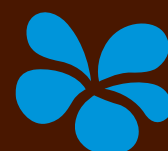


# Pacific Partnership Initiative on Sustainable Water Management



3rd Steering Committee Meeting

Review Report on the  
Pacific Wastewater Framework for Action



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# 1. Introduction

In this International Year of Sanitation 2008, seven years after the adoption of the *Pacific Wastewater Policy Statement and Framework for Action 2001*, a review of the actions taken so far and identification of further actions is being undertaken.

The Pacific Water Conference (9-11 September, 2008, held at Hotel Kitano, Samoa) gave an opportunity to representatives from the Pacific islands to focus on Pacific Partnership activities and arrangements and to review activities at national and regional levels on sanitation and wastewater management.

According to country coverage statistics provided by WHO, UNICEF (2008)<sup>1</sup> the numbers of people in the Pacific island countries served with some form of improved sanitation rose from 2.9 million in 1990 to 4.0 million in 2006. Despite this impressive achievement, the proportion of people served in 2006 was still barely 48% of the overall population.

Monitoring access to basic sanitation according to this definition is currently not possible provided the limited level of information available at country level or internationally. The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) works with the concept of access to “improved” sanitation facilities and uses this indicator as a proxy to measure progress towards the achievement of the MDG sanitation and drinking-water targets throughout the world. Improved and unimproved technologies as defined by the JMP are provided in Table 1 (WHO, UNICEF, 2006)<sup>2</sup>.

Table 1: Improved and unimproved sanitation types of facilities

Improved sanitation facilities*	Unimproved sanitation facilities
Flush or pour-flush to: <ul style="list-style-type: none"> <li>• piped sewer system</li> <li>• septic tank</li> <li>• pit latrine</li> </ul> Ventilated improved pit latrine (VIP) Pit latrine with slab Composting toilet	Flush or pour-flush to elsewhere** Pit latrine without slab or open pit Bucket latrine Hanging toilet or hanging latrine No facilities or bush or field (open defecation)

\* Only facilities which are not shared or public are considered improved.

\*\* Excreta are flushed to the street, yard or plot, open sewer, a ditch and a drainage way.

<sup>1</sup> WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2008, Progress on Drinking Water and Sanitation: Special Focus on Sanitation. UNICEF, New York and WHO, Geneva.

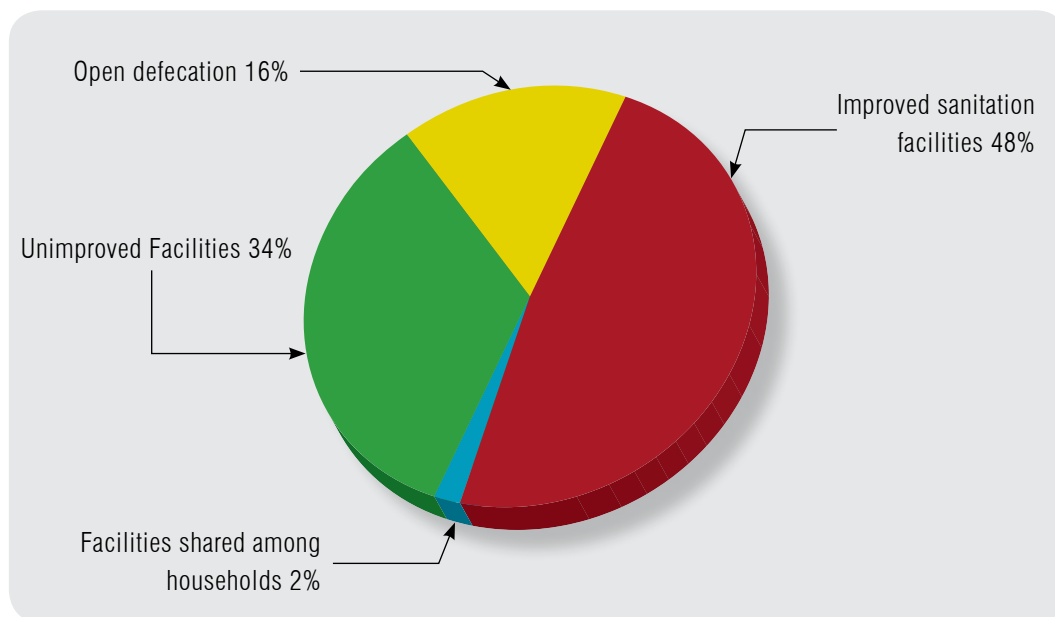
<sup>2</sup> WHO, UNICEF (2006) Meeting the MDG drinking water and sanitation target: the urban and rural challenge of the decade. Geneva, World Health Organization.

The JMP considers that different households sharing access to the same sanitation facility might not encourage use as this practice does not provide privacy, and cleanliness might be unattainable (WHO, UNICEF, 2004)<sup>3</sup>. Thus, those having access to shared facilities are not counted as having access to improved facilities even if the latter falls in the category of improved as defined by the above table.

The JMP calculates coverage estimates based on the outputs of household surveys as opposed to reported data. In the Pacific island countries, very few countries practice household surveys providing statistics on access to drinking-water and basic sanitation that are compatible with the JMP methodology. Thus, national and regional analysis in this report might be severely affected by lack of information that, otherwise, would make it possible to establish a more reliable coverage trend over time.

Figure 1 indicates the status of the Pacific island countries concerning types of sanitation practices. There is evidence that the proportion of people with access to flushing toilets connected to sewerage systems with adequate sewage treatment and sound disposal might be used by just a fraction of the Pacific islands population. Open defecation is still a widespread practice in the Pacific Islands: over 16% of the entire population defecates in the open. To get a snapshot of the overall sanitation and drinking water performance in the Pacific islands using the JMP methodology refer to WHO/SOPAC Joint Report<sup>4</sup>.

Figure 1: Proportion of people using different types of sanitation practices in the Pacific islands, 2006



It is important to highlight that there is an overall perception among key stakeholders in the region that the sanitation coverage statistics provided by the JMP, especially those for high-coverage Pacific countries, seem exceedingly optimistic. For the future, the JMP would be expected to refine its coverage statistics for the region by promoting the inclusion of questions and response categories on sanitation and drinking-water in national sample surveys or census conducted in the Pacific island countries.

<sup>3</sup> WHO, UNICEF (2004). WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation – Policies and Procedures. Geneva, World Health Organization (unpublished).

<sup>4</sup> WHO, 2008. Sanitation, hygiene and drinking water in the Pacific island countries: Converting commitment into action. World Health Organization.

Sanitation is vital for human health  
Sanitation generates economic benefits  
Sanitation contributes to dignity and social development  
Sanitation helps the environment  
Improving sanitation is achievable<sup>5</sup>

Recognising the impact of sanitation on public health, poverty reduction, economic and social development, and the environment, the UN General Assembly declared the year 2008 the International Year of Sanitation. The goal is to raise awareness and to accelerate progress towards the Millennium Development Goal target to reduce by half the proportion of the 2.6 billion people without access to basic sanitation by 2015.

