

# COOK ISLANDS

## 1. INTRODUCTION

The Cook Islands comprises 15 islands of which 12 are inhabited. The total land area is 240 square kilometers dispersed over an exclusive economic zone (EEZ) of 1.8 million square kilometers in the Southern Pacific Ocean.

The Cook Islands may be divided into two main geographical regions: Southern Group islands and Northern Group islands. All islands outside Rarotonga (capital of the Cook Islands) are referred to as the Outer Islands. Rarotonga and the Southern Group islands are generally younger volcanic islands, while the Northern Group is low lying coral atolls.

The total population of the Cook Islands was 19,103 in December 1996, at the time of the last Census. Of that number, residents numbered 18,071 while the number of visitors was 1,032. Since 1996 the resident population has decreased dramatically, due to economic crisis and the restructuring of government. Based primarily on migration statistics and presume birth and death rates, the Cook Island Statistics Office estimates the resident population at the end of December 2000 at 13,700. This is a decline of 4,371 from 1996 or a reduction of resident population by 24%.

### **Water Resources**

On Rarotonga and Mangaia the predominant water source is surface water from springs and streams within the catchment valleys. These have been tapped using filter bed intake systems and these are either gravity fed to the users, or first pumped to elevated storage reservoirs and then gravity fed to the users. Rainwater harvesting is also practiced on a smaller scale by private households.

The rest of the Southern Group islands utilise groundwater as the predominant water resource. This is extracted by pumping from boreholes, wells and aquifers to elevated storage reservoirs prior to being gravity fed to the user communities.

The Northern Group islands being coral atolls are without surface water and dependent on rainwater as the primary water resource. Rainwater harvesting are stored in either community or privately owned water tanks. As is the case with coral atolls freshwater lens is available however the past practice of manually extracting water from wells have been abandoned.

### **Water Supply**

The water supply on Rarotonga and Mangaia are fed by spring and stream water intakes using concrete weirs and in-stream/off-stream filter systems. The water supplies in the rest of the Southern Group islands are reticulated from aquifers, boreholes and gallery using diesel and electric pumps.

On the Northern Group islands the predominant rainwater supply is generally available from privately owned water tanks and community water tanks located at institutional or public buildings.

The old steel and galvanised pipes are having problems with corrosion and hence leakage. Replacement of the old pipes by uPVC and polyethylene pipes is in progress on the respective islands to alleviate these problems.

### **Sanitation**

Septic tank systems are widely used throughout Rarotonga, and typically comprise a septic tank and a soakaway. Soil soakage trenches or beds are rarely used. Septic tank sizes are governed by the regulations of the Ministry of Health.

On Rarotonga, most septic tanks are pumped out only when they overflow and become a nuisance. The septage sludge is currently dumped on vacant land, or on fields at the request of planters.

There is only one reticulated sewerage system on Rarotonga, which was installed in the early 50s and 70s. The sewer system collects sewage from the residents and feeds into septic tanks for treatment. The old sewer system was however overloaded. The septic tanks were replaced in 1994 with an Enviroflow proprietary sewage treatment plant. But the plant was neither maintained nor operated correctly, and fell into disuse, even today. For some years the plant has not been working, and the raw sewage currently bypasses the plant and flows via the airport perimeter drain into the sea.

There is currently no method of de-sludging septic tanks in the other Southern Group islands. It is understood that this would pose future environmental concerns. In the Northern Group the use of flush toilets is becoming popular probably as a result of the improvement of living standards. The septic tanks and soakaways are used.

## **2. NATIONAL CONSULTATION PROCESS**

### **ADB Community Partnerships and Consultation**

From 1998 the Cook Island Government requested assistance from Asian Development Bank (ADB) to prepare a feasibility study for urban infrastructure services. In response the ADB commissioned an international consultants company (Brockman Tym International in association with GlobalWorks and Montgomery Watson NZ Ltd.) to undertake the Project Preparatory Technical Assistance (TA).

The report makes recommendations for a water supply and wastewater management project on Rarotonga.

The recommendations of the TA stem from extensive public consultation carried out with people, community organizations, businesses and government.

The planning provision and regulation of water supply and wastewater management is dispersed among several agencies including The Ministry of Works (MOW), Tu'anga Taporoporo (TT, referred to as Environment Service), Cook Island Investment Corporation (CIIC), Ministry of Finance and Economic Management (MFEM) and the Ministry of Health (MOH). The Department of Water Works within MOW is responsible for water supply on Rarotonga.

To prepare a social assessment, qualitative and quantitative information was obtained through a series of participatory discussions with a range of stakeholders. Nineteen focus group discussions were held across Rarotonga. These covered:

- 140 Households including home gardeners, growers and farmers.
- 16 businesses
- 22 tourist establishments

A consultation meeting was also held with members of the Chamber of Commerce.

Poor sanitation facilities and inadequate water supply results in numerous dangers and impact to public health. Focus group meetings together with the business surveys indicated very few respondents knew where septage sludge is dumped but more than 90 percent want sludge disposed of in a controlled environment.

