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Chapter 5

Sustainable Water Management in Pacific Island Countries: From Vision to Action

Global and Pacific SIDS water and sanitation challenges

Pacific island countries (PICs) are no different from other countries in that freshwater is essential to human existence and a major requirement in agricultural and other commercial production systems. The economic and social wellbeing of PICs are dependent upon the quality and quantity of their water. However, the ability of the island countries to effectively manage the water sector differs in small island developing states (SIDS), as they are constrained by their size, isolation, fragility, natural vulnerability, and a limited human, financial and natural resource base.

In acknowledgment of the particular constraints faced by SIDS, the Mauritius Strategy for the Further Implementation of the Barbados Programme of Action (BPOA+10) highlights the need to prioritise water and sanitation on the SIDS global and national agendas during the Water for Life Decade (UN, 2005).

The Mauritius Declaration of 2005, which reaffirmed support for the implementation of the BPOA+10 specifically, recognises that:

> *Small island developing states continue to face water management and water access challenges, caused in part by deficiencies in water availability, water catchment and storage, pollution of water resources, saline intrusion (which may be exacerbated, inter alia, by sea-level rise, the unsustainable management of water resources, and climate variability and climate change) and leakage in the delivery system. Sustained urban water supply and sanitation systems are constrained by a lack of human, institutional and financial resources. The access to safe drinking water, the provision of sanitation and the promotion of hygiene are the foundations of human dignity, public health and economic and social development and are among the priorities for small island developing states*.
>
> UN, 2005

Challenges faced by Pacific SIDS in promoting sustainable water management can be categorised into three broad thematic areas as identified by the Consultations for Small Island Developing Countries on Water Resources during the 3rd World Water Forum, held in 2002:

1. Small island countries have uniquely fragile water resources due to their size, lack of natural storage and competing land use, vulnerability to natural and anthropogenic hazards, including drought, cyclones and urban pollution. This requires detailed water resources monitoring and management and improving collaboration with meteorological forecasting services.
2. Water service providers face challenging constraints to sustaining water and wastewater provision due to the lack of resources including human and financial resource bases, which restrict the availability of experienced staff and investment, and effectiveness of cost-recovery.

Future action is required in human resources development, water demand management and improving cost-recovery.

3. Water governance is highly complex due to the specific socio-political and cultural structures relating to traditional community, tribal and interisland practices, rights and interests, which are all interwoven with colonial and 'modern' practices and instruments. These require programmes such as awareness, advocacy and political will, at community, institutional and government levels to create a framework for integrated water resources management.

Freshwater resources of small island states

Freshwater resources in small island states consists of both 'conventional' and 'non-conventional' resources (Burns, 2003). Conventional resources include rainwater collected from natural or artificial surfaces, groundwater and surface water. Nonconventional resources include desalination, imported water and treated wastewater. For many islands, rainwater tends to be used as a supplementary source for cooking and drinking (Falkland, 1999). The majority of Pacific islands rely on groundwater for at least some of their water needs. Groundwater mainly occurs in perched and basal aquifers in small island states. Perched aquifers occur where an impermeable layer exists in the zone of aeration, which creates a groundwater formation above the water table, or when groundwater is retained in compartments in vertical volcanic dikes (Falkland and Custodio, 1991). Basal aquifers occur where rainwater percolates through an island and floats on the denser salt or brackish water in what is termed as a Ghyben-Herzberg lens. These lenses may be as thick as 20 metres on some islands, and as thin as 10–20 centimetres on raised coral atolls such as Tonga and Nauru (Burns, 2003). Surface water is found mainly on high islands of the Pacific, which tend to be the predominant source of freshwater because gravity-fed water systems are often more cost effective than groundwater pumping systems. Nonconventional water resources are not commonly used in the Pacific due to the high cost of supply. Only Nauru has relied heavily on desalination to meet water requirements.

Access to safe water and adequate sanitation

Access to safe drinking water, which is vital for human health and development, ranges from 23 per cent in Papua New Guinea (PNG) to 100 per cent in countries such as Tuvalu, Tonga, Niue and Tokelau (Pacific Islands Forum Secretariat [PIFS] and the Pacific Islands Applied Geoscience Commission [SOPAC], 2005). However, rapid population growth, increasing urbanisation, damage to water catchments resulting from deforestation, poor waste management practices leading to water pollution, and climate change are expected to further exacerbate the challenge of providing access to safe water.

Data on the region's access to safe drinking water and basic sanitation, illustrated in figures 5.1 and 5.2 respectively, is provided by SPC (2004) in the Pacific Islands MDG Report, under Millennium Development Goal 7: Ensuring Environmental Sustainability. The figures demonstrate that there is need for much improvement in the region.[1] According to the MDG report, atolls and other small islands that are reliant on rainwater collection or groundwater in basal aquifers face especially difficult challenges in ensuring that the population has access to safe drinking water supplies. In addition, climatic variability, which has been increasing over the past two decades and which could be linked to climate change, is posing a serious challenge to safe drinking water supplies in the region. For example, in 1998, droughts in Marshall Islands, Nauru, PNG, Fiji, Tonga and Samoa resulted in some of the worst water shortages on record in the region (SPC, 2004).