## 1.1. Pacific Characteristics and Challenges

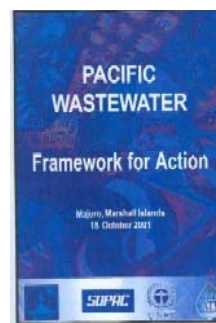
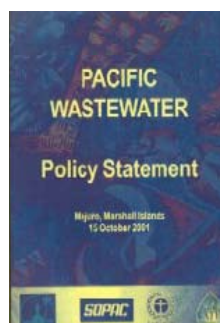
In the Pacific region there are 22 countries and territories occupying a vast area of the Pacific. They consist of 550 000 km<sup>2</sup> of land with nearly 8.5 million inhabitants spread across 29 million km<sup>2</sup> of the Pacific Ocean<sup>6</sup>.

The region's geographic, demographic and developmental diversity is as great as the area it covers. But with few exceptions, the people are located in the coastal areas and their lives are influenced by their immediate coastal environment. The ability of this environment at the land and marine interface to sustain the lives of people is extremely fragile and highly vulnerable to both natural and human impacts. Natural hazards like cyclones, droughts, earthquakes and tsunamis are expected. Human activities like urbanisation and tourism, and activities contributing to climate change threaten to overwhelm the supportive capacity of the natural environment and the health of the people. Increased waste and wastewater generation is one important risk to the environment and public health created by urbanisation and tourism, a risk that needs to be managed.

### 1.1.1 Pacific Strategic Water and Sanitation Documents

There are three main strategic documents that now drive regional water and sanitation development in the Pacific:

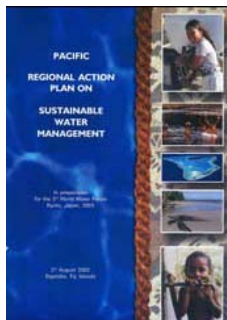
1. The *Pacific Wastewater Policy Statement and associated Pacific Wastewater Framework for Action* (FFA) were both completed in 2001 in Majuro, Republic of the Marshall Islands, and developed as part of UNEP's Global Programme of Action for the Protection of the Marine Environment from Land-based Sources of Pollution.



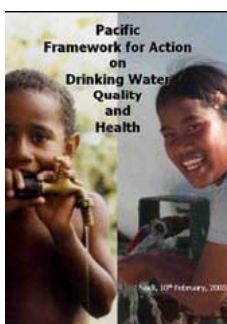
<sup>5</sup> <http://esa.un.org/iys/>

<sup>6</sup> <http://www.nzaid.govt.nz>

2. The more holistic *Pacific Regional Action Plan on Sustainable Water Management* (RAP) was completed in 2002 in Sigatoka, Fiji, in preparation for the Water in Small Island Countries session at the 3rd World Water Forum in 2003, Kyoto.



3. The *Drinking Water Quality and Health Framework for Action* was developed as a complementary framework building on the RAP. The framework was developed at the WHO-facilitated workshop on Water Quality Standards and Monitoring in Pacific island countries in 2005 in Nadi, Fiji.



The RAP and Drinking Water Quality and Health Framework for Action are structured around the same six thematic categories: Water Resources Management, Island Vulnerability, Awareness, Technology, Institutional Arrangements and Financing. The FFA, although not using these same category labels, does cover very similar themes. All three strategic documents call for a range of actions to be taken, and not surprisingly given the interrelated nature of water, sanitation and health there is considerable overlap of actions between these. In response, a number of over-arching Pacific regional programmes have been developed and implemented.

### 1.1.2 Over-arching Pacific Regional Programmes

#### Pacific Partnership Initiative on Sustainable Water Management

The RAP has been incorporated in a partnership arrangement under the so-called Type II initiatives submitted by the Pacific island countries to the Commission for Sustainable Development (CSD) in Johannesburg during the World Summit for Sustainable Development (WSSD) in August 2002. Pacific Forum Leaders also endorsed this umbrella Type II water initiative amongst 13 others at the WSSD. The main objective of the Partnership Initiative is to achieve sustainable water and wastewater management in Pacific island countries through:

- Creating a regional water network of persons and organisations to strengthen existing and build new partnerships on water and wastewater, and to improve regional coordination and collaboration;
- Implementation of the 2001 *Pacific Wastewater Policy Statement and Pacific Wastewater Framework for Action*;
- Implementation of the 2002 *Pacific Regional Action Plan for Sustainable Water Management*; and
- Implementation of the 2005 *Pacific Drinking Water Quality and Health Framework for Action*.

The Partnership has a Facilitator (based at SOPAC) who is responsible for implementing the core functions of the partnership: liaising between the regional stakeholder groups and their sub-networks (including an e-newsletter and website); researching and receiving stakeholder information on on-going and planned water activities; tracking donor and development agency programmes; identifying areas requiring implementation; and coordinating proposal submissions and project implementation. The Facilitator is also responsible for high-level advocacy of the strategic approach. SOPAC is assisted in this task by a deputy facilitator based at USP.

#### IWRM in Pacific island countries

Fourteen Pacific Island countries (Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu) are being supported through the Pacific IWRM programme to implement applicable and effective Integrated Water Resource Management and Water Use Efficiency (WUE) plans based on best practices and demonstrations<sup>7</sup>.

With a total estimated budget of over USD 90 million (from a range of co-financers on the regional and national level) the programme will support the implementation of the Pacific Regional Action Plan on Sustainable Water Management that aims to improve the assessment and monitoring of water resources, reduce water pollution, improve access to technologies, strengthen institutional agreements, and leverage additional financial resources in supporting IWRM.

The programme has been developed by Pacific Island Countries and SOPAC through the Pacific Water Partnership and consists of two main projects:

- ❖ The “Pacific IWRM National Planning Programme” is funded for three years (2008-2010) by the European Union, and focuses on strengthening governance structures (coordinating national water committees) and frameworks (policy, legislation, action plans) to mainstream IWRM and WUE in to national planning processes; and
- ❖ The “Sustainable Integrated Water Resources and Wastewater Management Project in Pacific Island Countries” (Pacific IWRM) is funded for five years (2008-2013) by the Global Environment Facility and implemented in collaboration with the United Nations Environment and Development Programmes (UNEP and UNDP). It focuses on practically demonstrating and developing IWRM best practice to address national priority water issues.

The two projects have been designed together over a period of four years and provide complimentary and mutually beneficial support to each other. As part of the design process countries have undertaken situational or needs analyses (National Diagnostic Analyses), to provide the basis for policy development, strategy choice, the development of National IWRM Plans, and on-the ground demonstrations to test and evaluate the effectiveness of integrated approaches to:

- ❖ Balance conflicting uses of scarce freshwater resources
- ❖ Improve public and environmental health by ensuring consistent water availability and quality
- ❖ Reduce effects of soil erosion, inadequate sanitation and other harmful activities on the quality of fresh and coastal waters
- ❖ Reduce vulnerability to droughts, floods, landslides and pollution

<sup>7</sup> Integrated Water Resources Management in Pacific island countries, a synopsis. GWP Consultants – SOPAC, 2007.