Community meetings also indicated that a significant proportion of the general public has a reasonable degree of awareness of the need to improve the water supply service and quality of water, which is consistent with a high proportion of respondents buying drinking water.

Water intake zoning is needed to ensure public and animal access is reduced, thereby reducing possible pollution into the water system.

### **WSSD Workshop**

A National Preparations for the World Summit on Sustainable Development (Environment, Social And Economic Development) Workshop was held in Rarotonga, Cook Islands from 30 April to 3 May 2002.

This was funded by the Government of the Cook Islands in association with the United Nations Development Programme (UNDP), Australian Agency for International Development (AusAID),

Pacific Islands Climate Change Assistance Programme (PICCAP), United Nations Convention to Combat Desertification (UNCCD), Environment Service Rarotonga, and supported by the South Pacific Regional Environment Programme (SPREP).

The workshop originated from a need to carry out preparations at the national level for the World Summit on Sustainable Development (WSSD) to be held in Johannesburg, South Africa, 26 August to 4 September 2002. Preliminary work commenced with multi-stakeholder consultations in November 2001 and the collection of responses from government, private sector and local community representatives associated with Agenda 21 and the Barbados Programme of Action.

Purpose of the Workshop is to review the progress of the Cook Islands commitment to achieving sustainable development in the twenty-first century; to provide a collation of information that will clearly identify: issues, priority actions, constraints and initiatives for the sustainable development of the Cook Islands; to provide the background information to feed into the National Assessment Report for submission to the Johannesburg World Summit.

Participation was from the Private Sector, Public Service, Civil Society, Local Government representatives, Traditional Leaders, and NGOs, at the national level. Technical support was provided by the South Pacific Regional Environment Programme (SPREP).

### **Outer islands**

The operation of water supply facilities in the Outer Islands is subsidised by the National Government. The respective Island Administration bid for annual appropriation from the National Budget. Any consultation regarding water supply for the Outer Islands is generally channelled from the respective Island Secretary (who also represents the Island Council) through the Office of the Minister for Island Administration (OMIA).

The consultation process regarding water supply in the Outer Islands involves;

- Island level (the users and community, Island Administration, Island Council, non-government organizations (women's group, water committee, etc.))
- National level (OMIA and other line Ministries, National Government)
- International Level (National Government and aid funding agencies)

Various other consultative process have also occurred over the pass five years in regards to water supply and wastewater management.

## **3. VISION, ISSUES AND CONSTRAINTS**

A national vision for the Cook Islands was defined at the November 1997 retreat. This is:

*"To enjoy the highest quality of life consistent with the aspiration of our people and in harmony with our culture and environment"*

Government recognize that this vision can only be attained through economic growth, which will provide opportunities for Cook Islanders to meet their needs in the Cook Islands. Government also recognizes the need to refine its broad strategy and has adopted a key task of facilitating private sector-led economic growth and investment, particularly in the tourism sector. Where possible, it aims to provide opportunities for private sector investment in and management of strategic assets and services currently owned and operated by government.

The overall goal is for Government to facilitate improved and sustained water supply and wastewater management practices in the Cook Islands. On Rarotonga, this implies the provision of a 24 hour water supply, 20 metres pressure at 150 litres per capita per day (1pd) to the population.

Institutional objectives to achieve this goal can be described as:

- To reduce Governments direct involvement in the provision of water supply and wastewater management services to achieve independence from civil service salary levels and autonomy in personnel matters and distancing the operations from political intervention.

- To create a financially sustainable water supply and wastewater management system, operated on sound commercial principles.
- To improve community participation in the planning and provision of water supply and wastewater management services.
- To establish an appropriate regulatory framework for public utilities separate from the service delivery function.
- To increase public awareness of responsible water and wastewater management practices.
- To protect public assets under control of the agency responsible for water supply and wastewater management services.
- To promote increased autonomy in establishing tariffs and rates and to make any subsidies more transparent.

The socio-economic conditions in the Outer Islands reflect an imbalance in development levels as a result of a historic focus on Rarotonga and the diversion of resources toward the higher concentrations of productivity and population.

Government priorities now serve to redress past imbalances with initiatives based on equity and the alleviation of poorer standards in the Outer Islands, which help to justify strengthened and cooperative efforts by aid funding agencies.

The critical issues for the Outer Islands have been identified as: equity in resource allocation, opportunity in economic development and participation in Local Government. These are being addressed through the Government's refocused strategic priorities to achieve better outcomes for the Outer Islands in the following areas of Economic Strength, Social Prosperity, Good Governance, Outer Islands Empowerment and Infrastructure Advancement and Development. This has been enhanced further through commitment by Government to support the devolution of authority and financial responsibility to the respective island governments to decide for themselves their development priorities.

The challenges ahead include further privatisation, including the airport, port, power generation, and corporatization of water distribution and waste management.