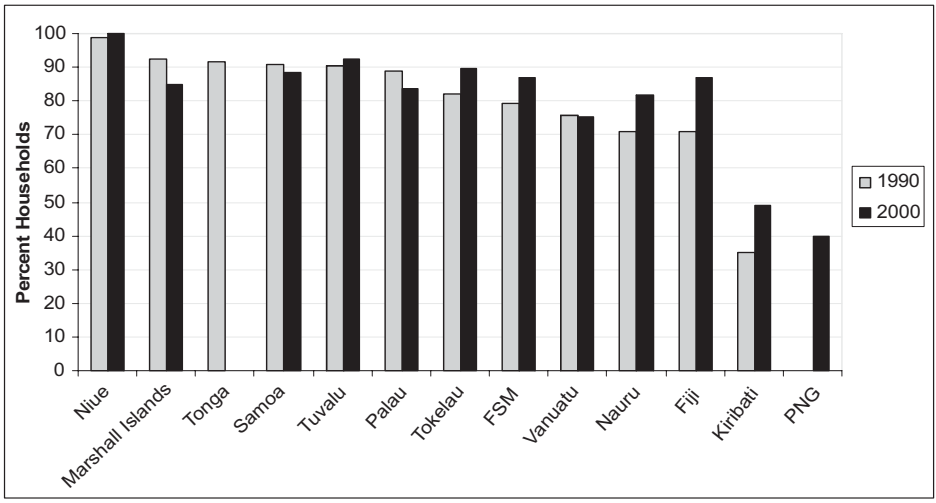

Figure 5.1 Proportion of urban and rural households with sustainable access to an improved water source
Note: Measures proportion of households rather than proportion of population. Figures may differ from rates calculated previously because of the definitions of 'improved' and 'not improved'.

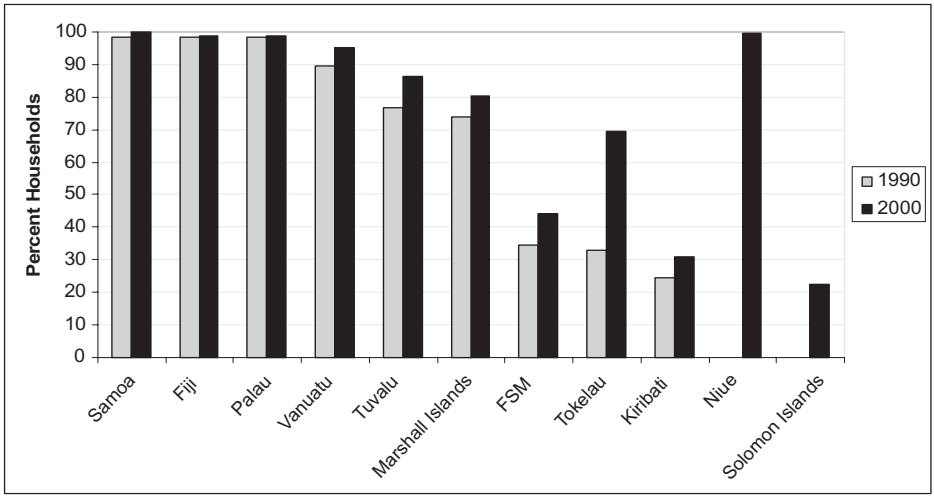

Figure 5.2 Proportion of urban and rural households with access to improved sanitation
Note: Measures proportion of households rather than proportion of population. The inadequacy of information regarding suitability of wastewater disposal methods and of facility location, construction and maintenance means these data should be used with caution when assessing access to 'improved' sanitation. Figures may differ from rates calculated previously because of the definitions of 'improved' and 'not improved'.

Other regional assessments have produced similar graphs using data from a performance benchmarking exercise in 2001 for Pacific Water Utilities (Asian Development Bank [ADB], 2005) but the data shown is equally unreliable to allow for a regional comparison and gauging progress in MDG targets. The final report[2] states: 'Interpretation of benchmark results for the water/wastewater sector in the Pacific is constrained by (i) a lack of a regional standard for measuring costs and valuing assets and, more importantly (ii) a general lack of consensus among utility managers, government authorities, and donors regarding performance targets that are realistically achievable within a given time frame'.

Further benchmarking by public water utilities and improved census data in PICs required with the inclusion of clear MDG target definitions on access to safe drinking water and adequate sanitation.

Impacts on human health

More recent health statistics (WHO, 2005a) show the relatively high infant mortality rates caused by diarrhoeal diseases in figure 5.3 and, as stated by the Pacific MDG Report (SPC, 2004), 'the issue of impacts to human health due to contamination of water supplies and inadequate sanitation has been recognised for many years'. According to McKean and Baisyet (1994) 'the pollution of drinking water and the resulting health hazard may be one of the biggest watershed issues in island countries of the South Pacific' (quoted in SPC, 2004, p. 110).

