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**SPREP** 

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# **Foreword**

ncreasing solid waste is currently a regrettable consequence of our development throughout the Pacific. It is a huge and growing problem. Our solid waste problem is exacerbated by the particular circumstances of the Pacific. We have small islands and atolls inappropriate for landfill, imports of excessive non-biodegradable packaging and a harsh environment decreasing the life of many consumer goods. The large distances between islands and the relatively small volume of waste place conventional solutions like recycling beyond the reach of most inhabitants. Sustainable waste management is a significant challenge.

Waste is an economic as well as environmental issue. Pacific countries are increasingly relying on their tourist image as a *paradise on earth*, but litter on the streets and beaches will slow this important economic driver. Waste is also inflating our health care costs by increasing pollution and mosquito breeding, causing diseases like dengue fever and malaria. Not managing waste effectively is already costing the Pacific significantly.

In contrast, waste management also offers a significant opportunity. Its high visibility means that any improvements will quickly become apparent. Efficient

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waste minimisation involves the community and business in a strong partnership with the government. This helps to build contacts and networks which, in turn, will assist in tackling more difficult social changes, such as alleviating poverty.

Happily, recent developments, such as the semi-aerobic landfill in Samoa, show that not all improvements in waste management are expensive. Kiribati and others have moved to reduce their problems by taxing some goods to fund their disposal costs. This *internalises* the waste management costs in the purchase price, just like the successful bottle deposit schemes. The Pacific needs more innovations like these, if we are to sustainably fund and improve our waste management.

This Action Plan has been formulated by senior government officials from Member countries. It will guide and prioritise the implementation of the Regional Solid Waste Management Strategy. The Strategy has taken several years to develop, and consultation has been widely sought. I would like to thank the Japanese International Cooperation Agency, NZAid, and AusAID for their support of waste management in the Pacific and for their assistance in developing the Strategy and Action Plan.

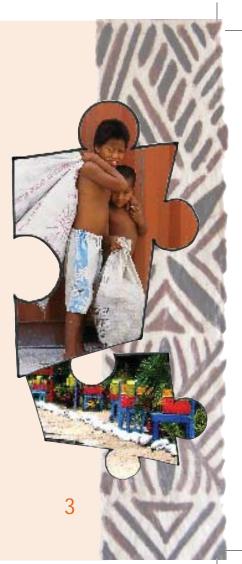
While the priorities may vary in detail between countries and over time, we are all now heading in the same direction. Our Members are committed to helping

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each other by sharing experiences and to participating in regional approaches where they are practical. The Pacific's senior waste officials have since developed an Action Plan (attached) to further clarify the immediate priorities. Success will require commitment over many years by the SPREP Members, the Secretariat and our development partners. We now have the road map—we simply need to continue the journey with haste and determination.

 $\begin{tabular}{lll} Asterio & Takesy \\ & & & & & \\ DIRECTOR, \\ SECRETARIAT OF THE PACIFIC REGIONAL ENVIRONMENT PROGRAM \\ \end{tabular}$ 



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# Background

his strategy has been prepared in response to requests from the Government of Japan to provide assistance to Pacific island countries and territories in this area. Both the Australian and New Zealand governments also assisted with this work, in recognition of its importance to the Pacific. Following adoption of the Regional Solid Waste Management Strategy by the 16<sup>th</sup> Annual SPREP meeting, a regional meeting of waste management officials from the Pacific Island countries and territories (PICTs) was held to develop this Action Plan to implement the Strategy. There was broad consensus that this list of actions represents the priorities across the Pacific, as identified by the relevant government professionals. The specific priorities and sequencing of actions for each PICT will vary according to particular circumstances and resourceing opportunities; however, the Plan is intended to provide the broad framework and a clear understanding of the work program that SPREP will be pursuing in the interests of its members. This Plan also illustrates that, while SPREP will be working with its members to capture regional efficiencies, there is considerable work required of members if the recent improvements in disposal and strategic planning are to be maximised.