In support of the national vision, improvements in water supply and wastewater management have a direct impact upon maintaining a clean environment and attracting tourist. It has three major objectives relating to:

- i. Institutional and policy reform to support private sector- lead participation;
- ii. Safeguarding public health and the environment of Rarotonga and outer Islands;
- iii. Increase public awareness of water and wastewater management practices.

Inadequate finance is often the result of water managers in developing countries being more concerned with affordability than sustainability.

The number of issues concerned with water supply is rather numerous:

- Insufficient human resources in water supply
- Lack of adequately trained human resources
- Insufficient financial resources
- Lack of positive Policy (Government) directive
- Lack financial commitment
- Lack of Political commitment
- Lack of technological development
- Insufficient human resource development

Should the above issues be dealt with there will be a positive direction in the development of water supply, sustainable water resources management, but not forgetting that there will always be some teething problems that will be encountered in the progress.

Lack of political will to commit itself but a drastic constraint on all aspects related to water supply. Therefore, the real issue is on the political masters to commit themselves and then the resource concerned with the management and operation of water supply and water resources will of course fall inline.

## THEME 1: WATER RESOURCES MANAGEMENT

### General Major Issues

Since Water Supply issues are dominant in the management of water resource, attention is primarily focused on them – especially in Rarotonga.

Need to address:

#### *Water Policies, Strategies & Legislation*

- Guidance & formulation of national water policies and strategies;
- Comprehensive water legislation for the use, protection and conservation of water resources and the operation of water supply systems;

There is no single, national comprehensive Water Supply Legislation in the Islands except for scattered legal provisions that address the supply of water to the public.

- Outdated Rarotonga Waterworks Ordinance 1960.

SOPAC will facilitate regional consultation and dialogue on national policies and Strategies. (As a SOPAC member country, we can request assistance to develop the National water policies and legislations.)

Appropriate protection and management policies for water catchment are essential for a safe water supply.

#### *Appropriate institutional arrangement*

Appropriate institutional arrangement to ensure that water resources development and management occur in the context of national strategy;

Line Ministry/Department; Local government, Public Water Supply Board or Public Utilities Authority etc.

Related issue - Greater co-ordination between Water Supply, Environment, Agriculture and Health agencies in respect to water resources and water supply; At present Institutional strengthening of the DWW is required. There are deficiencies in the current institutional arrangement.

Therefore a corporate structure for water supply is needed - to develop a financially sustainable water system, revenue streams are required and charging the public directly for water supply is necessary.

Planning processes to recognise the close relationships between water resources and the total island environment, especially between water supply, wastewater and solid waste disposal activities; Integrated Water Resource Management

#### *Appropriate Technology & Data collection*

Appropriate methodology and technology for water resource development schemes;

On Rarotonga, the water supply is gravity fed from 12 stream filtered Intakes through a reticulation system. In principle the water supply system is robust and forms a suitable base to develop an improved system. It is appropriate, affordable, easy to maintain and sustain.

Appropriate data collection for water resources assessment and monitoring; SOPAC is collaborating with the DWW in network modelling the water supply system using CyberNet.

Hydrological Monitoring by NIWA (NZ) – 4 Intake stream flow measuring weirs and 4 rainfall gauges were constructed in August 1999 to obtain a better understanding of Rarotonga's water resources.

GPS instrument for data collection of the new installed network systems.

### *Water Quality & Demand Management*

Adaptation of guidelines set by international agencies to island conditions, particularly to water quality; WHO, NZ standards. Public Health periodically carries out water monitoring for microbiological content (coliform analysis)

Guidance on water pricing policies and demand management;

Such basic measures as dual flush toilets and efficient shower-heads should be encouraged. Demand supplementation including household rain-tanks (rainwater harvesting) and small well development for agriculture needs to be promoted. Including system efficiency, Leakage assessment, detection and repair, hydraulic modelling and system improvement, water treatments, operation and maintenance issues, drought storage assessment, metering, tariff studies etc.

### *Public/Community/Government awareness & Participation*

Greater public education and awareness of water resources and supply issues – proper utilisation, protection and conservation, e.g. World Water Day, World Earth Day etc.

Greater public participation in the planning, co-ordination and control of water resource activities and provision of water supply services; Local Vaka Councils, landowners, NGOs' etc.

### *Disaster preparedness & Climate Change/adaption*

Better counter disaster planning and management arrangements, especially as it relates to water resources and water supply sector;

Guidance and assistance regarding the effects of climate change/adaption and sea-level rise in water resources; Water Risk Guideline (SOPAC).