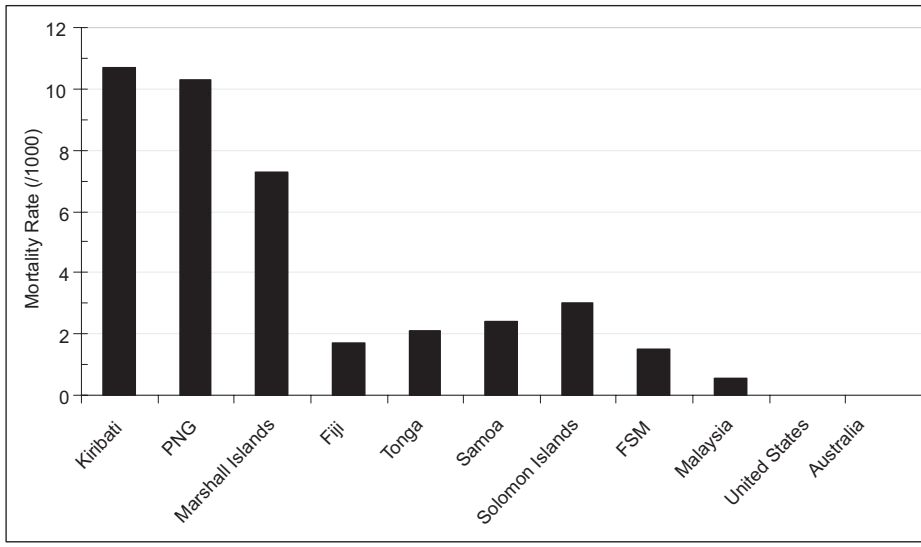

Figure 5.3 Infant mortality rate caused by diarrhoeal diseases (/1000)
Source: CHIPS WHO, 2005a[3]

High incidence of diarrhoeal and other infectious diseases (e.g. hepatitis, typhoid and cholera) on some small islands is often caused by poor quality groundwater used as a source of drinking water. Outbreaks of cholera in PICs have been linked to contaminated water – for example in Kiribati (e.g. Tarawa in 1977) and FSM (e.g. Chuuk in 1982–83 and Pohnpei in 2000); and Marshall Islands (2001). The incidence of diarrhoeal diseases in PICs has been found to vary with water availability and climate, with high disease incidence associated with low water availability, and higher temperatures. Pollution of water supplies from sanitation systems is a priority issue as it can have severe health impacts on individuals and populations. Small islands with high population densities (e.g. main population centres on atolls) are particularly affected. Significant reduction in microbiological pollution of groundwater or surface water resources requires installation of appropriate, affordable sanitation systems in small island communities.

Pollution problems are generally greater in urban and peri-urban areas with high population densities where the sanitation systems are principally pit toilets (either latrine or pour flush) and septic tanks, but many smaller villages also either exhibit high bacterial levels in groundwater or have the potential for such pollution. The problem is endemic in many small low-lying coral islands of the Pacific and other regions, which are characterised by thin and highly permeable soil zones, and is a major constraint to improvements in water quality (Falkland, 2002).

For example, the costs associated with reduced lagoon and drinking water quality resulting from herbicide, pesticide and fertiliser run-off, livestock and animal waste, septic tank leakage and inappropriate liquid and solid waste disposal in Cook Islands has been estimated to impose annual costs of NZ$7.4 million on the economy (or NZ$2,900 per household). A significant portion of these costs are attributable to public health spending on treating waterborne diseases and preventative expenditures on bottled water to avoid becoming sick from drinking contaminated groundwater supplies (Hajkowicz and Okotai, 2005).

Given the impacts of wastewater practices on water quality and human health, any improvement in water services provision has to be linked to sanitation, hygiene and programmes that aim for behaviour change. This is still rarely practised in the Pacific region where assistance is provided through mainly sectoral approaches.

The need to mainstream water resources management into national development strategies and priorities

The failure to recognise that economic and social development in PICs is inextricably linked to the sustainable management of water resources has resulted in the lack of focus or priority given to water and sanitation issues in national development strategies. As a result inadequate budgetary resources are allocated to this sector, which can jeopardise progress made by PICs in meeting the MDG targets to reduce by half the people without access to safe drinking water and basic sanitation before 2015.[4] In addition, it also hampers progress on the MDG target that aims to produce integrated water resources management (IWRM) and water use efficiency (WUE) plans.[5] IWRM can be used not only to achieve MDG targets but also to promote long-term economic development, poverty reduction and environmental sustainability as discussed in box 5.1 below.

Box 5.1 How integrated water resources management contributes towards the achievement of the Millennium Development Goals

IWRM provides a framework within which to consider trade-offs between different development objectives and, where possible, to identify win-win water investments. By aligning and integrating interests and activities that are traditionally seen as unrelated or that, despite obvious interrelationships, are simply not co-ordinated, IWRM can foster more efficient and sustainable use of water resources to achieve the MDGs. It must be emphasised, however, that an IWRM approach will support not just achievement of the MDGs, but also the long-term economic development, poverty reduction and environmental sustainability that will be needed to sustain that achievement.

The MDG process provides an opportunity to re-examine and modify the current development paradigm such that national development and poverty reduction strategies consider more explicitly (1) the multifaceted role that water resources management plays in poverty alleviation, environmental protection and economic development; and (2) the trade-offs between, and potential synergies among, a multitude of objectives (e.g. equity, economic efficiency and environmental protection). IWRM is not simply a process designed to carry us to a set of 2015 targets, but a way of thinking that enhances our capacity to tackle multi-objective, multisectoral development planning – such as is embodied by the MDG process.