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# The Regional Solid Waste Management Strategy— an executive summary

aste management is widely recognised as a major concern for PICTs, with the potential to negatively impact on national development activities, including tourism and trade, food supplies, public health and the environment. The Solid Waste Management Strategy and Action Plan sets out a long term programme for addressing waste management issues in the region to avoid these adverse social, economic and environmental effects.

The programme will be implemented at both national and regional levels. The Strategy should provide a mechanism for coordinating the future activities of donor agencies with interests in this area. Foreign aid is one of the limited resources available to the Pacific, and any assistance needs to be as cost effective as possible, gaining maximum leverage by applying successes of other PICTs. There are obvious benefits in ensuring that efforts are integrated to gain the maximum possible benefit from this resource.

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At the same time, while foreign aid can assist, there is a need for waste systems to be as efficient and self-funding as possible. Internationally accepted policies such as *polluter pays* and *producer responsibility* need to be pursued to ensure that unnecessary wastes are avoided, and those that are unavoidable have their waste management costs incorporated into the purchase price. This will reduce the burden that waste imposes on national budgets, while maintaining the sustainability so necessary for this type of unrelenting issue.

## The need for effective waste management

The generation and disposal of waste has direct and indirect links to economic development. Waste materials represent wasted money in terms of the original cost of the materials, the cost of disposal, and the potential value of the material as a recyclable and reusable resource. Poorly managed waste can have negative effects on tourism by detracting from the *Pacific paradise* image promoted by most PICTs, and via health warnings about infectious and vector-borne diseases. There is potential for contamination of food supplies, which can impact on local markets and revenue from export crops. There are also numerous health and environmental hazards that arise when waste is poorly managed and disposed of. Taking effective measures now will also avoid the need for expensive clean up operations in the future. Conversely, the benefits from good waste management

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include the enhancement of the tourism experience, reduced health care costs, reduced raw material costs, and the maximisation of the value of expensive infrastructure, such as landfill and collection systems.

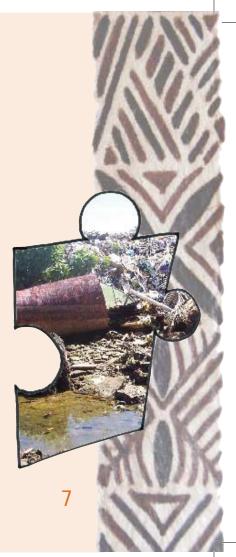
## Key elements of the strategy

The strategy is based on three major strategies:

- institutional activities by all key stakeholders, including policy development, capacity building, information exchange, public education and awareness
- 2. development and/or enhancement of waste minimisation activities (such as community awareness and participation, and recycling) to reduce the amount of waste produced at the national level
- 3. improvement and upgrading of existing waste management and disposal systems.

The proposed activities will assist PICTs in moving towards the development of effective waste management systems in accordance with their specific needs. The programme will be implemented over a period of 10 or more years because many of the required changes will only be achieved through gradual improvements over long periods of time. In addition, the activities emphasise

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the development of activities that embody some of the key requirements for sustainability, including the use of appropriate technologies and management systems, with a strong focus on self help and in-country capacity building.

#### Coordination mechanism

SPREP will coordinate the implementation of this strategy. The key elements of the coordination mechanism will be 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.

#### Commitment

Pacific Island governments have all recognised the importance of waste management in the region, and the need for positive action has been noted on numerous occasions. Little progress will be made, however, until the issue is acknowledged and actions are endorsed at the highest political level. The

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following policy was adopted as part of the Regional Solid Waste Management Strategy at the 16<sup>th</sup> SPREP Annual Meeting in 2005 ...

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
- encourage and support appropriate waste minimisation activities so as to achieve measurable reductions in the quantities of waste that need to be disposed
- 3. establish or upgrade waste disposal facilities within their countries that comply with minimum agreed regional-performance standard, quidelines and international commitments.