## 1.2 Pacific Wastewater Policy Statement and Framework for Action

The Global Programme of Action for the Protection of the Marine Environment from Land-based Sources of Pollution (GPA) identified the priority for action on sewage. In the Pacific region, a consultation process was facilitated by SOPAC, SPREP, PWA and the UNEP/GPA Coordination Office on wastewater management. A concluding consultation meeting was held in Majuro, Republic of the Marshall Islands in October 2001 to complete the *Pacific Wastewater Policy Statement* and *The Pacific Wastewater Framework for Action*.

The *Pacific Wastewater Policy Statement* sets out a framework of five guiding principles and policies to guide development and cooperation by the Pacific island countries. The *Pacific Wastewater Framework for Action* (FFA) comprises a list of proposed actions for each guiding principle to be undertaken at national and regional levels to achieve the stated overall outcome for each guiding principle.

**Guiding Principle 1:** National wastewater management policies and regulations will be appropriate and acceptable to the people and cultures of the Pacific Islands

*Overall Outcome: Appropriate and acceptable integrated national wastewater management policies and regulations in place.*

**Guiding Principle 2:** Appropriate national institutions, infrastructure and information will support sustainable wastewater management

*Overall Outcome: Sustainable wastewater management through the use of appropriate institutions, infrastructure and information.*

**Guiding Principle 3:** Better access to funding will improve service delivery, and develop the private sector

*Overall Outcome: Improved service delivery through increased access to funding and involvement of the private sector.*

**Guiding Principle 4:** Community participation in wastewater management and sanitation will ensure equitable benefit with recognition of socio-cultural sensitivities

*Overall Outcome: Equitable benefit to the entire community that incorporates social and cultural values through active community participation.*

**Guiding Principle 5:** Viable and sustainable levels of skilled and knowledgeable people within the wastewater sector and communities will improve wastewater management

*Overall Outcome: Wastewater management has improved, as a result of a viable and sustained level of skilled and knowledgeable people within the wastewater sector and communities.*

## 1.3 This Review

This report reviews progress of the proposed actions against the Overall Outcome of each of the five Guiding Principles, and identifies further priority actions. Information for the review has been sourced from the Pacific Water Action Matrix (a database that captures activity in the Pacific Partnership Initiative on Sustainable Water Management, managed by SOPAC), SOPAC water sector staff, a search of partner and donor organisation websites, and from participants at the Pacific Water Conference 9-11 September 2008, Apia, Samoa.

# 2. Review of Progress

“Inadequate Wastewater Management – within the 14 PICs, only a few capital areas have any sewerage systems, with the vast majority of the Pacific populace dependent upon on-site sanitation systems, most of which are unmanaged and therefore ineffective. Groundwater pollution is wide spread, especially in the low-lying atoll countries. Of the capital areas serviced by sewerage systems, few and perhaps none, work to the original design standards, discharging untreated or inadequately treated sewage into the near shore environment and local fisheries. Inadequate wastewater management was identified as the single largest cause of freshwater contamination in the Pacific by the UNEP International Waters Programme.”<sup>8</sup>

However, as this review highlights, significant effort is underway and progress is being made in some areas.

## 2.1 Guiding Principle 1: Management Policies & Regulations

Appropriate and acceptable integrated national wastewater management policies and regulations are required in order to direct sufficient attention to improving wastewater management. The FFA calls for governments to prepare issues papers, especially with decision makers, on the need for prioritising improvements in wastewater and sanitation. Governments with the support of regional agencies need to review existing or prepare new policies and regulations, implement these and set up systems to report on implementation and enforcement of the policy. National policies should define responsibilities leading to better co-operation between agencies and increased recognition of the linkages between good sanitation, improved public health, economic development, and a cleaner environment.

Proposed Action 1.1	Prepare policy or issues paper on the need for prioritising wastewater and sanitation sector for improvements, cross-sectoral actions and integration into national development plans.
Proposed Action 1.2	Education and awareness on policies and regulations across all sectors with special focus on decision makers.
Proposed Action 1.3	Identify and review policies and regulations on regional and national level and involve stakeholders and regional organisations.
Proposed Action 1.4	Review regulations from other countries and identify those suitable as models for Pacific island countries.
Proposed Action 1.5	Organise a review meeting involving all sectors, to agree on the need or otherwise, for national regulations and to recommend appropriate actions.
Proposed Action 1.6	Implement recommendations.
Proposed Action 1.7	Establish appropriate guidelines and systems for reporting on service delivery, and enforcement of regulations.

<sup>8</sup> Integrated Water Resources Management in Pacific island countries, a synopsis. GWP Consultants – SOPAC, 2007.

### Regional Initiatives

The European Union established a Programme for Water Governance for three regions, including the Pacific (Pacific Programme for Water Governance, PFWG, 2005–2006). The overall goal of the programme is to mainstream the principles of good water governance into day-to-day applications and pilot projects so as to assist in achieving sustainable water resource management and provision of water services<sup>9</sup>. The concept of water governance includes the design of public policies and institutional frameworks that are socially acceptable and have strong social support. The Pacific has three pilots, at different levels of scale – national, major utility and local catchment – in Fiji, Kiribati and Solomon Islands.

The IWRM in Pacific island countries programme will support the development and implementation of national integrated water resources management and wastewater strategies, policy and regulations (see section 1.1.3). A number of resources have been prepared to assist agencies with the process of involving stakeholders including communities, for example “*Mobilising People Towards Integrated Water Resource Management*”<sup>10</sup>.

### National Actions

The European Union Pacific Water Governance Programme (PFWG) has supported Kiribati in preparing a draft National Freshwater Resources Policy. The policy is a keystone Technical Assistance Activity in the 2005 Water Component of the World Bank–AusAID–NZAID Kiribati Adaptation Programme, Phase II<sup>11</sup>. The policy objectives include reviewing and revising legislation and regulations relevant to water resources and sanitation management.

The PFWG has also supported preparation of the Solomon Islands draft National Water Policy (2006) and review of the Water Resources Legislation (2006). The policy addresses water resources management and water and sanitation services. Cabinet submissions were prepared to submit these two documents for Cabinet Approval, and the government approved a budget for further awareness of the Policy and Legislation<sup>12</sup>.

