



Pacific Programme for Water Governance



KIRIBATI WATER GOVERNANCE

Milestone Report 2: Activities 3 and 4

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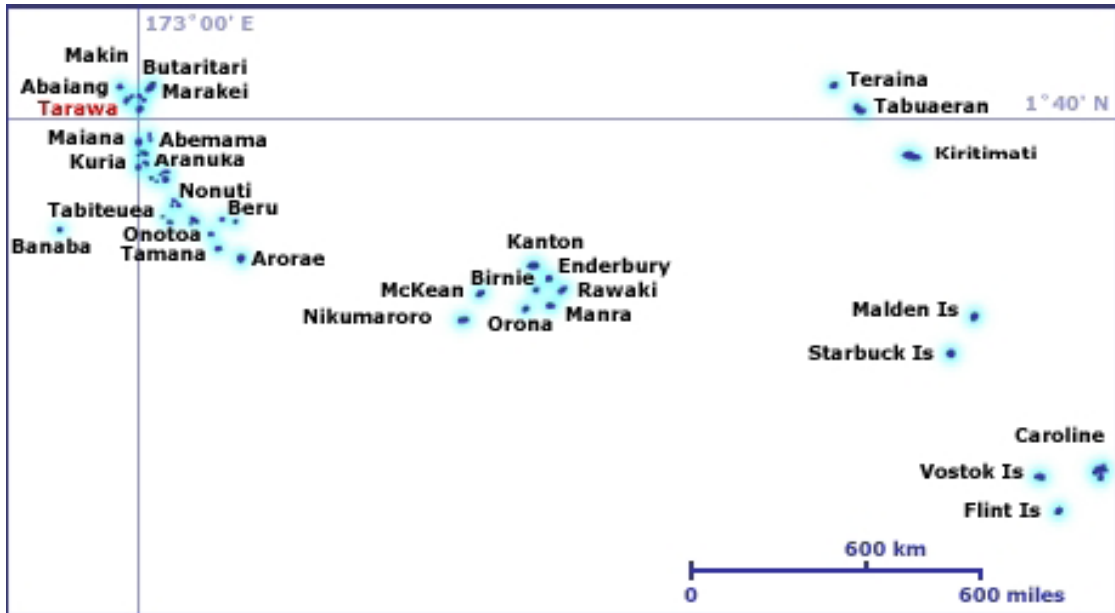
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Republic of Kiribati showing all 33 islands in the Gilbert (western), Phoenix (central) and Line (eastern) Groups. The country spans over 3,500 km of the Central Pacific.

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EU-SOPAC WATER GOVERNANCE PROJECT

This Report

This report is a contribution to the Kiribati Case study of the EU Pacific Programme for Water Governance. It is to contribute an upgraded discussion paper on “Kiribati Water Governance” and to include project design document/s for agreed projects including inputs, outputs, resource implications, likely outcomes of such projects and design documents agreed by Project Steering.

Pacific Programme for Water Governance

The European Union has established a Programme for Water Governance (PFWG), for three regions, Africa, the Caribbean and the Pacific. A successful Pacific region submission in 2002 by the South Pacific Applied Geoscience Commission (SOPAC) proposed three pilot studies in Fiji Islands, Kiribati, and the Solomon Islands for water governance at different scales: national, major utility and local village, island or catchment based.

Increasing demographic trends, hydrogeology, climatic variation and change, urbanisation and the impacts of human activities all combine to impose significant risks to water resources in small island nations. The challenges faced in the water and sanitation sector in small island states are amongst the most difficult in the world. They require a strategic, coordinated whole-of-government approach, in partnership with island communities, that incorporates the existing expertise and experience throughout the government and community sectors and which represents the hopes and needs of communities for adequate water and sanitation.

The overall goal of the EU Water Governance project is:

“to mainstream the principles of good water governance into day to day applications and pilot projects so as to assist in achieving sustainable water resource management and provision of water services”.

The goal of the Pacific component is *to promote the application of effective water governance within institutions, systems, structures and processes in 3 countries in the Pacific selected on the basis of their level of development in water governance.*

Good Water Governance

Water governance is the *capability of a social system to mobilise energies, in a coherent way, for the sustainable development, management and use of water resources.* Effective governance is open, transparent, participatory, communicative, sustainable, equitable, coherent, incentive-based, efficient, sustainable, integrative and ethical. It includes the ability to design public policies that have as their goal the sustainable development, management and use of water resources. It also involves the building of social acceptance and support for them and the development of strategies to implement them.

The degree of water governance within a society is determined by:

- The degree of consensus about the linkages between society and water;
- Agreement on the bases for public policy that express those linkages;
- The existence of management systems that can effectively implement policies.

Governance implies the capacity to generate and implement appropriate policies based on having established a consensus and coherent management systems and adequate administration. A fundamental factor in governance is the ability to introduce and develop institutions consistent with the capability, limitations and expectations of the prevailing system.¹

The major challenge in water governance in the Pacific region is coping with the institutional changes necessary in the transition from subsistence cultures to developing, urban communities.

Restraints to Improved Water Management Issues in Kiribati

Geographic constraints

The geographic setting of Kiribati provides significant constraints on the provision of water and sanitation services to its widespread island communities. Kiribati consists of 32 low lying coral islands and 1 raised coral island, Banaba, in 3 main island groups scattered over three million km² of sea in the Central Pacific, between 4° N and 3° S, and 172° E to 157° W. Twelve of these islands are currently unoccupied. The total land area of the country is only 810.8 km². The Gilbert Group, with a land area of 285.7 km², contains the capital on the southern islands of Tarawa atoll. South Tarawa is highly urbanised and has 43.5% of the nation's population. Some island population densities there are over 15,000 people/ km².

