Against Waste	
Lead Agency	SPREP in conjunction with national governments
Outline	The Year of Action Against Waste campaign is based around a range of national activities within each PICT, with SPREP serving a regional facilitation and coordination role. Governments have been encouraged to support the campaign through appointment of National Coordinators/Contact Points, and NZAID has supported this initiative by funding a SPREP–run preparatory workshop for these people. Additional funds have been secured for other regional initiatives to promote the campaign, while most national activities could possibly be and are funded by governments and through local sponsorship arrangements.
Indicative actions	1. Appointment of National Coordinators/Contact Points 2. Regional preparatory workshop for NCs (SPREP) 3. NCs develop national programmes in consultation with others 4. Programme implementation 5. Review activities at year end, plus recommendations for future work
Proposed Timing	2005–onwards
Resource Needs	At least US$90,000 for regional and national initiatives to promote the campaign. It is envisaged that future activities be proposed and PICTs to consider funding them through existing funding mechanisms with regional support coming from external sources.

Activity A2: Integrated Communication Programmes	
Lead Agency	Designated national coordinating agency for waste management
Outline	Integrated communication programmes should be improved or designed and implemented within each PICT in accordance with national goals and activities. However consideration should also be given to some form of regional support for the programmes through SPREP and other relevant CROP agencies.
Indicative actions	1. Develop initial concepts during work on National Strategy 2. Finalise proposals and programme after the Year of Action Against Waste, and request on-going funding 3. Initiate programme activities
Proposed Timing	2006 onwards

Resource Needs	PICTs to consider funding this through existing internal funding mechanisms with external funding and resources secured from donors and through partnerships with SPREP, and other relevant CROP agencies.

Capacity Building

Activity B1: Annual Training Course in Municipal Waste Management	
Lead Agency	JICA/SPREP
Outline	This is an existing activity, which earlier this year, completed its five-year cycle under the Japan Miyazaki Initiative. The course extended over a four–week period, with the venue alternating between Okinawa and Apia, and about 10 to 15 participants each year drawn from the Pacific Forum Island countries. The course will be continued for another 5 years after 2005, and it is intended that its impact be extended through distribution of a course video, and maintenance of the information network described under ***Activity B6***.
Indicative actions	Programme activities already determined
Proposed Timing	2006-2010
Resource Needs	Funding for future training activities to be determined and sought

Activity B2: Training for Atoll Countries and Territories	
Lead Agency	SPREP in collaboration with partners
Outline	It is widely recognized that the waste management issues and requirements of the atoll settings are distinctly different and in many cases are more challenging that the high island counterparts. The very limited availability of land is a major issue when it comes to designing programmes that deal with waste disposal. This activity would allow for atoll-specific training to be put in place to train personnel in all components of the national waste management programmes including policy makers to waste disposal facility workers.
Indicative actions	1. Develop a fully costed atoll–specific training programme in collaboration with waste expert in this area 2. Circulate programme to atoll PICTs for their perusal and endorsement 3. Seek donor funding for conducting training 4. Conduct training on a sub-regional basis initially and then at the country level 5. Evaluate and monitor the impact of the training after 3 years 6. Review the training programme after 5 years
Proposed Timing	2006-2010
Resource Needs	Funding for future training activities to be determined and sought

Activity B3: Assessment of National Capacities in Waste Management	
Lead Agency	National governments
Outline	Capacity building requirements should be initially considered and addressed during the planning work under ***Activities E4, H1*** and ***H3***. An initial needs assessment should be carried out, and a programme designed to address these needs, along with the appropriate funding. There is also a need for periodic reviews of the capacity building programme to monitor its effectiveness and make any necessary adjustments.
Indicative actions	1. Designating a lead agency for SWM 2. Establish national team to conduct needs analysis 3. Obtain external advice as required 4. Carry out assessment and report back to national coordinating body
Proposed Timing	Initial assessment during 2006-2008, then revisit every 3 to 5 years.
Resource Needs	PICTs to consider funding this through existing internal funding mechanisms with external funding and resources secured from donors or through partnerships with SPREP and other relevant CROP agencies