Fiji has prepared a draft National Water Resources Policy for consultation, and the policy recognises the impact sewage management can have on the quality of water resources. The draft policy identifies the need to consider the requirements of effective water legislation<sup>13</sup>. The Environmental Management Act was recently enacted. The Ministry of Environment is in the process of developing programmes and policies, for example the wastewater permit system is in the process of being developed and applied<sup>14</sup> and a National Liquid Waste Management Strategy and Action Plan was prepared in 2007<sup>15</sup>. The key objectives of the National Liquid Waste Management Strategy are to: reduce the amount of wastewater produced in Fiji; improve and upgrade waste management and disposal systems to improve wastewater quality; improve coordination of departments/stakeholders involved in regulating and managing liquid waste; and improve awareness and practices of public in relation to sanitation/wastewater management.

Vanuatu has adopted water resources legislation, The Water Resources Management Act No. 9 (2002), which provides for the protection, management and use of water resources. The Act provides for the formation of the National Water Resource Management Advisory Committee Operate in such a way as to ensure coordination of water resource management activities between stakeholders and agencies<sup>16</sup>.

<sup>9</sup> <http://www.sopac.org/Water+Governance>

<sup>10</sup> <http://www.sopac.org/IWRM+Outputs>

<sup>11</sup> <http://www.sopac.org/Water+Governance+Kiribati>

<sup>12</sup> <http://www.sopac.org/Water+Governance+Solomon+Islands>

<sup>13</sup> <http://www.sopac.org/Water+Governance+Fiji>

<sup>14</sup> GEF Hotspot Analysis Diagnostic Report, Fiji Islands, May 2007

<sup>15</sup> Fiji national liquid waste management strategy and action plan, / by the Ministry of the Environment, Government of Fiji. – Apia, Samoa : SPREP 2007.

<sup>16</sup> National Integrated Water Resource Management Diagnostic Report Vanuatu, Draft SOPAC Miscellaneous Report 648, November 2007

A National Water Resources Policy for Samoa<sup>17</sup> has been endorsed by Cabinet (2001) and is being reviewed (as at 2007). A complementary National Water Services Policy for water services is underway (as at 2007). A National Water Resources Management Strategy is under-going consultation (as at 2007) and provides a platform for close working between all agencies and stakeholders with interests in water at the national and local level.

The Cook Islands Ministry of Health is implementing a Sewage Treatment Improvement Program Strategic Plan<sup>18</sup>. The plan includes training in on-site waste management for sanitary and health inspectors to improve the enforcement of regulations, the establishment of wastewater testing capabilities to ensure compliance with sewage treatment standards, revised sewage treatment standards, more frequent communication with the community regarding sewage treatment issues and improved storage of sewage infrastructure information on Geographical Information System database. Progress has also been made with the passing of the Public Health (Sewage) Regulations 2008 to improve sewage treatment standards, the establishment of a Sewage and Sanitation Board under the Public Health (Sewage) Regulations, the training of sewage system inspectors, installers, servicing agents and designers and the development of public education materials such as the website, pamphlets and press releases.

Through participation in the International Waters Programme, Tonga identified degradation of marine and freshwater quality due to poor management of solid and liquid waste as a national priority for action. In response, Tonga has drafted a Water Resource Bill (2005) and Solid Waste Strategy (2007), and in 2007 started to prepare a National Programme of Action for the Protection of marine Environment from Land-based Activities<sup>19</sup>. The action strategy contributes to many of the guiding principles of the FFA, including improving disposal of wastewater, improving environmental awareness and education, strengthening national capability for marine conservation, and investigating appropriate technology/techniques to mitigate impacts on coastal/marine areas.

Tuvalu also used their participation in the International Waters Programme to focus on sanitation at the national and community level. This included a comprehensive analysis of the cost to Tuvalu of poor sanitation<sup>20</sup> and efforts to revise, update and implement the draft Water Resources and Sanitation Management Bill, the draft Integrated Water Resources Management Plan, and the Tuvalu National Building Code. A community-based pilot project was established with the aim of reducing the contamination of groundwater and coastal water from human and animal waste. This work, including an ecological sanitation demonstration strategy, is to be carried forward through Tuvalu's participation in the Integrated Water Resources Management Programme which is being conducted from 2008-2013.

<sup>17</sup>National Integrated Water Resource Management Diagnostic Report Samoa, Draft SOPAC Miscellaneous Report 644, November 2007

<sup>18</sup>[http://www.health.gov.ck/sewage\\_upgrade\\_prog.asp](http://www.health.gov.ck/sewage_upgrade_prog.asp)

<sup>19</sup>Presentation by Sione Faka'osi at the Pacific Water Conference, Apia, September 2008.

<sup>20</sup>Lal, P., Saloa, K., Willy, F. (2006) Economics of Liquid Waste Management in Funafuti, Tuvalu: Cost Benefit Analysis. SPREP

## 2.2 Guiding Principle 2: Institutions, Infrastructure & Information

Sustainable wastewater management requires the use of appropriate institutions, infrastructure and information. The FFA calls for clearly defined responsibilities for all stakeholder organisations in wastewater management to prevent fragmented and uncoordinated plans and actions and improved linkages to other sectors. Strengthened institutional capacities in the collection and dissemination of data and information will support enforcement of regulations, appropriate technology selection, improved system performance, and increase the understanding of subsequent environmental and public health impacts.

Proposed Action 2.1	Identify the key agencies/stakeholders involved with the management of wastewater, and environmental health, their roles and responsibilities, activities they undertake in wastewater and environmental health, and lead agencies for specific national activities.
Proposed Action 2.2	Establish mechanism for maintenance of data collection on wastewater management (standards, regulations and monitoring) and environmental health impacts.
Proposed Action 2.3	Develop national guidelines on wise practice approaches to assessing and managing wastewater system requirements that incorporate sound environmental health principles.
Proposed Action 2.4	Review existing wastewater technologies and infrastructure and recommend strategies for improvement.
Proposed Action 2.5	Develop a national monitoring capacity, building on existing and new resources, to provide initial baseline data, and long-term quality trends.
Proposed Action 2.6	Promote awareness of links between and means of integration of wastewater management plans to effectively address contingencies, emergencies and disasters.

### Regional Initiatives

The Pacific Wastewater Focal Group was established in 2005, to raise awareness on water, sanitation and hygiene issues and implementation of the Pacific Wastewater Policy and Framework for Action with membership from wastewater operators, specialists as well as NGO's. It is coordinated through SOPAC.

There is also a Pacific WASH Coalition. The Pacific WASH Coalition was established in 2007 with the aim to coordinate activities in the Pacific region on water, sanitation and hygiene (WASH). Partners in the Coalition include the Foundation of the Peoples of the South Pacific International (FSPI), Fiji School of Medicine (FSMed), Live and Learn Environmental Education, WHO, UNICEF and International Federation of Red Cross.

WHO Western Pacific Regional Office and SOPAC have prepared a report<sup>21</sup> that presents a snapshot status of sanitation and drinking-water quality in the Pacific Islands. The statistics and information presented in this report are intended to assist with policy development and decision-making. The report uses statistics from the latest country statistics published by the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation<sup>22</sup>.