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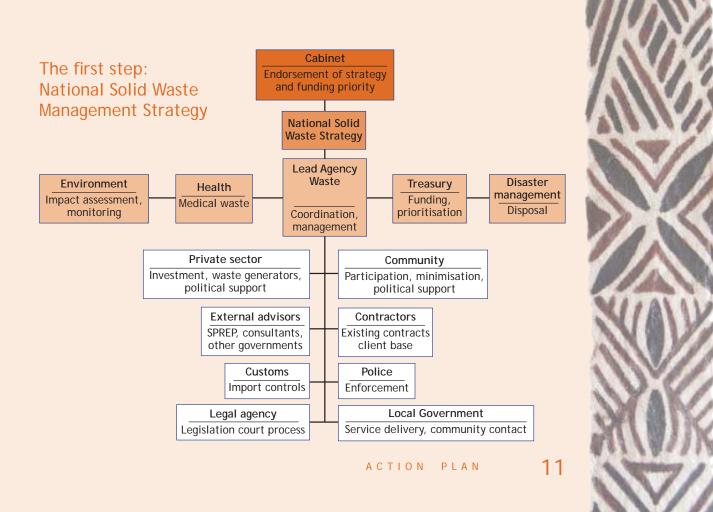
# The Action Plan

he Action Plan is a synthesis of the activities sourced from the Strategy and the JICA-and NZAID-sponsored seminar for senior waste management officials held by SPREP in Apia, Samoa in November 2005. The list of actions is not in any particular order or priority.



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# National strategy and coordination

The most important action at this stage is for countries to ensure that their waste management systems have clear lead agents with strong coordination with other institutional, community and commercial bodies. The lead agent requires a coherent and cost-effective National Waste Strategy that incorporates the appropriate elements of the Regional Strategy. Without this lead agency and a strategic view, gaining funding from National Treasuries or overseas partners, will be difficult. In addition, private sector investment is far more likely where the commercial risks and laws are clear and binding.

The national strategy 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, Millennium Development Goals, Barbados Plan of Action and the outcomes of the Mauritius meeting. The strategy should specify which agency or agencies will be responsible for specific activities—especially the lead agency responsible for overseeing implementation and ensuring coordination with others. Ideally, the strategy should also prioritise its implementation and the appropriate funding commitment.

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The completion or updating of the National Waste Management Strategy is the most urgent and important task for all. It will assist SPREP, its members and its donors in all subsequent work.

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Members' update to include:

- lead agent to coordinate government
- strengthened financial data
- analysis of waste stream
- reference to economic instruments
- training needs.

SPREP to provide assistance and templates on:

- format
- appropriate costing of waste system components
- update template on waste stream analysis with the World Health Organisation's work.



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# Economic instruments can assist and finance waste management

Economic instruments are incentives or disincentives to change consumption patterns, and may be more administratively efficient than regulation. Incentives will reward desirable changes. Disincentives, such as taxes, can be placed on goods or services to include the costs of waste management in the purchase price (polluter pays). A well known example is the refundable deposit on glass bottles to encourage their recycling. Each economic instrument has positives and negatives—a user pays charge on waste collection may raise funds but encourage people to illegally dump and, therefore, may cost more in enforcement or clean up. Economic instruments for environmental management must be part of an integrated policy package which may involve legislation, enforcement, education and social marketing.

Use of economic instruments requires good consultation to minimise unintended consequences. As part of a complete package of command and control regulation, voluntary agreements, community consultation and support, economic charges and incentives can provide PICTs with a useful additional policy tool and ongoing funding to improve waste management.

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Economic instruments will assist in sustainably financing waste management, internalising waste management costs and changing commercial and public behavior.

To prepare for use of economic instruments, members will:

- obtain information on legal issues and policies that might be in conflict
- consult with business and community on addressing automobile wastes and plastic bags.