Activity B4: National Capacity Building Activities	
Lead Agency	Designated national coordinating agency for waste management
Outline	This activity follows on from ***Activity B3***, and is intended to implement the findings of the assessment. This work should be done as a national initiative with assistance from external sources as necessary. Capacity Building activities should include a focus on skill building for institutional and systemic management including the skills to develop sound and appropriate policies and integrated strategic management of waste that incorporates funding and incentive for waste control.
Indicative actions	1. Develop capacity building programme 2. Obtain budget approvals for proposed programme 3. Implement the programme 4. Review programme periodically to make adjustments where appropriate
Proposed Timing	2006 onwards
Resource Needs	PICTs to consider funding this through existing internal funding mechanisms with external funding and resources secured from donors or through partnerships with SPREP and other relevant CROP agencies

Activity B5: Country Attachments	
Lead Agency	SPREP, in conjunction with national agencies

Outline	There is a country attachment scheme managed by SPREP, which aims to boost national capacities by supporting country-to-country attachments between Pacific island countries. Activities of this sort should provide an excellent vehicle for capitalising on some of the work being done under other parts of the waste programme, such as the landfill demonstration project in Samoa. There is the potential for waste management personnel to be included in the current project, but consideration should also be given to obtaining additional funds to allow a continuation of the programme beyond its current timeframe and scope (to broaden the skills base).
Indicative actions	1. Governments to identify potential use of the scheme during ***Activity B1*** 2. SPREP to establish attachment guidelines and assist in identifying suitable placements 3. Seek funding if necessary, and implement
Proposed Timing	2006 onwards
Resource Needs	SPREP to seek funding for the implementation of the activity

Activity B6: Maintenance of a Waste Information Network	
Lead Agency	SPREP
Outline	This activity would aim to enhance the existing knowledge and skills of waste management personnel through participation in a regional information network. Participants from the Municipal Waste Training Courses (***Activity B1***) are already nominal participants in this network, but the operation of the network needs to be boosted through regular input from a moderator, and extension to other waste practitioners.
Indicative actions	1. Activities could include operation of an e-mail discussion group, distribution of regular newsletters and information bulletins, organisation of periodic technical workshops and conferences, and support for mentoring programmes. 2. Activities would also include information gathering either through the e-mail discussion group or by filling out issue–specific methods such as questionnaires.
Proposed Timing	2006 onwards
Resource Needs	SPREP staffing and minor operational costs but some external activities may require additional funding which would be sought through donors

Policy and legislation

Activity C1: Review of Laws and Regulations	
Lead Agency	National coordinating agency (for waste management) with inputs from relevant government agencies such as the legal department, law

	societies, academics etc
Outline	Existing laws and regulations should be reviewed to ensure that departments have the necessary mandate to carry out their designated duties within the national strategy. The review should also consider the existence of, or need for, enforcement powers, as well as methods for implementing the possible funding mechanisms considered under ***Activity K1*** below. This review should be carried out in parallel with ***Activities K1*** and ***E4***.
Indicative actions	1. Establish working party 2. Review policies, laws and regulations in parallel with work on national strategy (E4) and funding mechanisms (K1) 3. At a minimum, engage in sub-regional collaboration with other PICTs and relevant regional organisations. 4. Recommendations to government 5. Draft amendments of new policies, laws and regulations as required
Proposed Timing	Within 6-18 months of adoption of National Policy.
Resource Needs	PICTs to consider funding this activity initially from internal resources, although external assistance may be required for the drafting of new legislation if necessary. In such cases external funding and resources may be sought through SPREP or through bilateral mechanisms.