<sup>21</sup>WHO, 2008. *Sanitation, hygiene and drinking water in the Pacific island countries: Converting commitment into action*. World Health Organization

<sup>22</sup>WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2008, *Progress on Drinking Water and Sanitation: Special Focus on Sanitation*. UNICEF, New York and WHO, Geneva.

<sup>23</sup><http://www.sopac.org/About+Water+Safety>

The Pacific Water Safety Plans pilot programme<sup>23</sup> promotes a comprehensive risk assessment and risk management approach in the Pacific region that encompasses all steps in the water supply, from catchment to consumer, to ensure the access to safe drinking water. Individual water supply plans identify sanitation practices and wastewater management as significant risks to the quality of drinking-water and therefore to public health. Improvement plans to manage these risks require close working between all agencies and stakeholders with interests in water at the national and local level, i.e. integrated management.

### National Actions

The planned Cooks Islands IWRM Demonstration Project (Integrated freshwater and coastal management on Rarotonga) includes a number of activities directly related to institutional arrangements, infrastructure and information for wastewater effective management. The project plan includes wastewater treatment assessment with government departments working together for data gathering and reporting, demonstration of improved wastewater treatment systems, and policy and legislative review<sup>24</sup>.

The Cook Islands Public Health (Sewage) Regulations 2008 have established a Sewage and Sanitation Board comprising the three development permitting agencies (National Environment Service, Public Health and Building Control) and a wastewater industry representative. The role of the Board is to approve amendments to the Public Health (Sewage) Regulations, to register qualified drain layers as installers of septic tanks, qualified engineers to design sewage systems, qualified inspectors to inspect septic tank installations, septic tank manufacturers that consistently manufacture septic tanks to the new standard and sewage treatment unit designs appropriate for operation within the Cook Islands. Under the Sewage Treatment Improvement Program, the Cook Islands has also established a computer database for new sewage systems.

The “Water for Life” initiative is an ongoing process to stimulate the development of Samoa’s water sector through a sector-wide approach<sup>25</sup>. Samoa is currently engaged in a number of national and regional water related projects. The Samoa Sanitation and Drainage Project targets improvements in Apia’s drainage, sewerage, sanitation and wastewater treatment. The Water Sector Support Programme (WaSSP) aims to introduce the sector wide approach in achieving its national water policy goals. The WaSSP is divided into six interlinked components, three of which are directly related to actions in the FFA – sector orientation (institutional framework, legislation and regulation, co-ordination), capacity building (institutional capacity), and sanitation and wastewater improvements (appropriate sanitation facilities to 200 schools and 15 district hospitals, collection and disposal facilities, awareness).

<sup>24</sup><http://www.sopac.org/Cook+Islands+3SC>

<sup>25</sup>Water for Life, Water Sector Plan and Framework for Action 2008/09-2011/12. Government of Samoa.

## 2.3 Guiding Principle 3: Finance

Increased access to funding is necessary to improve wastewater service delivery. The FFA calls for a review of possible funding mechanisms to support wastewater services, for both on-going management and maintenance and for improvements in service delivery. Guidelines and reporting systems are needed for monitoring service delivery performance (financial and quality).

Proposed Action 3.1	Carry out a review of systems currently used throughout the region and internationally, for funding wastewater services. Report finding in a form suitable for use by government decision makers.
Proposed Action 3.2	Develop and implement awareness raising programmes across all levels, on the need for funding mechanisms.
Proposed Action 3.3	Choose and adopt the most appropriate mechanisms (from above review).
Proposed Action 3.4	Identify stakeholders, and especially possible private sector partners and establish a national working party (or similar) for discussions/decision making over privatisation of wastewater systems.
Proposed Action 3.5	Review current wastewater systems and identify areas/aspects that could be improved through the involvement of the private sector.
Proposed Action 3.6	Invite proposals from the private sector, review and implement.
Proposed Action 3.7	Establish appropriate guidelines and reporting systems for monitoring service delivery, including financial efficiency, service quality, and service distribution across different sectors of the community (e.g. urban vs. rural).

### Regional Initiatives

ADB funded the ‘Performance Benchmarking for Pacific Power and Water Utilities’ project 2000-2005, implemented by PWA. The long-term goal was to improve delivery performance of electric power and water supply and sanitation services in Pacific developing member countries by developing benchmark data that would inform rationale performance management systems. Improved performance managements systems would then allow for better informed improvements in policies, institutional arrangements and physical facilities<sup>26</sup>.

### National Actions

The Government of Samoa has recognized the need to address Apia’s wastewater management, sanitation and drainage issues and has secured a loan from the ADB to fund the Samoa Drainage and Sanitation Project, which has commenced. The Project has 3 components: A) Drainage; B) Wastewater Management and Sanitation; and C) Capacity Building and Project Implementation Assistance<sup>27</sup>. A complementary technical assistance grant will be financed out of ADB’s Japan Special Fund, to focus on helping the Government, through its Planning and Urban Management Agency, develop drainage and wastewater management planning as well as urban planning and regulation. It will also help develop legislation and implementing regulations for better wastewater and sanitation<sup>28</sup>.

<sup>26</sup>Technical assistance completion report. TA No. 5883-REG: Performance Benchmarking for Pacific Power and Water Utilities. Available at <http://www.adb.org/Documents/TACRs/REG/33496-REG-TACR.pdf>

<sup>27</sup><http://www.swa.gov.ws/Projects/SamoaSanitationandDrainageProject/tabid/2454/language/en-US/Default.aspx>

<sup>28</sup><http://www.adb.org/Documents/News/2003/nr2003168.asp>

## 2.4 Guiding Principle 4: Participation & Awareness

Community involvement is essential in addressing sanitation issues and wastewater management, especially where communities are not connected to reticulated systems which is 90% of the population of Pacific Island countries. The FFA calls for active community participation of communities in the development and implementation of community-based culturally-acceptable wastewater and sanitation management strategies and activities. Raising awareness and education are seen as key actions, and should include cultural, economics, environmental and public health aspects of appropriate management.

Proposed Action 4.1	Conduct survey and collect information/data on the social and cultural aspects/ characteristics of the community population.
Proposed Action 4.2	Develop and implement national and local public awareness and education campaigns.
Proposed Action 4.3	Use local theatre groups and media in raising awareness programmes.
Proposed Action 4.4	Identify key stakeholders to determine their roles and responsibilities within the community.
Proposed Action 4.5	Create a task force that has representation of all stakeholders that will facilitate the development and implementation of cultural appropriate strategies and activities of wastewater management programmes. The task force will have a fair representation that will include women, disabled and disadvantaged.
Proposed Action 4.6	Enhance or improve participation of community in the development and implementation of community-base strategies and activities through/by: holding regular meetings/seminars/workshops; identifying and reviewing existing systems; developing where appropriate wise alternatives; Establishing community capacity building programmes; and identifying and securing assistance and funding for community involvement.
Proposed Action 4.7	Include public information components in costing for all development programmes.
Proposed Action 4.8	Promote the use of community consultative committees in development programmes.
Proposed Action 4.9	Perform gender assessment studies in wastewater management and where appropriate stress the need for gender issues to be included into project planning.
Proposed Action 4.10	Conduct research into the traditional practices and determine whether or not these can be adapted to suit the present situation and new development programmes.