SPREP will distribute guidelines on:

- policy packages (including economic instruments) to address the priorities of automobile wastes and plastic bags
- successful examples from other countries
- legal and economic advice.



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## Cost-effective waste management

Good waste management is not cheap, and the PICTs have a limited capacity to generate funds for the necessary improvements. Any improvements in waste management be the most cost-effective and appropriate for the situation. The areas most appropriate for increased expenditure vary with each circumstance. A leaking hazardous waste storage requires immediate attention but the funds may be generated by optimising the domestic waste collection routes. Door to door collection costs are often about two thirds of the costs of the entire waste system, but also offer the chance to generate funds from a user pays system. Minimising the waste going to landfill can also generate significant savings in expensive airspace. Similarly, the increases in compaction gained by using a bulldozer can often more than pay for the hire of the machine. To best analyse the system, data on the cost components is essential.

Just as important are the correct specifications on contracts. Waste contracts are often long due to the high capital amortisation. If the specifications are wrong or the system is changed mid-contract, clear and equitable variation clauses must be invoked to avoid being at the mercy of the contractor. Overspecification can also be ruinous. Complex machinery requiring imported components has stopped many an aid-assisted project a few years after being commissioned.

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SPREP and its members must try to reduce the high cost of waste management to assist in financing cost-effective improvements to current systems.

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Members will reduce the costs of the waste management system by:

- establishing costs of assets and a maintenance plan
- identifying opportunities for savings: route design, standard equipment, public participation
- identifying opportunities for private sector involvement
- providing data on landfill costs (capital and operation)
- consulting donors on appropriate equipment.

SPREP will assist by:

- providing template and methodology
- providing advice, a template and training the trainer
- providing guidelines and training on out-sourcing and contract specifications
- distributing analysis and a guide for atolls and islands
- helping members with donor negotiations.

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#### Waste minimisation

Studies have proven that minimising waste reduces pollution, energy use, resource consumption and the costs incurred by running a waste management system. Just as importantly, minimising waste can connect the waste generators with the consequences of their actions and involve them in the solution. As the Pacific progressively upgrades its waste infrastructure, every tonne of waste not being collected from business or the community and then not requiring expensive burial in landfill will save on operating costs and also prolong the life of these investments.

Waste minimisation is often ignored by waste managers because it is less amenable to a technical solution. It requires community and industry consultation and education and ongoing attention, and it is difficult to quantify the outcomes. The reality is that waste minimisation is one of the few ways to reduce costs. In most systems, organic waste makes up over half the waste stream. Home or village composting can not only reduce costs, but also retain an important resource for beneficial reuse. Landfill-constrained atolls have a particular need to minimise waste because safe disposal is not a viable option in most cases.

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Waste minimisation is the cheapest and most environmentally beneficial. Organic waste makes up the majority of our wastes and is an obvious target to capture resources and save landfill space.

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To minimise waste, particularly organic and green wastes, members will:

- find the best motivators for rural and urban people in their own country
- run home composting programs using country-specific campaign materials
- identify national and village champions to drive the campaigns.

#### SPREP will:

- work with the World Health Organisation on a joint home composting program
- find funding for regional programs
- develop core materials and train the trainer programs
- distribute information on new technologies and trials (e.g., nappies, bio-bins and medical waste incinerators).

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# Communication, data and analysis

nformation exchange has never been easier or more necessary. While each country is unique, we can all learn from others' successes and mistakes. Considerable resources have been spent on pilot projects and new initiatives over the past ten years. We must ensure that the data and experience isn't confined to only a few. Information exchange contributes to the capacity building of the Pacific, keeps us all aware of particular initiatives, and builds the professional structure of the waste management profession.

While information has never been more available, the sheer volume can now overwhelm us. It is important that we target both the audience and the best method to convey that information. The web, compact discs, videos, newspapers and cultural events can all play a useful role in communicating the information. A good slogan, performance groups like *Won Smol Bag*, or competitions can be more effective than the most sophisticated website.