Waste generation and minimisation

Activity D1: Development of National Waste Minimisation Strategies	
Lead Agency	Designated national coordinating agency for waste management, with inputs from departments of Industry, Internal Affairs and other agencies as appropriate.
Outline	This activity should be done in parallel to, but separately from the work on a national strategy and should involve a review of opportunities to minimize waste at source from the introduction of economic and other incentives. It should be linked to activities under K1 and K2. The strategy should lay out a framework for implementation of some or all of the other minimisation activities listed below.
Indicative actions	1. Establish working party and consult with relevant stakeholders 2. Collect and assess information on waste minimisation opportunities at source. 3. Submit report and recommendations to national coordinating body 4. Incorporate recommendations into national strategy 5. Implement strategy as appropriate
Proposed Timing	Within 12-36 months of adoption of national policy

Resource Needs	PICTs to consider funding this activity initially from internal resources, although external technical assistance may be required if necessary. In such cases external funding and resources may be sought on a case-by-case basis through SPREP or through bilateral mechanisms.

Activity D2: Development of National Waste recycling Strategies	
Lead Agency	Designated national coordinating agency for waste management, with inputs from departments of Industry, Internal Affairs and other agencies as appropriate.
Outline	This work should involve a review of information on quantities of recyclable material currently being produced (see ***Activity H1***), current recycling activities, and potential markets for recyclable goods, and an assessment of other opportunities for waste minimisation. The strategy should lay out a framework for implementation of some or all of the other minimisation activities listed below.
Indicative actions	1 Establish working party and consult with relevant stakeholders 2 Collect and assess information on recycling opportunities 3 Submit report and recommendations to national coordinating body 4 Incorporate recommendations into national strategy and implement as appropriate
Proposed Timing	Within 12-36 months of adoption of national policy
Resource Needs	PICTs to consider funding this activity initially from internal resources, although external technical assistance may be required if necessary. In such cases external funding and resources may be sought on a case-by-case basis through SPREP or through bilateral mechanisms.

Activity D3: Enhancement of Existing Recycling Programmes	
Lead Agency	SPREP (mainly in a coordination role) in collaboration with designated lead agency for waste management and donor agencies
Outline	There are numerous recycling activities currently operating in the region, especially for aluminium cans, PET bottles, scrap metal and to a lesser extent, paper and batteries. Many of these operations are being carried out by NGOs or the private sector, but most are only marginally viable. Most of these operations would benefit from external technical assistance directed at upgrading of equipment, implementation of more effective business practices, regulations and promotional activities to improve participation rates.
Indicative actions	1. Work with governments to identify activities that would benefit from this work 2. Enhance and strengthen regional and sub-regional collaboration 3. Liaise with donors over possible support

	4. Assist in developing the work plan 5. Implementation of the work plan as required 6. Review and report (regionally) on outcomes as appropriate
Proposed Timing	2006 onwards
Resource Needs	Cost of these operations should be determined on a case-by-case basis. Costs would include consultancy fees as well as possible equipment costs

Activity D4: Assessment and Demonstration of New Recycling Methods	
Lead Agency	SPREP (mainly in a coordination role) in collaboration with the appropriate partners at both the national and regional levels
Outline	Conventional recycling programmes for materials such as paper, tyres, PET plastics and glass are not viable in most PICTs, mainly because of the low waste volumes coupled with high shipping costs. There is a need for development of alternative recycling methods for these wastes, which are suitable for small-scale, local use. This could include small-scale paper, tyre recycling, manufacture of plastic lumber, and the use of crushed glass in construction materials or ceramics. These are all established technologies, but there is a need for demonstration and assessment of their application within PICTs, through technical assistance programmes.
Indicative actions	1. Work with governments to identify suitable targets for this work 2. Liaise with donors over possible support 3. Assist in implementation as required including market support 4. Review and share information regionally on outcomes as appropriate
Proposed Timing	2006 onwards
Resource Needs	Cost of these operations should be determined on a case-by-case basis. Costs would include consultancy fees as well as possible equipment costs