### *Capacity building*

Capacity building & Staff retention (recruitment) – training of personnel to provide better qualified and trained manpower at all levels of water resources and water supply sector;

Continued hand-on training, B Grade Water Treatment Operators Course (NZ), C Grade Wastewater Treatment operators course, Earth Science and marine Geology Certificate Programme (USP-Fiji)

Regular international, regional or country- level meetings for participants to exchange information and learn from problems and solutions in similar island conditions to our own; Hydrology Workshop – Data input and Analysis (Aust.);

### *More Cooperation & Optimisation, less duplication*

Greater technical co-operation between island countries, either directly or through co-ordinating agencies, with efforts made to exchange information and equipment used for water resources assessment and development; DWW Leak detection equipment was lend out to Niue Water Supply Department in 2000. Regional and international agencies to assist us in our water resources assessment, development and management; - NZODA; SOPAC; NIWA; PWA; WHO; WMO.

Aid-donor agencies to co-ordinate their activities to reduce duplication of effort and assist us with standardisation of equipment and materials; co-ordinate research activities into specific aspects of water resource assessment and development: NZODA; AusAID etc.

### **Water Quality**

The Public Health Act 1996 identifies several functions of the Ministry of Health (MOH) to foster the preservation and health of the people of the Cook Islands. The MOH does not have the mandate to test

water quality. This is undertaken as part of a general service of the Ministry to protect public health. The Ministry periodically carries out water monitoring for microbiological content (coliform).

The water supply in Rarotonga and outer islands are neither properly filtered nor disinfected. There are coarse filters at some intakes. During the wet season the water supply is often discolored and turbid and contains silt, sediment, leaves and twigs.

Test of water quality from various intakes is undertaken regularly by the Department of Health. Test results have been returning positive with faecal coliforms. People are therefore advised to boil their water before drinking, and many people do this.

Sewerage for most of the island is by septic tanks. A proportion are poorly built, not well maintained and seldom emptied. A private company collects septage and dumping is wherever a site can be found. Nutrient and organic loading from liquid waste present a significant problem to the eastern, southern and western coastal regions where the inner reef lagoon is well developed and extensive. These lagoons offer the ideal environment for unwanted microbiology activity. The northern and north east coast, which have less well developed lagoons and are well mixed with nutrient-poor ocean waters, have high population densities.

Lagoon water quality is deteriorating through the impact of human activity. Conclusions are that at existing population levels, Rarotonga is getting beyond its capacity to assimilate such impacts without a noticeable effect on the environment. Further population growth and increased tourism will accelerate this degradation.

## **THEME 2: ISLAND VULNERABILITY**

### **Islands Vulnerability and Risk Management**

The water system of the Cook Islands at present is vulnerable to any form of disaster. The types of disasters that could possibly incur ranges as such;

- Contamination from agriculture chemicals
- Sanitation contamination
- Other chemical contaminants
- Salt water intrusion
- Cyclone induce hazards
- Introduction of human borne diseases

Geographic isolation of outer islands to Rarotonga and transportation limitations are just some of the factors highlighting the small islands vulnerability to risk. The approach to disaster management has shifted focus from recovery and response to preparedness and risk reduction.

CHARM – a comprehensive hazard and risk management tool or process within the context of an integrated national development planning process. It is a SOPAC regional adaptation initiative based on a recognised standard and provides a consistent approach to risk management across the region.

The attributes of CHARM are the following:

- It is linked to national development planning (social, economic, and infrastructure)
- It assists in establishing and prioritising development activities,
- Targets the management of both current and future risks
- Creates an environment for enhanced collaboration at national and regional levels
- Creates a programming environment that maximises the use of available resources and minimises duplication.

Challenges:

- Gaining commitment by national governments to strengthening disaster reduction and risk management capabilities
- Linking disaster reduction and risk management activities to national development planning
- Recognition that the initial costs of prevention is an investment towards medium to long term economic savings
- Improving current disaster management planning arrangements

- Strengthening current NDMO (national disaster management organization) capabilities through the allocation of increased resources
- Improving existing or introducing new legislation
- Locating the NDMO in an appropriate Ministry
- Building a case for donors support to implement national risk reduction strategies.

### **PICCAP (Pacific Islands Climate Change Assistance Programme)**

PICCAP is a regional project managed by SPREP, and responds to the commitments by Parties to the United Nations Framework Convention for Climate Change (UNFCCC). The project ended in June 2002, and efforts are being made for Add-on activities such as the two-year Adaptation project for Aitutaki, and the Capacity Development Initiative (CDI).

The implementation of the PICCAP Project mark the start of climate change activities in the Cook Islands initiated by the creation of a multi-disciplinary group to be part of the Climate Change Country Team.

Other activities under the project were the implementation of national vulnerability assessments and national greenhouse gas inventory and the drafting of the 1<sup>st</sup> national report to the UNFCCC.

Priority areas identified were:

- Institutional arrangements so the project can proceed in its implementation, needs assessment to identify training needs, skills development and policy development.
- Island specific vulnerability assessments are targeted for Mangaia, Penhryn and Aitutaki. A community-based adaptation project will be starting in Aitutaki.
- Further actions required implementation of the adaptation initiative to be integrated across all sectors such as the environment sector; marine resources (coral bleaching), agriculture (drought resistant crops), water (water storage) and biodiversity (habitat loss); social sector under health (dengue fever) and education (capacity building); and on the economic sector are energy and tourism (coastal infrastructure).