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It is important that information and lessons learned are available to assist us all. Pilot or showcase projects such as the Fukuoka aerobic landfill must be publicised and expanded.



To develop better information networks and engage with the community, members will:

- regularly supply information to SPREP and each other (waste practitioners)
- obtain information from SPREP and distribute it to the public, nongovernment organisations and the government
- consult, and commission plan becomes part of the national strategy using research involving other sectors (for example, health and the environment)
- use existing strategies and include clear outcomes and monitoring.

#### SPREP will:

- develop a hub to coordinate and distribute information on web
- distribute hard copies or compact discs
- fund members' equipment through the Pacific Environment Information Network (PEIN)
- distribute lessons learned from the International Waters Project and SPREP's Members' experiences
- assist with consultation and social marketing.

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#### Difficult wastes—cars

Difficult wastes are items that are bulky or dangerous to landfill, such as tyres, white goods and car bodies, or possibly hazardous chemicals, car batteries or motor oil that require safe disposal. These items will continue to accumulate unless a regular collection and disposal system is in place. Regional recycling shares both target commodities and methodology with many difficult wastes. These waste types have been grouped under a regional approach because it may make sense to export and collect on a regional basis, whether that is for recycling or disposal.

At the 16<sup>th</sup> Annual SPREP meeting, members asked that SPREP investigate a regional approach to recycling to gain some economies of scale, following the reportedly successful example of the north Pacific members. Metals have an established recycling market. Used oil can be re-refined or used as a fuel. Tyres can be used for reclamation or road works, artificial reefs and fuel. Each country will have to decide which options are best for them and how to sustainably finance their chosen management.

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Difficult wastes consume disproportionate amounts of our resources. A regional approach may reduce those costs. The first difficult wastes to be addressed are car wastes, asbestos and plastic. Car wastes (tyres, bodies, oils and batteries) require a multi-faceted and sustainable approach.

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To address the car wastes problem, members will:

- survey to determine existing volumes of scrap metal, oil and tyres in or entering the country
- identify and assess collection systems/companies and costs
- identify storage or other needs
- implement activities as appropriate.

#### SPREP will:

- develop lists of wastes and locations
- identify potential sponsors and providers of shipping services to design specific activities and confirm costs and budgets
- identify possible advance recycling levies to fund the system
- publicise activities in conjunction with existing communication initiatives at the regional and national levels.



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#### Difficult wastes—asbestos

A sbestos was primarily used across the Pacific in a bonded cement sheet form (termed *non-friable*) for cladding on buildings. It is stable and safe if it isn't drilled, sawn or handled in a way that will liberate the fibres from the sheeting. The appropriate way to handle the cement sheets is to immediately wet them to minimise any dust particles, wrap them in plastic and landfill with a metre of cover and appropriate controls to ensure no disturbance in the future. It does not leach into water supplies and is best handled as locally because this is the way that secure internment can best be guaranteed.

Friable or fibrous asbestos was an insulating material around boilers and furnaces. It is extremely dangerous and should not be handled without full protective equipment (suit, masks and gloves). The fibres are carcinogenic in the respiratory system. Planned disposal should always involve skilled professionals. Post-disaster waste handling or unexpected discovery during demolition are the major risk factors, and should be considered in any disaster management planning.

SPREP has developed a guideline for asbestos management, which is downloadable from the SPREP website or by contacting SPREP direct.

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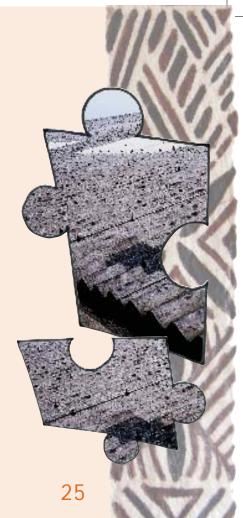


Members will manage asbestos material by:

- undertaking surveys of volumes and type (bonded or fibrous) of asbestos at the national level
- determining the most appropriate option and the cost involved
- implementing the chosen option based on the advice provided.