Activity D5: Promotion of Community Composting Activities	
Lead Agency	SPREP, in conjunction with donor agencies and governments already active in this area
Outline	Community composting programmes have been demonstrated successfully in several PICTs, and this work should now be extended to other PICTs through further technical assistance projects and the production of information sheets, videos and other promotional materials with technical assistance from SPREP and other relevant organizations. On–going promotion of the techniques should be incorporated into the national waste integrated communication activities suggested below.
Indicative actions	1. Review existing information and other materials on composting activities

	2. Obtain funding and develop regional resource materials 3. Liaise with governments over incorporation into national programmes
Proposed Timing	2006-2008 for steps 1 and 2, and then on-going
Resource Needs	PICTs should consider funding the internal component of this work from existing resources while preparation of promotional and resource material can be undertaken collaboratively with assistance from SPREP or other relevant organizations.

Waste Management and implementation of the strategy

Activity E1: Sub-regional Waste Forums and Finalisation of the Pacific SWM Strategy	
Lead Agency	SPREP in collaboration with PICTs
Outline	There was a great need for an extensive consultation on the draft strategy to ensure participation and support by all parties with the four sub–regional waste forums serving as the major avenue to engage PICTs and other relevant stakeholders to contribute to this process. More than 60 country and territory participants had the opportunity to review the document and contribute to the document where appropriate. The key focuses of the sub-regional forums were the sharing of experiences and concerns in waste management, and finalisation of the strategy. The sub-regional approach to extensive consultation should be repeated in about five year's time, to allow for review and modification of the Strategy.
Indicative actions	1. Confirm budget, identify and obtain funding (SPREP) 2. Organise venue, potential participants (about 70), programme, travel arrangements (SPREP) 3. Governments to review draft Strategy and submit country reports to SPREP in advance of meeting 4. Strategy revised during sub-regional forums and finalised by the chairpersons of the four sub-regional forums 5. Final version of the strategy endorsed and approved by the 16 SPREP Meeting and published by SPREP. 6. Reconvene sub-regional consultation meetings to review progress in 2010
Proposed Timing	March-June, 2005, then repeat in 2010
Resource Needs	The four sub-regional meetings held in 2005 cost about US$160,000 but this figure will need to be reviewed for the repeat meetings in 2010.

Activity E2: Establishment of a Regional Coordination Mechanism	
Lead Agency	SPREP in collaboration with PICTs
Outline	The setting up of a regional coordinating mechanism is imperative

	for the regional implementation of this strategy. While emphasis is placed on the implementation at the national level, the regional coordination of the individual PICT achievements is important in the overall implementation of the strategy. SPREP's role as the lead agency is consistent with its established role in the region.
Indicative actions	1. Develop and agree on the coordination mechanism with its associated programmes and activities based on SPREP's established role in the region 2. Establishment of dedicated SPREP staff position to oversee and assist sub-regions with this activity – either through a centrally located officer in SPREP or sub-regionally located officer in the region (Melanesian, Micronesian and Polynesian) 3. Implement mechanisms, in conjunction with activity E3.
Proposed Timing	Within 6-18 months of endorsement of national strategy
Resource Needs	SPREP staffing and minor operational costs but some external activities may require additional funding which would be sought through donors

Activity E3: Establishment of a National Coordination Mechanism.	
Lead Agency	Designated national coordinating agency for waste management
Outline	The role of the lead agency specified in the national strategy should be to ensure coordination of all activities, to monitor the effectiveness of the programme, and to ensure that the necessary financial resources are made available. One of the first steps is to establish a coordinating mechanism, which would most likely be a National Coordinating Committee, plus other subsidiary bodies as required.
Indicative actions	1. Identify all relevant stakeholders and convene a meeting 2. Develop and agree on the coordination mechanism 3. Implement mechanisms, in conjunction with activity H1.
Proposed Timing	Within 6-12 months of endorsement of national strategy
Resource Needs	PICTs to consider using existing resources to undertake this activity