### Regional Initiatives

To start off with, the first Pacific Water Association Conference was an excellent example for sharing, strengthening and supporting water utilities and relevant partners in relation to managing water resources sustainably. The conference included many actions proposed under this guiding principle including school art, jingle/song competitions, water/hygiene posters and school demonstrations through Apia, Samoa with excellent media coverage.

The UNICEF Pacific Water and Environmental Sanitation Programme falls within UNICEF's Health and Sanitation programme, and is aimed at providing support for the development and implementation of community based hygiene improvement and water safety plans that lead to a reduction in childhood diarrheal and other water-related illnesses.

World Water Day is supported by many Pacific agencies and governments, for example: UNICEF Pacific, SOPAC, SPREP, and Live & Learn Environmental Education. Contributions include awareness materials, fact sheets, articles for the media, visits to schools, and school competitions.

Through the funding from the Department for International Development (DFID), a Community Participation and Gender survey was carried out in the region during 2003-2004. The overall objective of the study was to collect, analyse and disseminate findings on the extent of community participation, with particular attention to gender and poverty issues, in water and sanitation in Pacific island countries, in order to offer recommendations and guidelines for improving practice. Outputs from the project include a summary of the study "*Equitable Management of Water and Sanitation in Pacific Island Countries*<sup>29</sup>" and guidelines for field workers entitled "*Tapping Connections between Water and People*" both available from SOPAC. A comic booklet "*A Gender Tale of Water and Energy*" 2008 has been jointly developed by the Pacific Energy and Gender Network (PEG) and the Water, Sanitation and Hygiene (WASH) programme of the Community Lifelines Programme of SOPAC. The aim of this booklet is to create awareness on water, energy and gender issues.

"*Sharing Experiences: Sustainable Sanitation in South East Asia and the Pacific*" is a joint publication of WaterAid Australia and International Water Centre (2008)<sup>30</sup>. The case studies presented in this book are an attempt to share some of the practical lessons learned from water, sanitation and hygiene initiatives throughout the Asia and Pacific region. The case studies tell the stories of those working on the ground, the practical issues they face and the lessons they learn.

The "*Keeping Your Drinking Water Safe Community Toolkit*<sup>31</sup>", an output of a regional programme funded by AusAID for effective management of drinking water supplies in Pacific island countries, has been designed to be used by Community Trainers, Health Officers, Community Workers, and Facilitators, to raise awareness about the need to keep water clean and promote responsible attitudes, behaviour and actions to ensure safe and lasting drinking water supplies. The toolkit contains an Introductory Guide containing background information and annexes, and tools on Conducting a Water Audit, Conducting Sanitary Surveys, Snapshots to Monitoring Water Sources, Water Quality Monitoring Using The Hydrogen-Sulphide (H<sub>2</sub>S) Paper-Strip Test, Water Awareness and Education, Water Management Actions, and a Comic and Paper-strip test Instruction Flipchart.

### National Actions

The Fiji School of Medicine in partnership with SOPAC, Fiji Ministry of Health, and WHO launched the Sanitation Park in late 2004 with funding from NZAID and WHO. The Sanitation Park Project was designed to provide support to communities and health workers in Fiji and the Pacific region to identify and address their sanitation problems. A range of technologies are available at the Park, including a sanitary well, water seal latrine, pit latrine, a septic tank and soakage trench, a ventilated improved pit latrine and a waterless or composting toilet<sup>32</sup>. After undergoing refurbishment an Open Day was organised on 6 August 2008, for Pacific WASH Coalition members to allow ongoing collaboration to be strengthened in the area of sanitation. It is envisaged that the Park would be utilised to a greater extent through the Coalition members as a teaching tool and allow further dissemination of knowledge on affordable sanitation technologies in Fiji and the Pacific region.

<sup>29</sup>Crennan, L and Burness I. 2005. *Equitable Management of Water and Sanitation in Pacific Island Countries*. SOPAC Technical Report 388.

<sup>30</sup>In: D. Pedi and P. Dwan (eds) *Sharing Experiences: Sustainable sanitation in South East Asia and the Pacific*. A joint publication of WaterAid Australia and International WaterCentre.

<sup>31</sup>Copies can be requested from SOPAC (<http://www.pacificwater.org/index.cfm>) or WHO SP Office. 388.

<sup>32</sup>[http://www.sopac.org/tiki-read\\_article.php?articleId=142](http://www.sopac.org/tiki-read_article.php?articleId=142)

Practical training in eco-sanitation has occurred in Tonga, Vanuatu, Fiji, Tuvalu and Kiribati, providing community members with sufficient information and practical skills to choose, construct and maintain the most appropriate systems for their needs<sup>33</sup>.

The planned FSM IWRM Demonstration Project (Ridge to Reef: Protecting Water Quality from Source to Sea in the Federated States of Micronesia) includes a number of activities directly related to community participation in wastewater management such as community engagement, alternative toilet design where future connections to the new sewage mainline are not planned<sup>34</sup>.

The WaiVotua<sup>35</sup> project is a collaborative project between the Fijian villagers of Votua, USP and three New Zealand agencies, that integrates indigenous cultural, local practices, knowledge, resources and infrastructure with scientific and engineering approaches to develop appropriate community drinking-water supply and wastewater treatment and disposal solutions. The funding for the project was received from NZAID.

## 2.5 Guiding Principle 5: Capacity Building

A viable and sustained level of skilled and knowledgeable people within the wastewater sector and communities will enable communities and individuals to take responsibility for operating and maintaining their systems. The FFA call for appropriately trained and experienced urban and rural wastewater professionals to develop projects and operate facilities, at both the technical, managerial and community participation levels.

Proposed Action 5.1	Review the need for increased capacity and management training in human resources development and planning.
Proposed Action 5.2	Carry out training needs analysis (TNA) for workforce and community groups to identify gaps in existing training, including communities and individuals. This should include reviews of current programmes, who needs training, the type of training required, and resources needed.
Proposed Action 5.3	Identify funding sources for training programme development.
Proposed Action 5.4	Develop island specific training programmes and pilot projects, identify resources for delivery (e.g. staffing, equipment etc), secure funding and implement them.
Proposed Action 5.5	Evaluate performance of human resource development planning based on improved wastewater management.
Proposed Action 5.6	Periodically go back to Actions 1 and 2 to assure sustainability.

### Regional Initiatives

In 2003, UNEP/GPA with UNESCO-IHE developed and delivered a pilot course titled “Improving sanitation and wastewater management in PICs”. SOPAC along with the IAS arm of USP together with GPA have looked at how to adapt the course for use in the Pacific region. The first step in this regional adaptation has been to carry out a training needs assessment<sup>36</sup>.