Source: Global Water Partnership (2005)

To some degree PICs have used the UN Commission on Sustainable Development meetings in 2004 (CSD12) and 2005 (CSD13) to facilitate prioritisation of water in their national sustainable development strategies (NSDS), but the real efforts towards achieving the MDG targets remain largely driven by outside entities.

Despite this, communities at large express a great desire to increase their access to water and sanitation, shown through various in-country consultations. For example, extensive community consultations carried out in Kiribati for the National Adaptation Program of Action (KAP Phase I) identified several priority adaptation strategies where seven out of the top ten priorities were water and sanitation-related (Global Environment Facility [GEF], 2004).

Under development assistance provided by the European Union under the National 'B' Envelope in the Pacific, aimed at building and strengthening national actions to reduce vulnerability to natural disasters and build resilience, four out of eight participating countries selected water security for their area for intervention (SOPAC, 2007).

Other vulnerability and adaptation assessments and studies conducted by PICs as part of their preparation of national adaptation programmes of action (NAPA) have highlighted climate impacts on water resources and the need for adaptation, with subsequently four out of eleven participating countries giving priority to water interventions under the GEF-funded Pacific Adaptation to Climate Change (PACC) programme (SPREP, 2007).

Despite water and sanitation being identified as a priority for PICs within quite a number of regional support programmes as demonstrated above, the human as well as the financial capacity to address the root causes of unsustainable management of water resources and more specifically, the lack of access to water supply and sanitation services, remain largely inadequate. This requires the capacity of PICs to be significantly enhanced. Capacity building is something usually not incorporated in bilateral assistance programmes, and remains largely dependent on regional support mechanisms which only have limited effects when put in place in isolation.

Introducing integrated approaches

In addition to the MDG water and sanitation targets, the global community also adopted a lesser-known target in Johannesburg (WSSD, 2002) 'to develop integrated water resources management and water efficiency plans (IWRM/WUE plans) by 2005 **with support to developing countries to** achieve broader societal goals such as poverty reduction, health improvements and environmental sustainability'.

IWRM is a relatively new 'brand' in the Pacific islands and several surveys undertaken for the Global Water Partnership (GWP) and the Japan Water Forum have shown that little progress has been made in the Pacific region on this specific target, with only a few countries having started catchment IWRM plans or drafting national IWRM plans. However, the concept and the approaches IWRM embodies – namely, the need to take a holistic approach to ensure the socio-cultural, technical, economic and environmental factors are taken into account in the development and management of water resources – has been practised at a traditional level for centuries in the Pacific islands.

The formal development of the IWRM management approach within governance structures at the national level has not been a widespread reality. At the national level, often there exists multiple agencies that deal with water, and this fragmented management of water resources is exacerbated by the lack of overarching policy, outdated laws and poor administration capacity for integration (PIFS and SOPAC, 2005). This has largely been a function of inherited colonial government structures with their inherent line ministries and poor inter-ministerial liaison and collaboration, with a general tendency for government administrations to be inadequately resourced and weak compared to local and traditional governance structures (Carpenter and Jones, 2004). As a persistent constraint for integration, water has been regarded as everybody's business and therefore no individual's responsibility.

IWRM island style

Growing recognition since the late 1990s and into the new millennium that sustainable water resources management was not being achieved in the PICs started to focus water stakeholders on identifying the causes. It was increasingly understood that competing activities in watersheds and on small atoll islands had to be tackled together if the water resources of the catchments and on the islands were to be managed adequately.

Cyclone and drought events, to which the PICs are especially vulnerable (due to the small size of the catchments and aquifers and therefore the lack of natural storage) affect all water users, whether they be urban or rural water supplies, commercial forestry and agriculture, subsistence agriculture, and of course the fisheries/reefs and tourist developments. The need for drought and disaster preparedness plans became two forms of climatic extreme water resources management, recognised as national priorities in many PICs.

Additional mounting evidence was suggesting that pollution on land from inadequate wastewater disposal, increased sediment erosion and industrial discharges, were impacting upon coastal water quality and fisheries stock which sustain the entire island populations. In the islands, this led to looking at managing water resources not only within the watershed but also the receiving coastal waters.

'Doing things right' vs 'doing the right things'

In order for IWRM to work, effective institutional development is required. As mentioned in a speech on this topic delivered by the Dutch Minister for Development Co-operation at the World Bank (Herfkens, 2001) the notion was made that the focus of development assistance has usually been on **doing things right** whereas the focus should actually be on **doing the right things**. The speech paraphrased the differences as follows:

- **Doing things right**. That means losing sight of the big picture in which you operate. Concentrating on your own job and your own responsibility to carry it out to the best of your ability. And it means fear of change, of taking risks and making mistakes. Procedures take priority over goals.
- **Doing the right things**. This means starting with a clear vision of the context in which you work. Being flexible so that you can adapt to new situations. Knowing where you are heading and how to get there.

As for the Pacific region, there are numerous examples of losing sight of the big picture, e.g. the concentration on the potential impacts of climate change on small island communities has deflected attention and resources away from the immediate and serious day-to-day problems faced by small island nations, particularly in water resources (White et al., 2007). The above obviously does not preclude the application of coping strategies and adaptation measures to climate variability and change, which on the contrary, is essential for water resources management in PICs.

During the five years preceding the Water for Life Decade major progress has been made towards identifying the right things and how these can be undertaken for the water sector, most notably through the Pacific Regional Action Plan on Sustainable Water Management which followed the consultations held for the Water in Small Island Countries Session at the 3rd World Water Forum.