Activity E4: Development of a National Waste Management Strategy	
Lead Agency	National governments
Outline	This is an essential first step in clearly defining a country's goals for waste management and how it intends to achieve them. The policy should be endorsed at the highest political levels and should be consistent with the national development goals or plans, including their links to regional and global initiatives such as the Pacific Plan, MDGs, BPoA, JPOI and the outcomes of the Mauritius meeting. The policy should further specify which agency or agencies would be responsible for specific activities, and especially the lead agency responsible for overseeing policy implementation and ensuring and

	ensuring coordination with others.
Indicative actions	1. Nominate government agency to lead the work on the strategy 2. Consultations with all other stakeholders. 3. Draft policy considered by cabinet, revised as required 4. Policy endorsed by government 5. Implement the strategy
Proposed Timing	Within 6 to 18 months of endorsement of the Strategy
Resource Needs	PICTs to consider funding this activity through existing internal funding mechanisms and in cases where technical assistance in required, external resources should be sought and provided through partnerships with SPREP, other relevant CROP agencies and donors

Activity E5: Development of National Management Plan for Disaster Debris	
Lead Agency	Designated national coordinating agency for waste management, with inputs from other agencies as appropriate.
Outline	PICTs are vulnerable to natural disasters and at times experience civil disturbances. In the aftermath of such sudden and unplanned events PICTs usually have to deal with the large volumes of debris. There is currently a limited number of disaster debris management plans in any of the PICTs to prepare for such events. This work involves stakeholder consultations and the development of a disaster debris management plan. Guam is currently working on their plan that other PICTs could consider using as a guide.
Indicative actions	1. Establish lead agency to develop the plan. 2. Conduct stakeholder consultations and develop plan in line with national disaster management or emergency response plan. 3. Submit plan for consideration and endorsement by government. 4. Implement plan as needed.
Proposed Timing	2007 onwards
Resource Needs	PICTs to consider funding this activity through existing internal funding mechanisms and in cases where technical assistance in required, external resources should be sought and provided through partnerships with SPREP, other relevant CROP agencies and donors

Waste Collection

Activity F1: Incremental Improvements at Existing Collection Systems	
Lead Agency	National governments
Outline	The collection system is an integral component of any waste management programme. This along with waste disposal are the components most demanding of resources and therefore need special attention. In order for the other operational components to function adequately, an efficient and effective collection system needs to be in place. This activity is to assist PICTs in assessing their respective

	collection systems and identify ways in which they can be improved to make them more efficient and effective.
Indicative actions	1. Governments to identify existing collection systems and undertake assessment exercise to determine their efficiency and effectiveness 2. Develop an upgrading programme for their improvement 3. Liaise with donors as appropriate 4. Undertake feasibility study and project design 5. Project implementation 6. Review and report findings with assistance from SPREP
Proposed Timing	2006 onwards
Resource Needs	The funding and resource requirements for each improvement work in each PICTs setting will differ and will be determined on a case–by–case basis

Waste Disposal

Activity G1: Incremental Improvements at Existing Disposal sites	
Lead Agency	National governments
Outline	This activity will build on the work already being carried out under the Japan Miyazaki Initiative (see Appendix 1) involving a demonstration project to upgrade the Tafaigata landfill in Samoa. Similar work will be carried out at other landfills in the region. Some initial technical assistance will be required for feasibility studies, design and implementation work at each site. However, it is envisaged that over time, governments will undertake these activities within their own resources, especially for smaller disposal sites within each PICT.
Indicative actions	1. Governments to identify eligible disposal sites 2. Liaise with donors as appropriate 3. Complete feasibility study and project design 4. Project implementation 5. Review and report findings with assistance from SPREP
Proposed Timing	2006 onwards
Resource Needs	The funding and resource requirements for each improvement work in each PICTs setting will differ and will be determined on a case–by–case basis