<sup>33</sup>Check citation in footnote 27, at page 54: Crennan, L 2008 “Training in Eco-Sanitation for Communities in Pacific Island Countries”

<sup>34</sup><http://www.sopac.org/Federated+States+of+Micronesia+3SC>

<sup>35</sup>Tanner, C.C., Dakers, A., Headley, T., Aalbersberg, W., Winstanley, A., Stott, R., Lange, M., Bonito, V., Fong, P., Jeke, V., Tamata, B. 2008. The WaiVotua Project – sustainable water supply and waste treatment systems for a coastal Fijian village. *Proceedings of the Pacific Water Conference 08’, Pacific Water Association, Apia, Samoa. 9-11 September 2008.*

Stott, R., Winstanley, A., Lange, M., Tanner, C.C., Dakers, A., Headley, T., Aalbersberg, W., Bonito, V., Fong, P., Jeke, V., Tamata, B. 2008. The WaiVotua Project – Linking water and health in Votua: Raising awareness to support sustainable water supply and waste treatment systems for a coastal Fijian village. *Proceedings of the Pacific Water Conference 08’, Pacific Water Association, Apia, Samoa. 9-11 September 2008.*

<sup>36</sup>*Needs assessment for wastewater training programme for the pacific region*, Compiled by Kamal Khatri, Sarah Davies, Marc Overmars & Bill Aalbersberg, April 2007, SOPAC Training Report 118.

Since 2005, the adapted Train-Sea-Coast - GPA project has delivered three courses in sanitation and wastewater management, one each in Fiji (October 2005), Guam and Papua New Guinea (June 2006). Pacific island countries that have participated in these courses include Solomon Islands, Samoa, Papua New Guinea, Kiribati, Cook Islands, Tuvalu, Fiji, Marshall Islands, Federated States of Micronesia, Palau, Vanuatu and Guam. Further in-country delivery of the course has been done in Kiribati and Tonga (August 2008), training participants. Additional training courses in 3 other Pacific countries may be scheduled for 2009 under the EU Water Facility funds coordinated by UNEP GPA.

A number of technical resources on the design and construction, operation and maintenance and suitability of wastewater technologies have been prepared, including the UNEP 2002 "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"<sup>37</sup>, and the CD-ROM "Wastewater Technologies and Management for Pacific Islands"<sup>38</sup> containing compendium of technologies appropriate for Pacific Islands; a tutorial in Project Cycle Management to identify feasible solutions; three software tools to support decision making; and a document library with 100 publications on management and technologies.

### National Actions

The Cook Islands Public Health Department in partnership with the Department of National Human Resources Development coordinates a course in on-site wastewater management. The course is designed for sewage system designers, inspectors and regulators with some components relevant to installers and servicing agents. The first course was delivered in three stages (July 2006, May 2007 and November 2007) with participants proceeding to the next stage after passing a theoretical exam. The content of the course includes wastewater characteristics, function and performance of septic tanks, site and soil assessment, advanced sewage treatment systems (aerated wastewater treatment systems, packed bed reactors, membrane bioreactors, recirculating sand filters, vermiculture systems), composting toilets, land application systems (soak holes, absorption trenches, mounds, evapotranspiration/absorption beds, subsurface irrigation), familiarization with the Public Health (Sewage) Regulations and Sewage Code.

<sup>37</sup>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. United Nations Environment Programme (UNEP) 2002.

<sup>38</sup>CD-ROM Wastewater Technologies and Management for Pacific Islands available from SOPAC.

# 3. The Way Forward: Next Priority Actions



*Participants of the 2001 Pacific Regional Wastewater Framework for Action meeting in Majuro present at the 2008 Pacific Water Conference review meeting, Apia, Samoa.*

A workshop session at the Pacific Water Conference, Apia, Samoa (September 2008) focused on sharing what has been achieved at the country-level towards the outcomes and actions identified in the FFA, and on identifying further priority actions. The workshop style was a modified “Open Space” session. All participants were asked to raise topics that they wished to discuss, under the general headings of the five Guiding Principles. Other participants nominated to join a conversation about one of the topics, and were encouraged to move to another conversation when they were no longer contributing or learning. The discussions were captured by facilitators, and a summary presentation for each Guiding Principle was made to the meeting.

The following are summary statements of the actions identified by participants.

## 1. Institutional Arrangements, Policy & Regulations

Aim for separation of responsibility for policy, structure, planning and budgeting (legally mandated body), from the responsibility for implementation (a steering committee).

## 2. Infrastructure, Technology & Information

Western technology is too expensive, and proven solutions need to be tailored to the local environment. Possible list of actions could include:

- setting up regional information clearing house (e.g. Knowledge Hub in the area of sanitation for the Asia Pacific Water Forum, <http://www.apwf-knowledgehubs.net>),
- development and training centre for ecological sanitation,

### 3. Finance

Pacific Water Association could be a suitable forum to determine priorities for projects for the water sector which can then be raised with development partners for funding at the national level, e.g. Setting targets for water loss through leakage and funding leak detection programmes across the region.

Review and provide guidelines for appropriate contract management for public-private partnerships for service delivery and improvements.

Consider a multi-sector price regulator across industries, and Community Service Obligations provided by Government for the rural sector.

### 4. Awareness & Participation

1. Identify ways of publicizing the dangers of poor sanitation and the benefits of proper sanitation for human and environmental well being:

- Singing/jingle competition with prizes especially for schools and colleges. Allows student to be free to present/explore the issues how they want and in a way which attracts youth interest. The students could then make a more polite version for the public using their understanding of local culture, taboos and obstacles.
- Theatre, putting the humour into a sensitive topic makes it more acceptable;
- Media presentations using graphics and cartoons, perhaps with an ongoing column theme. Encouraging the public to write in and contribute
- Poster/billboard competition;
- Engaging pastors to make sermons about the religious meaning and significance of good water/wastewater management; and

2. Increase the practical skills of the community to understand and look after their water and sanitation systems because most families their own systems (rainwater tanks, wells, pit latrines, septic tanks etc).

- Water quality monitoring by community, using indicators like hydrogen sulphide test which is clearly visible and understandable.
- 'Train the trainers' for respected representatives from community organisations in practical skills to design, construct and maintain appropriate toilet systems especially leaders from church groups, and also private sector such as builders.

### 5. Capacity Building

Concern about the lack of skilled and unskilled workers available. Most of the brain-drain occurs from public sector to private sector to overseas. To address lack of skilled workers, consider developing in-country competency-based training modules.

There is expertise from around the Pacific island countries that would be available for training. Collaborative effort within region is needed, including a database of skilled operators from around the region that could be brought in for training.

Learning on the job is particularly important, i.e. hands-on training. If training is only based in the classroom it does not have much connection to what happens in the real world.