### **THEME 3: AWARENESS**

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## THEME 4: TECHNOLOGY

### Appropriate Technology

The countries' weather accelerated the corrosion of mechanical, electrical, and other equipment. Cook Islands is a long way from the nearest source of spare parts. While servicing skills for some sophisticated equipment are available on Rarotonga, the breakdown of some components can result in equipment being out of service while replacement parts are located, ordered, and delivered. To minimize the need to carry large inventories of spare parts, which may be subject to deterioration in storage, technology should be robust and appropriate to the local environment. Vehicles and equipment needed for water supply and wastewater management should be familiar to those in the Cook Islands and spare parts readily available within the Region.

In the Outer Islands there are no policies established to identify the appropriate water supply system to be applied for each island. At present the development of water supply facilities in the Outer Islands are to be aligned with the respective island "Strategic Directions" prior it being considered at the Ministerial and National level. In the past the water supply development projects are implemented on the respective islands without assessing its viability, sustainability and impact on the local community and environment. There is a trend now to ensure that future water supply development projects are implemented after the appropriated technical assessments, aid funding agency requirements have been completed and satisfied.

On Mangaia in the Southern Group water supply have been from private and community rainwater catchments (on-going), groundwater extraction via pumping from boreholes (abandoned in the late 1980's because of high operating and maintenance costs), and stream water intakes that is currently in operation.

Water supply in the other islands in the Southern Group are from the on-going private and community rainwater harvesting, and extraction of groundwater via such systems as water galleries (Aitutaki), boreholes (Mauke), wells (Atiu) and acquifers (Mitiaro). Where the groundwater is brackish, it is generally used for cooking, washing and laundry while drinking water is obtained from rainwater.

Rainwater harvesting is the predominant water supply in the Northern Group islands. However, investigation has been conducted to assess the feasibility of introducing the gallery type system to extract groundwater.

To employ the appropriate water supply system in the Outer Islands considerations should be made for the level technical capability of the local personnel who will be operating and maintaining the system once in place. The commissioned Aitutaki Water Project (AusAID funded in 2000) is a classic example where training of the local personnel (hands on and off-site) was intentionally included as one of the components of the project.

### Water Treatment

The water supply in Rarotonga and outer islands are neither properly filtered nor disinfected. There are coarse filters at some intakes. During the wet season the water supply is often discolored and turbid and contains silt, sediment, leaves and twigs.

Test of water quality from various intakes is undertaken regularly by the Department of Health. Test results have been returning positive with faecal coliforms. People are therefore advised to boil their water before drinking, and many people do this.

The age, lack of engineered designing and water quality of the existing water system in the Cook Islands restricts demand management. Even thou it is possible to apply demand management to the existing system this exercise will be extremely expensive. Therefore, it is far more economical to concentrate on developing the system to a stage whereby it is feasible to apply demand management.

It is in the interest of the Ministry of Works to further develop sustainable development of the water sector therefore support the national vision.

## **Demand, Management and Conservation**

During periods of drought in the Outer Islands the supply of water are generally operated on intermittent services (for reticulated water supply) or rationed for rainwater source. Spring water sources where available are also utilized to supplement for washing and cooking.

The management of the water supply facilities in the Southern Group is under the respective Island Administration who receives annual appropriation from the National Budget to assist with the operation. The respective Island Council who also receives annual appropriation from the National Budget through the Island Administration manages the Northern Group islands community water supplies. The Island Administration staff operates and maintains the water supply facilities in the Outer Islands.

## **Human Resources**

Delays in the implementation of foreign assisted project have illustrated the limited capacity of executing agencies. These limitations have resulted from lack of professional expertise and a small number of professional staff. A lack of expertise and training in project implementation has hindered progress. A smaller public service has reduced staffing levels. As a result, project coordination for a number of projects has been undertaken by the private sectors. New approaches require adequate assistance and support during project implementation, particularly for works proposed under any future projects. Timely release of counterpart finance has also been a problem, and adequate budgetary provisions will be necessary.

## **THEME 5: INSTITUTIONAL ARRANGEMENTS**

### **Deficiencies of the current institutional arrangement**

To enact improvements in the way water supply and wastewater management is provided on Rarotonga and to introduce a proposed structure that is conducive to for private sector participation, there are a number of deficiencies within the current institutional arrangements that need to be corrected. These are;

- No national policy on water, sewerage or sanitation.
- The absence of an effective regulatory framework for public utilities, where neither technical nor economic regulation is provided to safeguard the interests of the consumer.
- The lack of commercialization within the water supply and public wastewater management sectors with an absence of revenue streams in both.
- A need to maximize community support for commercialization and private sector involvement.
- A need to reduce the risks associated with the private sector participation.
- The lack of expertise in the management of water supply and wastewater disposal.