Box 5.2 'Doing things right': the case of liquid waste management in Tuvalu

The Government of Tuvalu has considered a number of alternative sanitation systems over the past 15 years to address the groundwater and lagoon pollution problem in the country's capital, Funafuti, caused by leaking septic tanks and soak pits, these include: a centralised reticulated system, mini-treatment plants, repairing the existing septic tanks with plastic ones, a hybrid system which uses reduced quantities of water and the use of compost toilets.

A large-scale reticulation system was recommended by ADB (1996) based on environmental grounds. This would involve establishing a network of pipes for a seawater-based second-class system, a sewerage disposal system together with a centralised treatment plant. The total cost of this system was estimated to be 11.7 million Australian dollars (A$), with monthly maintenance costs of A$11,000. The benefits of constructing a reticulated system would be low in comparison to costs since the annual household cost of poor waste management practices (health treatment costs, bottled water costs, costs of installing rainwater tanks, etc…) was estimated to be A$500,000 (or $700 per household) per year.

On the other hand, the annualised cost of purchasing and installing compost toilets in homes was estimated to be A$700 for new homes, and A$900 for existing homes, which is comparable to the costs that households are currently incurring as a result of poor waste management practices on Funafuti (not to mention the added value of selling compost and water savings associated with compost toilets). It is estimated that if all residents were to convert to compost toilets, Tuvalu could expect to save A$2 million annually.

Source: Lal, Saloa and Uili (2006)

Strategic development: towards sustainable water resource management in the Pacific

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

1. The **Pacific Wastewater Policy** and associated Pacific Wastewater Framework for Action, were both completed in 2001 in Majuro and developed as part of UNEP's Global Programme of Action for the Marine Protection from Land-Based Sources of Pollution (GPA) (Bower et al., 2002).
2. The more holistic **Pacific Regional Action Plan on Sustainable Water Management** (Pacific RAP) was completed in 2002 in Sigatoka and was produced by the region in preparation for the Water in Small Island Countries session at the 3rd World Water Forum in Kyoto, 2003. Inclusive of wastewater and sanitation, the action plan provides a holistic approach to achieving sustainable water management using a framework of six thematic areas. Each theme has key messages or sub-themes, and each of these has a list of actions. Priority actions under each theme are listed in figure 5.4 below (ADB and SOPAC, 2002).

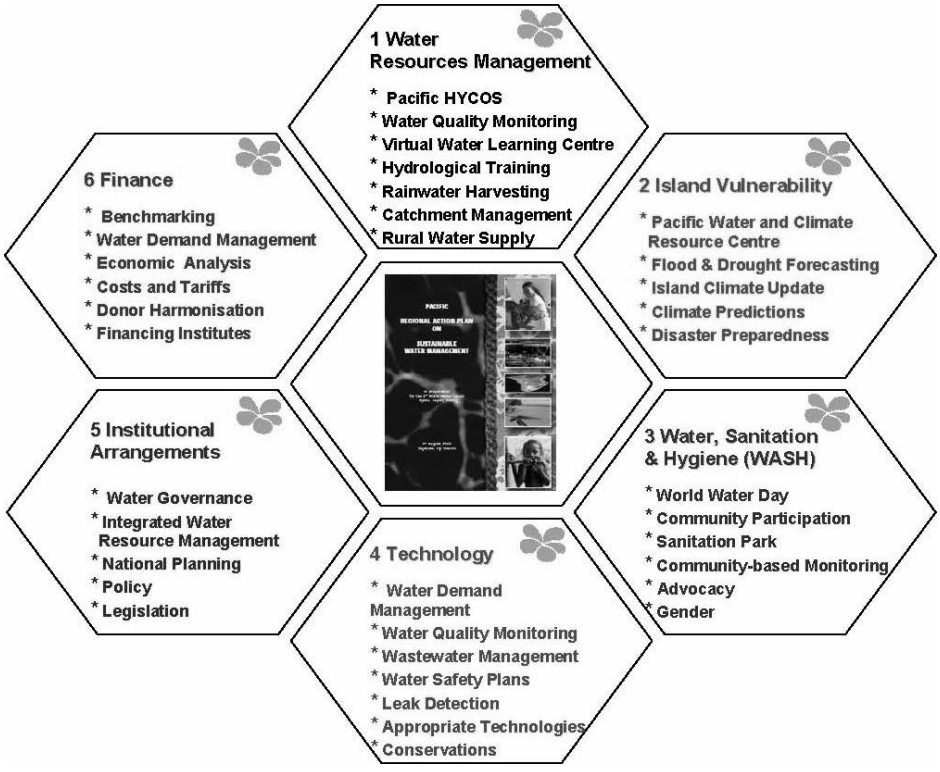

Figure 5.4 Diagram of Pacific Regional Action Plan on Sustainable Water Management

The Pacific RAP was endorsed at ministerial level in August 2002 and at head of state level in August 2003. This level of political commitment was largely secured through the transparent and participatory consultation process leading up to the development of the Pacific RAP. Importantly, the inclusion of the regional donors and development agencies in the consultations has also given them ownership of the Pacific RAP.