#### SPREP will:

- develop and provide technical advice on how to deal with the asbestos problem at the national level
- acquire and distribute asbestosrelated awareness raising and occupational health and safety materials.



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## Difficult wastes—plastic packaging

Petrochemical plastics have revolutionised packaging, displacing glass and cardboard for most uses. They are light and efficient but extremely stable, and can release toxic pthalates as they slowly break down. They contribute significantly to the litter and flotsam, impacting on tourism and providing a breeding ground for mosquitoes. Plastic bags have been implicated in a significant number of sea turtle deaths. As their use increases, their disproportionate consumption of landfill space also increases. Their disposal has become a significant problem for Pacific countries.

The recycling of plastic packaging is also difficult. Some resins have a value and others do not. Mixed (unsorted) plastics have minimal resale value to fund the recycling, but the increases in oil prices are increasing the possibility of recovering feedstock for remanufacturing. Mixed plastics can be made into durable pipes, outdoor furniture and wharf beams. Specific resins such as PET can be recycled as fleecy clothing, but their low density makes shipping the recovered plastics expensive. Sorting into the various types will be necessary to maximise the value, but most Pacific countries have yet to force manufacturers to identify the resin type on the packaging.

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Members will manage plastics by:

- developing target lists of the different types of nonbiodegradable and biodegradable plastics
- surveying to determine the volumes and types of plastics in the country
- identifying and assessing collection systems/companies and costs
- examining compulsory plastic identification laws
- implementing and publicising systems and activities as appropriate.

#### SPREP will:

- compile a directory of companies that are in the recycling business, and also what they are recycling (ferrous and non-ferrous, PET, cardboards, etc.) assess regional recycling systems
- assess regional recycling systems using the Pacific Islands Regional Recycling Initiative model
- identify potential sponsors and providers of disposal services to design specific activities and confirm costs and budgets
- assist the implementation of regional recycling.



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# Capacity building

Waste management has become a complex field. Gone are the days when landfilling skills were all that was needed. Integrating social change, legal regulations, enforcement, economics, contract management, logistics and communications has meant that modern waste management requires a cross-disciplinary team with good links in the community and private sector. Establishing such a team in every country is a challenge and the turnover of professional staff in the Pacific means that any training and upskilling must be an ongoing effort.

Just as importantly, modern waste managers must be able to access and filter the vast quantities of information available through other waste managers, organisations such as SPREP, aid donors and private consultants. They must also be able to link with experts in other fields such as medical facilities, universities and the media.

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Capacity assessment and training is vital for making our waste management sustainable.



National capacity assessment (including provincial/state and local governments) and appropriate training will be addressed by:

- undertaking needs assessment using Human Resource Development divisions within the government, chamber of commerce or equivalent organisations and national nongovernment organisations
- undertaking inventory of trained people in the country
- developing a Human Resource plan with needs and gaps identified in the National Capacity Assessment
- national governments aiding training for local government personnel.

#### SPREP will:

- establish a network of Solid Waste management experts/personnel
- gain support from donors and relevant organisations such as SPREP, the Japanese International Cooperation Agency, and the World Health Organisation
- extend regional and national training to include personnel from private sector and non-government organisations
- use contracts to identify the capacities' requirements
- train private sector operators to meet government and other requirements for their operations.

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## Waste management on atolls

A tolls represent a unique challenge for waste managers. The lack of physical space, the porous substrate of coral, the use of the groundwater and the excessive quantities of packaging arising from imported goods all make disposal in sanitary landfills problematic. Hazardous wastes (Persistent Organic Pollutants), such as pesticides and used motor oils, can be impossible to retrieve once released into the environment, and have consequences far exceeding their physical volume. This issue with disposal forces atolls to concentrate on minimising waste as a focus for an integrated cost-effective management strategy.