Key principles have been identified that Government should follow; these are that:

- A national water, sewerage and sanitation policy statement should be prepared.
- A strategy for the commercialization of water supply and wastewater management services is needed.
- To encourage private sector participation, revenue streams are required. Charging the public directly for water supply and wastewater management services is essential. Hence there is a need to secure the commitment of Government to support commercially viable tariffs for water supply and wastewater management.
- Consumer protection through regulation should be cost effective and take into consideration the small size of the utility markets on Rarotonga.
- Economic, environmental and performance regulation be undertaken by different agencies to avoid conflicts of interest.
- The responsibility for providing adequate water supply and wastewater management rests with the Government, but the actual provision and operation of public utilities can be undertaken by others.

## **Outer Islands**

In the Outer Islands some islands have in place policies and local by-laws to regulate water supply operations, example:

- There shall be no agricultural activities (includes the use of chemicals) to be conducted in the vicinity where a water supply facility is established
- The land where a water supply facility is setup is to be reserved and no human related activities are to take place in this area
- During periods of drought intermittent supply of reticulated water shall be operated.

A Water Policy should address issues related to water extraction and extraction rate, water use, user pay, water conservation, management, financing. As part of the Aitutaki Water Project a draft policy have been completed and yet to be endorsed by the Island Council.

The National Government subsidises the operation and maintenance of the water supply facilities in the Outer Islands. There is no formal user-pay system established yet in the Outer Islands however, some islands have systems such as monthly monetary contribution from each households to assist with operating cost of pumps.

## **Planning and Legislation**

There is no single, national comprehensive Water Supply Legislation in the Cook Islands except for scattered legal provisions that address the supply of water to the public. The Department of Water Works (DWW) is responsible for delivery of water supplies free of charge to the end users.

The Rarotonga Water Supply Ordinance needs reviewing and overhaul as part of the proposed restructuring and institutional strengthening of the Water department.

Of specific interest will be the overhaul of Water Act Clauses with respect to payment for services, penalties for non payment, and prescribed penalties for damaging the water supply system. The basis on which the water supply system will work in the future will be based on user charges, and householders will be disconnected for non payment of water bills.

Other issues which will need to be addressed as a matter of urgency is the question of land ownership at the water intakes, and the question of pipe easements over private property for water supply and sewerage pipelines.

## **Sanitation**

The Public Health Regulation of 1987 (presently under review) administered by MOH require that all sanitary waste be connected to septic tanks or if available, a public sewerage system. The Public Health Department (PHD) of the Ministry issues a permit to erect, establish extend or alter any drain, septic, disposal system or any othersanitary appliance in compliance with the Building Code.

Every septic tank should be constructed in accordance with a model plan provided by the PHD.

No controls exist for the disposal of septage sludge except through the Rarotonga Environment Act. This provides for the development of a management plans for Rarotonga for the protection, conservation, management and the control of the environment including pollution and wastes.

## **Plan of Action**

Implementation of consistent and regular drinking water quality monitoring program with public notification of the results.

Public Health Regulation of 1987 amended to include compulsory septic tank sludge removal every four years including periodic inspections of operating septic systems by PHD personnel.

## **Institutional Strengthening**

Public awareness programmes on water is identified as a major contribution to institutional strengthening in water supply operations. Some of the islands in the Southern Group sometimes distribute public notices or give local TV announcements regarding water conservation issues and how the publics are to be advised how to reduce adverse impacts to the local water supply. Water conservation issues are currently introduced in the schools.

The establishment of a Water Committee ensures that water policies are implemented.

## **THEME 6: FINANCE**

The Government continues to look toward donor partnership for support in the form of technical assistance and project or program finance.

The major agency responsible for water supply is the Department of Water Works (DWW) of the Ministry of Works (MOW). There is no enabling legislation for MOW and it was first set up under the Ministry of Supportive Services Act of 1973-74. Funding is through general appropriations under the national budget and some receipts for the installation of new water connections. DWW raises no revenue from its other activities. The Budget of DWW for financial year 2002/2003 currently is about NZ\$1.7 million, which includes operating and maintenance costs of NZ\$0.45 million and, capital outlays of NZ\$1.25 millions.

The DWW currently undertakes water supply on Rarotonga directly itself. No capital cost recovery is undertaken. At present, the only charges for water supply relate to the cost of connecting to the network. These comprise a connection fee, plus the cost of labour and a transport charge. Separate rates are charged for domestic consumption, which includes agriculture, institutions, schools, and for commercial customers that covers hotels, resorts and businesses.

There is neither a system of user charges nor rates in place, although in the past an annual water rate was billed and collected by Treasury.