3. A WHO-facilitated workshop on Water Quality Standards and Monitoring in Pacific Island Countries held in Nadi, Fiji in 2005 resulted in a **Water Quality and Health Framework for Action** which was developed as a complementary framework building on the Pacific RAP (WHO, 2005b).
4. In addition the UNESCO-facilitated workshop (Nelson, 2005) on Hydrology for Environment, Life and Policy (HELP) resulted in a **Framework for Action for HELP in the context of the Pacific Regional Action Plan** (Waterman et al., 2007).

Following the above strategic developments, Pacific Heads of State recommended at their Advisory Committee on the Protection of the Sea (ACOPS) summit meeting, held in Nadi, Fiji in 2006, that water, sanitation and hygiene challenges facing the region be directly addressed under the **Pacific Plan** through the Pacific Regional Action Plan on Sustainable Water Management, providing further political endorsement to this strategy and its sister frameworks for action (SOPAC, 2004).

Water demand management

In the past, development projects in the water sector have mainly focused on the upgrading or extension of existing water supply infrastructure. Not only has this supply-driven approach been very costly for donors and receiving countries, but it has also failed to ensure delivery of safe water supplies, even for larger urban centres in most PICs (Schölzel and Bower, 1999). With pressure on limited water resources, many countries in the region have realised that the key to sustainability lies in more sound management of the existing water system rather than costly infrastructure extension. Since water supply systems are subject to economies of scale, systems in the region that serve small populations have high unit costs. This clearly suggests the need for an emphasis on cost recovery and improved operational efficiency in water and sewerage.

Demand management involves a number of measures including cost-reflective pricing and universal metering, reticulation leakage detection and repair programs, community education and awareness campaigns, and regulation of the efficiency of water-using appliances, which is intended to reduce water wastage in the system, thereby relieving pressure on freshwater supplies and protecting water quality.

Water pricing can be used to both raise water utility revenues and improve the efficiency of water use. In formulating water pricing policy, capital and recurrent costs of treatment and distribution, current level of government subsidy, the level of external funding, types of water consumers, level of demand and willingness and ability to pay for water must be considered (United Nations Environment Programme [UNEP], 1998). There are a number of examples in the Pacific where effective water pricing combined with the installation of water meters has resulted in a significant improvement in efficient water use. For example, a 43 per cent decline in water consumption in Honiara was attributed to the installation of water meters. In Samoa, introduction of meters by the Samoa Water Authority reduced consumer demand from approximately 900 to 300 litres per person per day. Prior to the installation of meters customers were supplied with a mixture of treated and untreated water and were not prepared to pay for the inconsistent quality of water supplied. Reducing the demand has allowed the majority of customers to be served with treated water and

increased the revenue stream for the utility contributing towards its sustainability. In Majuro, in Marshall Islands, tariff increases have resulted in more responsible water use by consumers. As a result, rainwater catchments are now the preferred source of water, especially among low-income households (World Bank, 2004).

Using partnerships to promote sustainable management of water resources

The Pacific RAP consultations also provided the platform to develop the **Pacific Partnership Initiative on Sustainable Water Management** (submitted to World Summit on Sustainable Development [WSSD] which aims to facilitate the implementation of all listed actions in the Pacific RAP on a national, regional and international level (Overmars, 2002).

The partnership has facilitators (SOPAC and USP) who are responsible for implementing the core functions of the partnership: liaising between the regional stakeholder groups and their sub-networks; researching and receiving stakeholder information on on-going and planned water activities; tracking donor and development agency programmes; identifying areas requiring implementation; and co-ordinating proposal submissions and project implementation. The facilitator is also responsible for high-level advocacy of the strategic approach.

The partnership enables countries and development agencies to: identify successful previous activities and therefore improve the sustainability of subsequent interventions; reduce and prevent duplication of activities; link country requirements to development programmes (and vice versa); and augment existing and proposed activities nationally and regionally.

This co-ordinated approach has already proved successful in implementing projects or providing technical assistance to PICs and many of the partnership activities have also resulted in increased donor collaboration and harmonisation on in-country action plans and strategies. This has been demonstrated, for instance, through the regional response to use the Kiribati National Water and Sanitation strategy developed with the support of the ADB in collaboration with SOPAC as a framework to address water-related issues under a GEF climate adaptation programme which is being implemented by the World Bank with financial contributions from AusAID, NZAID and the EU.

The level of intervention by the partnership through regional support programmes is largely restricted to capacity building, advocacy and awareness targeted at the key counterpart government departments in PICs. However, the success of the Pacific RAP, and its sister action plans on waste water and drinking water quality and health, is ultimately determined by the success of its implementation at national and local levels, which are significantly more difficult to implement and monitor.

Monitoring and evaluation of Pacific RAP implementation are carried out using a matrix inventory of previous, existing, planned and proposed activities, including details of the stakeholders involved, the intervention objectives, implementation duration and status, and anticipated impact.

The Pacific RAP and associated partnership allows supporting organisations to optimise their role in building the region's capacity and assist in implementing the Pacific RAP through a co-ordinated approach while lining their services up with the requirements and needs expressed by PICs.

Introducing water safety planning to improve drinking water quality and health

An example of enhanced partner co-ordination and donor harmonisation is provided through a series of interventions that focus on the improvement of drinking water quality and health.