Activity G2: Development of landfill and other appropriate waste disposal techniques for Atoll Environments	
Lead Agency	National governments in conjunction with SPREP and donors
Outline	The landfill improvement work carried out in Samoa is relevant to most high island situations in the region. However, a modified approach is needed for atoll environments because of the limited land

	availability and close proximity to marine and freshwater resources. A development project should be planned for the atoll setting, and this should be implemented over the next two years. Extension to other atoll PICTs should then be considered, using the same approach as noted in ***Activity G1***.
Indicative actions	1. Develop plan for the development work and seek appropriate funds and resources 2. Chosen governments to identify potential disposal facility 3. Liaise with donors as appropriate 4. Complete feasibility study and project design 5. Project implementation 6. Review and report findings with assistance from SPREP
Proposed Timing	2006-2008 (Initial PICT), 2008 onwards for other atoll PICTs
Resource Needs	The funding and resource requirements for each PICTs setting will differ and will be determined on a case–by–case basis

Activity G3: Development of new sanitary landfill	
Lead Agency	Designated lead agency in conjunction with the coordinating committee
Outline	In some PICTs, the existing disposal facilities are unable to be upgraded due to their location, condition, and other reasons. In some cases, new disposal facilities have to be developed, which would require careful planning and implementation.
Indicative actions	1. In conjunction with ***Activities H2*** and ***H3***, undertake EIA study 2. Governments to decide on the site based on the EIA 3. Secure architecture and engineering (A&E) services and develop closure/post closure plans 4. Construction of the facility 5. Develop and implement operation and maintenance (O&M) plans
Proposed Timing	2006 onwards
Resource Needs	PICTs to consider funding this internally initially but external funding may be required for the construction of the facility

Activity G4: Closure and post-closure of existing disposal sites	
Lead Agency	Designated lead agency in conjunction with the coordinating committee
Outline	In the event that an existing disposal facility is unable to be upgraded, then a proper closure plan with its appropriate post-closure monitoring programme needs to be put in place. This is important in making sure that the closure work is undertaken properly and that the disposal facility is monitored well after its closure. These activity would be undertaken parallel to ***Activity G3***.

Indicative actions	1. In conjunction with ***Activities H2*** and ***H3***, undertake facility assessment and investigation 2. Design closure/post-closure plan 3. Implement closure activities 4. Monitor post-closure activities
Proposed Timing	2006 onwards
Resource Needs	PICTs to consider funding this internally initially but external funding may be required for the closure and post-closure activities

Activity G5: Assessment of Regional Options for Managing Difficult Wastes	
Lead Agency	SPREP
Outline	Some wastes present special problems for PICTs because of the lack of any viable recycling or disposal options. These include but not limited to; car bodies, tyres, domestic whitegoods, computers, low-grade scrap metal, dry and wet-cell batteries, non-recyclable plastics, and disposable diapers/nappies. The work under this activity should involve an assessment of the size of the problem, an evaluation of disposal options, and possible mechanisms for addressing the issues, such as advance disposal fees on imported goods, and promotion of the principle of Extended Producer Responsibility.
Indicative actions	1. Develop detailed TOR for consultancy 2. Identify and obtain funding 3. Conduct study and share findings within the region and sub-region, with recommendations for follow-up actions
Proposed Timing	2006-2008
Resource Needs	SPREP to work with potential partners and determine the resources needed for such an activity on either a regional basis or a sub–regional basis

Activity G6: Regional and sub-regional clean-up of difficult wastes	
Lead Agency	SPREP
Outline	This activity was previously proposed by SPREP, to be carried out in association with the proposed Year of Action Against Waste (***Activity A1***). It is not intended that the clean-up activities will deal with all difficult wastes in all countries, and the availability of funding is most likely to be a significant limitation. Multi-national companies should be targeted and encouraged for participation in the work, as an example of Extended Producer Responsibility. The work would be organised and coordinated at a regional level, although national initiatives should also be encouraged. The activities will also be relevant to ***Activity G5***.
Indicative actions	1. Develop target lists of wastes and locations 2. Identify potential sponsors and providers of disposal services, to design specific activities and confirm costs and budgets

	3. Implement activities as appropriate 4. Publicise activities, preferably in conjunction with Year of Action Against Waste
Proposed Timing	2006-2008
Resource Needs	Both national and regional operational costs to be determined on a case-by-case basis.