The Government has received assistance for the development of urban infrastructure from a number of sources. Until the late 1980s, New Zealand was the principal contributor to water supply and sanitation development, particularly on Rarotonga, although assistance was received from Australia, Britain, Canada, Germany, the United States of America, French Government and other bilateral sources to support infrastructure in the Cook Islands. Multilateral agencies that have provided assistance to the sector includes the South Pacific Community, United Nations Development Program, World Health Organization, and the United Nations Children's Fund. More recently, Australia financing water supply improvements in Aitutaki. In 1997/98, New Zealand provided assistance to cover cost of machine hire and materials needed to replace water supply distribution pipelines on Rarotonga.

## **4. PLAN OF ACTION**

### **Overall Objectives**

- Upgrade reticulation system
- Upgrade develop water intakes
- Develop groundwater (to be utilised as a supplement to the system)
- Develop water treatment
- Develop a water policy
- Develop a water resources policy
- Develop institutional strengthening
- Continue human resource development
- Apply appropriate technology
- Total Stakeholders participation
- Actions already undertaken
- Upgrading of reticulation system (46% complete. 100% complete 2004/05)
- Personnel development; Water quality technician, basic database, GPS training, Hydrology training
- Development program – Short/Long term
- Technological applications

#### Future actions needed (National level, Regional level, International Cooperation)

- National Water Policy
- Institutional strengthening
- Infrastructure development
- Training, Develop local capacity
- Water treatment
- Regional collaboration with regional agencies
- Collaboration with regional water agencies
- Support International concerns- Climate change, pollution

#### Means of implementation and responsibilities

- Collaboration with all authorities concerned with water issues
- Develop Nation water policies
- Develop operational policies

#### Water Resources Strategy

- The Rarotonga Proposed Water Board should be responsible for water resources policy decisions, coordinating agencies, water management, setting and agreeing on water rates with the Government and establishing a water allocation plan.
- Volumetric charges should be introduced to the industrial, commercial and tourist sector and be fully metered
- Rarotonga Water Catchment Zone should be adopted following the recommendations by the Rarotonga Water Catchment Committee (1996)
- The Water distribution network should be upgraded to reduce leakage and *unaccounted-for water*
- Water consumers with high consumption should be encouraged to develop their own water facilities
- Existing reservoirs should be maintained and upgraded as necessary
- New housing construction should be required to install rain water tanks and other collection devices as part of the Building Permit, with levies on water tanks being waived by Government
- Introduce water saving devices to improve water use efficiency
- A vigorous public awareness campaign should be implemented to disseminate water use efficiency, (User pay) principles, water conservation and environmental protection
- A Water resources data base and management information system should be developed for effective management of the water system and environment
- Water Quality Standards should be improved
- Major pollution sources should be identified and charged for environmental degradation
- An Act should be promulgated to legally establish the Rarotonga Water Board, with Regulations to implement the decisions of the Water Board
- A fair and effective annual allocation plan should be made based on the available water resources and demand from all sectors of the water users

#### Water Resources Policy

- Water is a basic human need and must be accessible to all
- Water is both a social and economic good
- Water has value and therefore, a cost should be attached to providing a water service to all water users
- Allocation to all water users in various water sectors, should be introduced for sustainable development of the Nation
- Water Pricing should be initially introduced to the commercial, industrial and tourism sector on a volumetric basis
- An autonomus body (Proposed – Rarotonga Water Board) should be created to coordinate and manage water resources development and environmental protection
- Private Sector participation in financing, constructing, and operating and maintaining water services should be promoted
- Necessary legal and institutional reform should be made to implement the water policies

- Increase community participation and public awareness of water resources activities

### **Financial Objectives**

Financial objectives for the water supply and wastewater management are:

- To develop a financially sustainable water supply and wastewater management service on Rarotonga operated on sound commercial principles.
- To reduce Government direct involvement in financing water supply and wastewater management services over time.
- To improve the levels of cost recovery from the users of public utilities by establishing an appropriate framework for recovering the costs of operations, maintenance and capital investment so that full recovery of marginal and fixed costs is achieved in the medium-term.
- To ensure that the lower income and vulnerable groups can afford to pay for a basic level of service.
- To encourage demand management through progressive tariff structures.
- To ensure that all consumers pay appropriate charges based on the full cost of usage.
- To promote increased autonomy in establishing tariffs and rates and to make subsidies more transparency.

### **Institutional Objectives**

Institutional Objectives for the water supply sector are:

- To reduce Government's direct involvement in the provision of water supply and wastewater management services to achieve independence from civil service salary levels and autonomy in personnel matters and distancing the operations from political intervention.
- To create a financially sustainable water supply and wastewater management system, operated on sound commercial principles.
- To improve community participation in the planning and provision of water supply and wastewater management services.
- To establish appropriate regulatory framework for public utilities separate from the service delivery function.
- To increase public awareness of responsible water and wastewater management practices.
- To protect public assets under control of the agency responsible for water supply and wastewater management services.
- To promote increased autonomy in establishing tariffs and rates, and to make any subsidies transparent.