Following the Pacific Framework for Action on Drinking Water Quality and Health, support has been forthcoming through the Pacific Water Safety Plans Programme (WSP) implemented through SOPAC and WHO and supported by AusAID for the period 2005–2007 (SOPAC/WHO, 2006).

Water safety plans are defined in the third edition of the WHO Guidelines for Drinking Water Quality (WHO, 2004) as 'a comprehensive risk assessment and risk management approach that encompasses all steps in the water supply from "catchment to consumer" to consistently ensure the safety of water supplies'.

As mentioned earlier, growing segments of the population in the Pacific are at risk to water borne diseases (through polluted drinking water, from coastal as well as surface sources). This is compounded by a lack of information needed for water resource development and protection as well as a lack of awareness of the problems associated with contaminated water. The introduction of the water safety plan concept in PICs will address all aspects of drinking water supply through an integrated approach with a focus on the control of abstraction, treatment and delivery of drinking water in combination with attention for awareness and behaviour change. The Pacific region now stands to benefit from pilot WSP projects in four countries. Strong interest from governments, water utilities, NGOs and partner agencies has evolved through the programme in these pilots with replication already being undertaken in interested countries and a replication strategy being developed for other PICs.

Two companion projects supported by NZAID/NZODA have now followed this lead under the Framework for Action. The SOPAC/WHO/IAS Water Quality Monitoring Capacity Building Programme for Pacific Island Countries (WQM) provides monitoring and laboratory support components which complement the AusAID-funded WSP. Secondly, in-kind support is provided by the New Zealand Ministry of Health with their water safety and water quality experts being fielded to PICs, guided by the SOPAC/WHO team to technically support the national WSP and WQM pilot projects.

Figure 5.5, below, illustrates the integrated plan on drinking water quality and health implemented through various regional support mechanisms.

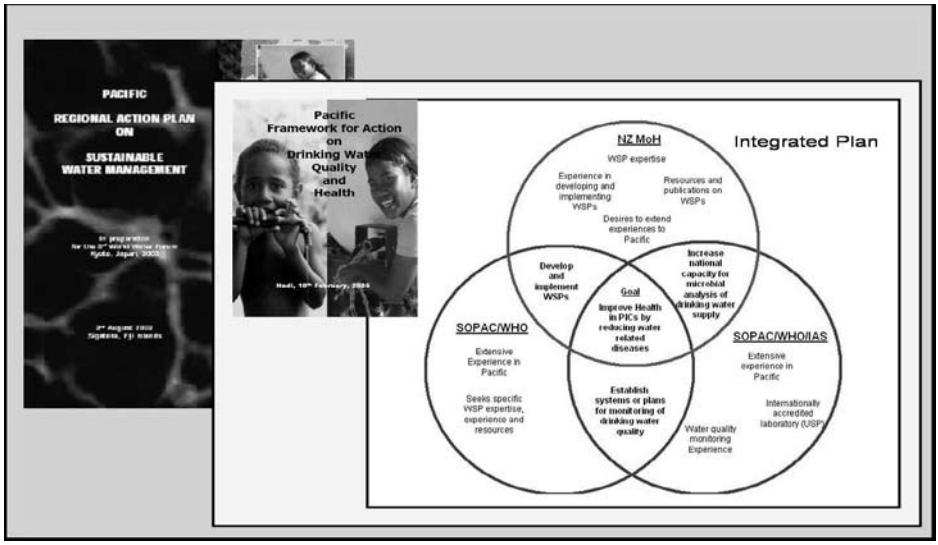

Figure 5.5 Integrated plan on drinking water quality and health
Source: ADB and SOPAC, 2002

The integrated plan highlights areas (activities and outputs) where the three programmes are integrated to maximise coverage, delivery, impact and success by fully utilising existing synergies. The objectives under each programme, although distinct, have a shared and common goal of reducing water-related diseases in the Pacific region. As a result the activities and outputs of each programme complement the others.

Beyond the co-ordination of WHO, SOPAC and USP-IAS work as regional partners each providing support in their area of expertise, so that donor support is channelled to countries in a co-ordinated fashion. This can be even further enhanced through the interest donor agencies may have in providing financial support towards the improvement schedules that are resulting from the WSP pilots and which require at times large infrastructural interventions.

Introducing IWRM and WUE planning

The Pacific RAP in general provides a unique model to improve the assessment and monitoring of water resources, reduce water pollution, improve access to technologies, strengthen institutional arrangements, and lever additional financial resources in support of IWRM on a regional scale.

The partnership provided a platform for the development of proposals to the GEF and the European Union ACP-EU Water Facility (ACP-EU WF) in a unique arrangement for mutual aid and assistance, for a programme on sustainable integrated water resources management in PICs in association with UNDP and UNEP. The resulting collaboration between the two facilities (GEF and EU WF) provides an unprecedented opportunity to allow the harmonisation of two global funding mechanisms.

The long-term objective of the planned integrated water resources management (IWRM) interventions is to assist the PICs with the implementation of applicable and effective IWRM and water use efficiency (WUE) plans. The GEF-funded component will see the implementation of catchment

(or island) demonstration projects whereas the EU WF-funded component will focus on the development of national IWRM plans and improvements in institutional arrangements over the next few years and within the Water for Life Decade.