Concern about overseas companies come in and bring their own skilled experts. Local people with experience are overlooked, so there is no sharing of skills and capacity building. A mentoring/partnering/buddy system could be encouraged between the private sector and government.

## 3.1 The Way Forward

If the Millennium Development Goal target on sanitation (to reduce by half the proportion of people without access to basic sanitation by 2015) is to be achieved in a sustainable way, then regional, national and local-level strategies and initiatives need to consider (i) the interrelated nature of sanitation, water and health, and (ii) the multiple dimensions of “sustainable”:

- With minimal environmental impact;
- At an affordable cost;
- With minimal impact on the ability to achieve other health targets (e.g. safe food, safe drinking-water); and
- Through actions that can be continued.

The following recommendations from the joint SOPAC/WHO report should be adhered to:

1. Make use of the Asia Pacific Water Summits, of which the first one organized by the Asia Pacific Water Forum was held in Beppu, Japan in 2007. These high-level discussion platforms intend to mobilize political support for strategic actions required to achieve the MDG on sanitation and drinking-water target in the Pacific island countries, under the framework of the Pacific Plan.
2. Implement a sound sanitation and drinking-water monitoring and evaluation system for the Pacific island countries, capable of collecting, analyzing and disseminating population-based information on access to sanitation and drinking-water in close collaboration and consultation with the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP). Such a system should provide recurrent information on the following: access to sustainable sanitation and drinking-water services; drinking-water quality; hygiene behaviours; water-related diseases.
3. Revise the strategic instruments addressing the expansion and improvement of access to sanitation and drinking-water services in the Pacific island countries, taking into perspective the Pacific Regional Action Plan, and make the required adjustments conducive to the attainment of the sanitation and drinking-water MDG target.
4. Promote and support the inclusion of national drinking-water safety plans into the national development planning process for the Pacific island countries as a crucial measure to improve drinking-water quality generated by the existing and future islands water supply systems.
5. Promote the establishment of national sanitation, hygiene and drinking-water assessments under the framework of the Pacific Regional Action Plan (Pacific RAP) taking into account the need to conduct such assessments within the perspective of sustainable integrated water resources management. Such assessments should provide valuable insights into the current national planning processes throughout the Pacific islands.

(Source: WHO, 2008. *Sanitation, hygiene and drinking water in the Pacific island countries: Converting commitment into action*. World Health Organization.)

# ANNEX 1:

## 3rd Steering Committee Meeting and International Year of Sanitation

### 3rd Steering Committee Meeting

Pacific Partnership Initiative on Sustainable Water Management  
10th September 2008, Apia, Samoa  
DRAFT PROGRAMME

Session	Times	Details
Opening	8.30 – 9.00am	<ul style="list-style-type: none"> <li>Welcome, Prayer, Introductions, Appointment of Officers, Housekeeping Proposed Chair Latu Kupa, PWA</li> </ul>
Session 1	9.00 -9.30am	<p><b>Background</b></p> <ul style="list-style-type: none"> <li>Pacific Regional Action Plan (RAP), Partnership Initiative, World Water Forum, Pacific Plan Marc Overmars, SOPAC</li> </ul> <p><b>Review of Regional Action Implementation</b></p> <ul style="list-style-type: none"> <li>3rd Progress Report Marc Overmars, SOPAC</li> </ul>
Session 2	9.30 – 10.30am  (10.30 – 11.00am MT)	<p><b>Review of Partnership Arrangements and Clearing House Rhonda Bower, SOPAC</b></p> <ul style="list-style-type: none"> <li>Water Action Matrix Database</li> <li>Pacific Partnership Newsletter</li> <li>Buddy System Exchange and Education</li> <li>Coordinating Capacity Development</li> <li>Donor Harmonisation</li> </ul>
Session 3	11.00 – 11.45am	<p><b>Global and Regional Advocacy</b></p> <ul style="list-style-type: none"> <li>Asia Pacific Water Summit Andre Siohane, Niue</li> <li>5th World Water Forum Shinobu Fukumoto, JWF</li> </ul>
Session 4	11.45 – 12.00am	<p><b>Way Forward</b></p> <p><i>Latu Kupa, PWA</i></p> <ul style="list-style-type: none"> <li>Identification of further priority actions</li> <li>Future outlook of Pacific RAP</li> </ul>
<b>International Year of Sanitation 2008</b>		
Session 5	12.00 – 1.15pm	<p><b>Overview on Health and Sanitation in the Pacific WHO and Introduction to the IYOS</b> <i>(Stephen Terras, WHO)</i></p> <p><b>Review Pacific Wastewater Framework for Action 2001</b> Kamal Khatri, SOPAC/Jan Gregor, ESR</p> <p><b>National Wastewater Programmes/Activities</b></p> <ul style="list-style-type: none"> <li>Eco-sanitation on Funafuti, Tuvalu – Leonie Crennan</li> <li>National Programme of Action Tonga – Sione Faka’osi TCDDT</li> <li>Sanitation and drainage project in Apia, Samoa – Russell Abrams</li> </ul>

## LUNCH

Session 6	2.00pm – 3.00pm	<p><b>National Wastewater Programme Activities cont..</b></p> <ul style="list-style-type: none"> <li>✿ Cook Islands, Strategic Plan for Sewage Treatment Jacqui Evans</li> <li>✿ Development of sustainable water supply and waste treatment systems for coastal villages – Chris Tanner, NIWA</li> <li>✿ The WaiVotua Project – Linking water and health in Votua – Rebecca Stott, NIWA</li> </ul> <p><b>Regional Wastewater Programmes/Activities</b></p> <ul style="list-style-type: none"> <li>✿ Regional Wastewater Training Global Programme of Action - Fiji, Guam, PNG, Tonga and Kiribati Kamal Khatri/Sione Faka’osi</li> <li>✿ Ecological sanitation centre for the Pacific – Chris Tanner, ecoEng, USP, ESR and Southern Cross University</li> </ul>
Session 7	3.30pm – 5.00pm  3.00 – 3.30pm (AFT)	<p><b>Open Space Session – Introduction and Facilitation Jan Gregor/ Kamal Khatri</b></p> <ul style="list-style-type: none"> <li>✿ Theme 1 Awareness: Facilitator Leonie Crennan</li> <li>✿ Theme 2 Institutional arrangement: Facilitator Rhonda Bower</li> <li>✿ Theme 3 Technology: Facilitator Jeff Booth</li> <li>✿ Theme 4 Finance: Facilitator Noumea Simi</li> <li>✿ Theme 5 Capacity Building: Facilitator Rebecca Stott</li> </ul>
Closure	5.00pm – 5.30pm	<p><b>Wrap up</b></p> <ul style="list-style-type: none"> <li>✿ Feedback from open session Latu Kupa/Jan Gregor</li> <li>✿ Future Outlook on Wastewater and Sanitation</li> </ul>



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