Planning and Performance Monitoring

Activity H1: Establishment of Planning and Monitoring Systems	
Lead Agency	Designated national coordinating agency for waste management
Outline	This activity follows on logically from ***Activities D1, E1*** and ***E4***. The work would be coordinated by the designated lead agency, with input from others as required. The main requirement is to establish a system for collating information and reporting on the implementation of activities under the national strategy. These processes should be used for identifying and responding to issues in strategy implementation, as well as the need for changes to the strategy in response to changing circumstances.
Indicative actions	1. Identify information and reporting needs, in consultation with other relevant government agencies 2. Agree on and implement routine reporting system 3. Set timetable for planning reviews and implement
Proposed Timing	On completion of national strategy
Resource Needs	PICTs to consider funding this activity through existing internal funding mechanisms with technical advise provided through partnerships with SPREP and other relevant CROP agencies

Activity H2: Collection and Analysis of Waste Data	
Lead Agency	Designated national coordinating agency for waste management
Outline	It is essential for PICTs to regularly collect reliable information on their waste generation rates,waste composition, effectiveness of waste management programmes and economic value of waste. This is required for the planning of future disposal requirements, for identifying and assessing waste minimisation opportunities, and for monitoring the effectiveness of some of the other activities carried out under the national strategy. Data on waste quantities should be collected on a continuing basis, while waste composition surveys should be carried out regularly where appropriate
Indicative actions	1. Allocate responsibilities for data collection and analysis 2. Obtain advice on methodologies if required 3. Initiate routine data collection and information management programme
Proposed	Initial survey during national planning stage, then establish on-going

Timing	programme
Resource Needs	PICTs to consider funding this activity through existing internal funding mechanisms with technical advise provided through partnerships with SPREP and other relevant CROP agencies

Activity H3: Long-Term Planning	
Lead Agency	Designated national coordinating agency for waste management
Outline	Long-term planning should be based around an assessment of future infrastructure requirements, including equipment for collection and disposal, and new landfill sites. The planning should take into account expected changes in waste quantities as a result of strategy activities, population growth, and national development activities
Indicative actions	1. Review existing plans and future projected needs during work on national strategy 2. Agree on future planning timetable and methodology, then implement
Proposed Timing	Plan reviews undertaken within a few years of implementation of the national strategy, and then revisited about once every five years.
Resource Needs	PICTs to consider funding this activity through existing internal funding mechanisms with technical advise provided through partnerships with SPREP and other relevant CROP agencies

Impact (Environmental) Monitoring

Activity I1: Routine Landfill and disposal site monitoring programmes	
Lead Agency	Designated national coordinating agency for waste management
Outline	Basic monitoring programmes should be established at all operational disposal sites and target landfills in each PICT. External advice may be needed for the design of the monitoring programmes, but in most PICTs all routine inputs should be available in-country.
Indicative actions	1. Identify target disposal sites and landfills 2. Agree on monitoring methodology, including laboratory inputs 3. Design and implement operation and closure monitoring programme 4. Review programme at 3 to 5 yearly intervals
Proposed Timing	2006 onwards
Resource Needs	External advice (SPREP) may be needed for the design of the monitoring programmes, but in most PICTs all routine inputs should be available in-country.