There are a number of arrangements to provide water supply and public wastewater management services on Rarotonga. These are summarized below:

- Line Ministry/Department – current arrangement.
- Local Government Operating Entities.
- Community-based Water and Sewerage Co-operative.
- Public Water Supply and Sewerage Board.
- Statutory Public Water Supply and Sewerage Company.
- Water Supply and Sewerage Division in Te Aponga Uira.
- Public Utilities Authority.
- Operating, Management and Leasing Company (Telecom Model).
- Private Water Supply and Sewerage Company.

## 5. CONCLUSIONS

In support of the national vision, improvements in water supply and wastewater management have a direct impact upon maintaining a clean environment and attracting tourists. It has three major objectives relating to (i) institutional and policy reform to support private sector-led participation; (ii) safeguarding public health and the environment of Rarotonga and the Outer Islands; and (iii) increase public awareness of water and wastewater management practices.

Water supply on Rarotonga is facing major problems, particularly the need for significant rehabilitation of the distribution network. Although part of the system has been upgraded with both French and New Zealand Overseas Development Aid, a further 60 percent needs replacing. High levels of water consumption should be reduced and conservation of water use should be encouraged. Per capita consumption figures of about 260 liter per capita per day are high for developing countries and water losses throughout the system are thought to be between 50 and 70 percent. Increased storage capacity is needed as evidenced by the low pressure and limited water availability in certain areas during the recent drought. Improved filtration of raw water too is required, since a number of intakes do not have such facilities. Full treatment, however, is only thought of as a long-term need. Major new additional sources of water are not required in the short-term although efforts are needed to make greater use of groundwater reserves, particularly for agricultural use.

Financial sustainability is a must and the introduction of water tariffs is needed so consumers begin to pay for the services of providing water directly to them. More independence is needed in the management and operations of the system, which implies a new commercial structure for water supply.

There are neither public water supply or sewerage tariffs on Rarotonga, even though some water meters have been installed about five years ago. Attempts have been made in the past to introduce water charges, but these have met strong consumer resistance. However, opinions are changing more in favour of paying for improved services. This has been influenced by the irregular nature of water supply and the continued low pressure in many areas. Government and many people now are beginning to accept that some payment may have to be made for the supply of water in future. Relating payments to improved service provision is now a realistic option.

Problems with wastewater stem from environmental concerns rather than public health problems. The current system is largely dependent on badly constructed and poorly maintained on-site septic tanks. The current water quality and waste discharge standards are inadequate. There is no real enforcement of effective standards for the construction of new septic tanks or other wastewater treatment facilities, particularly for new resorts. Further, there is no septage sludge treatment facility on Rarotonga and there is some doubt where dumping is currently being carried out. The only communal sewer system and integrated treatment plant in Te Puka village is not being maintained. Proposals made for an island wide sewer system on Rarotonga are unaffordable. It is likely to be more cost effective to tackle the problem on site, and in the more densely settled areas, consider some communal systems.

These problems are being addressed but with slow response from government. However concerted efforts are required to provide adequate infrastructure to support the population of Rarotonga, reduce poverty, improve the environment, strengthen public sector management sector and encourage tourism. The financial requirements for these efforts are significant and are likely to be met by the Government alone.

The Government has responded to this challenge in a number of ways. There have been attempts to encourage community participation in the provision of municipal services and to devolve governance through the creation of elected Vaka Councils on Rarotonga and the Island Council of Aitutaki. Mayors have been elected. But the need for additional resources has encouraged Government to look towards and expanded role for the private sector as “partners and providers” of infrastructure and services. Private Sector participation is being encouraged as official Government Policy. The need for a more effective and independent regulatory framework is also becoming increasingly necessary.

These trends, increased private sector participation, the commercialization of the provisions and operation of urban infrastructure, maximizing community participation and the devolution of governance, are expected to dominate the sector over the coming years. To cope with the demands for improved water supply and wastewater management, Government is in the process of managing the transition from central control to decentralized and market-based provision. The impact of this will be to make provision demand-led, with service providers becoming increasingly accountable to consumers and Government itself more transparent.

Clearly, a major need is to provide 24-hour water at good pressure and of good quality. This means that the pipes must be fixed first. Although part of the system has been rehabilitated with both French and New

Zealand Overseas Development Aid, still a further 60 percent needs improvement. Increased storage capacity is needed as evidenced by the low pressure and limited water availability in certain areas during the recent drought. Improved filtration of raw water too is required, since a number of intakes do not have such facilities. Full treatment, however, is only thought of as a long-term need. Major new additional sources of water are not required in the short-term although efforts are needed to make greater use of groundwater reserves, particularly for agricultural use.

High levels of water consumption must be reduced and conservation of water use should be encouraged. Per capita consumption figures are high relative to those of developing countries and water losses throughout the system are thought to be between 50 and 70 percent. Hence, besides the system improvements, demand management measures are necessary. Financial sustainability is a must and the introduction of water tariffs based upon consumption is needed so that consumers begin to pay for the services of providing water directly to them. More independence is needed in the management and operations of the system, which implies a new corporate structure for water supply.