Atolls usually have limited import points, so controls at Customs are relatively cost-effective. Controls can take the form of outright bans, import taxes to discourage purchase, bonds to encourage repatriation or export when the goods have completed their useful lives, levies to fund the costs of export and disposal, or laws requiring a waste management mechanism *before* the goods can legally enter onto the country. Compost made from recovered organics can increase food yields, a positive human health benefit, while reducing health and import costs. Even if compost is contaminated with other wastes, it can be used as a day cover for landfill rather than dredging up coral.

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Most countries have either atolls or small islands. They have particular problems in managing wastes.



Their special needs will be addressed by:

- engaging the community to minimise, recycle, compost and safely dispose of waste using church and community leaders and youth
- focusing on composting because it helps soil fertility, water loss and leachate contamination, and is chean
- assessing the legal and enforcement tools needed to control waste management
- assessing financing mechanisms, such as container or difficult waste deposit/refunds and departure tax.

#### SPREP will:

- develop a guideline for best practice management of waste on atolls, including import controls, landfill management, collection/sorting systems and bulky wastes
- work with donors to pilot appropriate disposal methods
- distribute information on successful incentives for business and the public to minimise wastes
- distribute educational materials for local adaptation
- identify opportunities for regional cooperation.

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## Legislation and enforcement

egislation, regulations and enforcement are an important part of waste management. Illegal dumping, consistency of requirements, import controls, economic instruments and the power of search and seizure must each have a legitimate legal basis that treats all equally. This is particularly important for those in the private sector, which depend on clear, transparent rules applying to both them and their competitors in a way that no competitive advantage is given to any particular operator. Just as importantly, clear laws show the private sector where to invest their capital to service a need or withdraw from something that has become unacceptable.

The Pacific has three legal systems—French, US and English—that makes standardisation impossible. Changing laws is slow and requires significant consultation. Papua New Guinea's attempt to ban the manufacture of plastic bags was quashed because the ban favoured the importers over the local manufacturers. Laws also have significant problems. Enforcement is often expensive and politically unpopular. Laws that aren't enforced often simply penalise the good people who spend money complying and reward the law breakers who take advantage. Sometimes voluntary codes of behaviour can work as well as a law compelling behaviour.

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Legal instruments provide an important backstop and commercial equity for business.

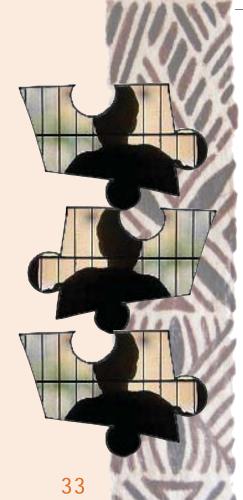


#### Members will:

- assess non-legal, cheaper ways, such as community involvement, and voluntary agreements to gain cooperation
- identify what laws require amendment or creation
- consider their resources and the willingness of police and courts to enforce
- identify focal points to foster easy legal liaison with SPREP for technical assistance.

#### SPREP will:

- · distribute checklists for drafting
- assist with drafting or identify partners to help
- assist in information exchange on new laws and successful non-legal methods
- assist with codes of practice, environment management plans and self-audit mechanisms
- provide a multi-disciplinary team for technical assistance.



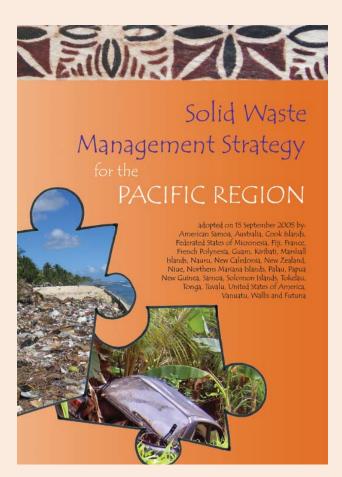
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