Waste Industry

Activity J1: Establishment of local "recycling" system	
Lead Agency	National coordinating agency (for waste management) in

	collaboration with the private and business sector and SPREP (technical advise)
Outline	Because the waste industry is still in its infancy, there is a great need to put in place a local "recycling" mechanism that will stimulate efforts for the development of the waste industry at the national level. These set ups would then be easy to use by regional organizations to accentuate mechanisms to enhance the recycling sector of the waste management process.
Indicative actions	1. Establish work party to identify the possible private sector companies or individuals to operate this recycling systems such as collection points, waste segregation mechanisms, transfer stations etc. 2. Liaise with partners and other possible donors over possible support 3. Put into place mechanisms with incentives to attract fuller participation from all sectors of the business community 4. Establish local recycling system
Proposed Timing	2006 onwards
Resource Needs	PICTs to consider supporting this activity through existing internal resources with technical advise provided through partnerships with SPREP and other relevant stakeholders (both internal and external)

Activity J2: Assessment and Development of partnerships with the recycling industries	
Lead Agency	National coordinating agency (for waste management) in collaboration with the private and business sector and SPREP
Outline	Although conventional recycling programmes for recyclable materials such as paper, PET plastics and glass are not viable in most PICTs, several PICTs have shown that if coordinated and planned out properly, these materials can be shipped off-island for recycling with partners in countries where the waste industry is more developed. In many of these successful cases, there has been the involvement of partners from within and outside the PICTs. There is an urgent need for involvement of the business and private sector in making this happen. This could include making arrangements with individuals or companies in countries where there is a waste industry to facilitate the transportation and selling of the recyclable materials to recycling companies.
Indicative actions	1. Establish work party to identify the possible partners in countries that have a waste industry 2. Liaise with partners and other possible donors over possible support 3. Implementation the recycling process as required 4. Review and report (regionally) on outcomes as appropriate
Proposed	2006 onwards

Timing	
Resource Needs	PICTs to consider supporting this activity through existing internal resources with technical advise provided through partnerships with SPREP and other relevant stakeholders (both internal and external)

Funding requirement and mechanism

Activity K1: Review of Funding Requirements and Possible Mechanisms	
Lead Agency	National coordinating agency (for waste management) plus Treasury
Outline	Adequate funding and resources are an essential requirement for the development of a sustainable waste management programme. These funds may be provided from the consolidated or general accounts/funds but would be more appropriately obtained through other mechanisms such as user-charges where the revenue collected is directed towards waste management. This review should be carried out in conjunction with the work on a national strategy ***(Activity E4)*** and may benefit from external assistance for those PICTs with little or no experience in the use of user-pays systems
Indicative actions	1. Establish working party 2. Review funding requirements and possible funding mechanisms in parallel with work on national strategy (E4) and laws and regulations (C1) 3. Submit recommendations to government on innovative strategic financing 4. Implement mechanism as required
Proposed Timing	Within 6-18 months of adoption of National Policy, although this work could involve some longer term developments as well
Resource Needs	In cases where the necessary capacities do not exist in PICTs, then external assistance may be provided with the associated costs determined on a case-by-case basis. In most cases, PICTs should consider supporting this activity from existing internal resources.

Activity K2: Assessment of Financial Mechanisms to Assist Recycling or Disposal Costs	
Lead Agency	Designated national coordinating agency for waste policy, with inputs from relevant Government agencies as appropriate.
Outline	This activity should be carried out in conjunction with Activities D1, D4 and K1. The key requirement is to assess the use of container deposits, advance disposal fees, and other similar financial (economic incentive and disincentive) mechanisms, as a means of enhancing existing recycling programmes, and/or covering the costs of waste disposal.
Indicative actions	1. Establish working party 2. Review options for financial mechanisms in parallel with work on waste minimisation strategies (D1). Also relate to work on national strategy (E4) and laws & regulations (C1)

	3. Consult with stakeholders over proposed options 4. Recommendations to government 5. Implement mechanisms as required
Proposed Timing	Initially 12-24 months after adoption of national policy, then review periodically
Resource Needs	PICTs to consider supporting this activity through existing internal resources with technical advise provided through partnerships with SPREP and other relevant stakeholders