The pivotal role all members of the Pacific Partnership Initiative on Sustainable Water Management are playing in the design and implementation of these IWRM interventions under the above programmes including CROP and UN organisations, funding agencies, NGO's, CBO's, universities and research institutes, can be used as a model for increased donor harmonisation and co-ordination of water and sanitation interventions.

Monitoring of investments and results

In PICs there is an urgent need to strengthen monitoring mechanisms to understand where investments are being made, where investment gaps occur, and what the impact is of different interventions and investments. This information is invaluable for national sustainable development planning and sectoral strategic planning and to determine best practices which need to be replicated. Donors monitor for reporting to their national governments/investors, and to improve their programming, but how can monitoring across donors and sectors be harmonised?

Partnerships and networks have a critical role to play in monitoring and recording investment data and understanding the impact of those investments. Capacity building and mainstreaming can often produce intangible benefits. Greater impact may be created by seconding and implanting staff from developed countries and international organisations into Pacific island governments to improve capacity through mentoring.

Monitoring the impact of water investments can be linked to wider development outcomes, such as health and economic growth indicators. However, it is often difficult to assign attribution due to the lack of control over exogenous variables, lack of data, and lack of statistical rigour. However, the direct outputs of physical infrastructure, services, quality and resource mobilisation are clearly measurable and this is not receiving enough attention.

Economic analysis, including benefit-cost analysis, can provide a useful framework for determining the pay-off from proposed investments in the water and sanitation sector. Given the scarce resources available for investing in improved water management in PICs, benefit cost analysis can be used to determine which investments are most efficient, i.e. provide the best value for money, by comparing the benefits of a particular project or activity with its costs. For example, benefit-cost analysis was used in Tuvalu, under the International Waters Project, to determine the most cost-effective option for addressing liquid waste management in Funafuti (Lal, Saloa and Uili, 2006).

Within SIDS, due to the complex multi-donor environment, multiple cross-sectoral impacts (due to the small size and complicated hydrogeological nature of the islands) it becomes difficult to establish all the causal links and specific monitoring and evaluation rules need to be determined. Little information exists on private sector involvement (including the value of community engagement, time, and contributions to projects and programmes). It is difficult to determine baseline activities, i.e. those activities solely for the benefit of a particular sector, due to the volume of different donor initiatives. Government funding tends to dominate sectoral funding but private sector funding is often not recorded or included, or is discounted.

SOPAC uses the Pacific Water Action Matrix under the Pacific Partnership Initiative on Sustainable Water Management. By collating information on projects and programmes in the Pacific, knowledge is improving on investments made. This data-focused approach takes considerable time

but by starting the process it provides a valuable benchmark for the future. Completed project information is being sourced now but it is difficult to locate.

This approach needs to be aligned with a monitoring and evaluation (M&E) framework, which the GEF-funded IWRM programme will develop so that the impact of investments past and present can be understood to improve planning for the future. The Pacific already has the Regional Action Plan on Sustainable Water Management as a guiding structure for monitoring investments and the impact of those investments.

Conclusions

If the MDG targets on water and sanitation are to be achieved (reduce by half the number of people without access to safe drinking water and basic sanitation before 2015), additional resources have to be made available to the water sector in the Pacific. The third 'water-related' MDG target of developing national IWRM plans by 2005 has been modified into 'setting processes in motion' towards National IWRM Plans.

With the regional support programmes being well established and funded, there is now an increased need to focus on implementation at the national and local levels through a two-pronged approach: i) further improvements in national strategy, planning and institutional arrangements (partly through the development of national IWRM/WEU plans) and ii) increased focus on water and sanitation improvements in the NSDS. Prioritisation of water and sanitation in the national political agendas as well as harmonisation of donor agency programmes are in this respect key to maximise the impact of actions and would need to be supported by a regional framework for monitoring of investments and results.

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Notes

1. Indicator 30, the Proportion of Households with Access to Safe Drinking Water, monitors access to improved water sources based on the assumption that improved sources are likely to provide safe water; 'unsafe' water is the direct cause of many diseases in developing countries. Access to safe water refers to the percentage of the population with reasonable access to an adequate supply of safe water in their dwelling or within a convenient distance of their dwelling. The Global Water Supply and Assessment Report 2000 defines 'reasonable access' as 'the availability of 20 litres per capita per day at a distance no longer than 1,000 metres'.

   However, access and volume of drinking water are difficult to measure and so sources of drinking water that are thought to provide a safe and reliable supply of water are used as a proxy. Likewise, the definition of access to improved sanitation facilities and the methods for assessing it are even more contentious than those for water with national definitions of 'acceptable' sanitation varying widely (SPC, 2004).
2. TA: REG 38633: *Technical Assistance for Improving Delivery of Infrastructure Services*, approved in 2005.
3. Infant mortality rates measure child survival. They also reflect the social, economic and environmental conditions in which children (and others in society) live, including their health care. Because data on the incidences and prevalence of diseases (morbidity data) are frequently unavailable, mortality rates are often used to identify vulnerable populations (SPC, 2004).
4. MDG Target 10: Halve the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015.
5. The MDG Target on developing national IWRM and water efficiency plans by 2005 set at WSSD was adjusted at the 2005 World Summit which called for 'assistance to be provided to developing countries in efforts to prepare IWRM and water efficiency plans as part of their national development strategies'.