The Phoenix Group, located some 1750 km east of Tarawa, has 8 largely uninhabited islands with a total land area of just 28.6 km². The only inhabited island of the Phoenix group is Kanton (Canton) Island with the land area of 9 km². The Line Group has 8 islands with a total land area of 496.5 km², extending over a north-south line 2,100 km long and located at a distance of between 3,280 and 4,210 km east of Tarawa, beginning 800 km south of Hawaii. This Group includes the Kiritimati Island, a designated growth centre, with the largest island area in the Republic of 388.4 km². Transport and communications between the widespread islands which make up the Republic and transport costs to other countries around the Pacific pose significant problems.

The country's population of over 92,400 people living in over 14,700 households scattered throughout the islands. These are in 1 urban centre with a population of over 40,000 and 167 villages in the rural outer islands. Village size in rural areas ranges from 17 to 1872 people (2005 census) with a median size of 245 people. There are over 14700 households with an average household size of 6.5 people. Most islands are usually not more than 2 km wide, and, except for the raised island of Banaba, are not more than 6 m above sea level. The task for a small island developing nation of devising governance strategies that are able to deliver equitably supply and maintain safe water and sanitation services to such small and very widely dispersed communities is both complex and expensive. The tyranny of distance is compounded by the lack of few economies of scale.

Climatic constraints

The climate is tropical. Weather is controlled by the seasonal movements and annual variations of the Intertropical Convergence Zone and the Equatorial Doldrum Belt. Long droughts of up to 16 months are common with an average frequency of 6 to 7 years. Average yearly rainfall in the Gilberts ranges from 1,300 mm in the south to 2,000 mm on Tarawa, near the equator, and to over 3,200 mm in the northernmost islands while it is less than 1000 mm in Kiritimati in the Line

Islands. Rainfall is highly variable from year to year. Table 1 summarises the known rainfall and coefficients of variability for atolls and islands in Kiribati.

Table 1 Mean annual rainfalls and coefficients of variability in Kiribati

Atoll/Island	Island Group	Annual Rainfall (mm)	Coefficient of Variability
Banaba	Gilbert	1,847	0.60
Makin		2,821	0.37
Butaritari		3,107	0.29
Marakei		2,053	0.45
Abaiang		2,158	0.41
Tarawa (North)		1,949	0.50
Tarawa (South)		1,949	0.49
Maiana		1,543	0.55
Abemama		1,518	0.49
Kuria		1,518	0.64
Aranuka		1,518	0.67
Nonouti		1,507	0.65
Tabiteuea (North)		1,418	0.59
Tabiteuea (South)		1,418	0.74
Beru		1,355	0.57
Nikunau		1,242	0.63
Onotoa		1,230	0.59
Tamana		1,425	0.65
Arorae		1,826	0.51
Kanton	Phoenix	958	0.80
Orona (Hull)		1171	0.60
Enderbury		<i>1000</i>	
Birnie		<i>1000</i>	
Rawaki (Phoenix)		<i>1000</i>	
Manra (Sydney)		<i>1000</i>	
Mackean		<i>1000</i>	
Nikumaroro (Gardner)		1319	0.57
Teraina (Washington)	Line	3,021	0.36
Tabuaeran (Fanning)		2,107	0.43
Kiritimati (Christmas)		974	0.75
Malden		676	0.91
Starbuck		700	
Vostock		800	
Millennium (Caroline)		900	
Flint	1,000		

Rainfalls in italics for uninhabited atolls in Table 4.1 are estimated.

Four locations Beru, Butaritari, Tabiteuea North in the Gilberts and Kiritimati Island in Line Islands group have been chosen as Growth Centres in the latest National Development strategy. While a survey of the water resources of Kiritimati has been completed those of the others are

poorly known. The natural variation in rainfall, the frequent prolonged droughts add to the difficulty imposed by the dispersed geography of the nation in managing water resources.

Demographic and demand constraints

Water is used by the community for consumption and washing, for agriculture, and for industry. In agricultural, water is used by traditional crops, such as coconuts and babai (swamp taro), vegetable and fruit crops and livestock, mainly as pigs and chickens. It is estimated that there are almost 2.5 pigs and 4 chickens per household given an estimated total number of over 34,000 pigs and 55,000 chickens in the country. Apart from coconuts, there is little information on fresh water use in either agriculture or in industry, although it is estimated that 2 pigs require the water of one human. Mature coconut trees are estimated to use approximately 150 L/day of groundwater. The highest priority is to meet the demand for safe drinking water for people.

There is little information on actual water use from various available water sources in either urban or rural areas. In urban areas, per capita demand is growing as acquisition of water using devices such as washing machines increases. In the absence of that information, estimates of the daily per capita potable water requirements have varied between 30 and 100 L, with the WHO recommending a lower limit of 40L/person/day. Well water, even when brackish or polluted is accessed for washing and other non consumptive uses. Freshwater reticulation and Outer Island supply projects have aimed at supplying design demands of 30 to 50L/person/day. The key information then has been the expected number of people in any community. Population census data have been collected in the country at intervals since 1921. Figure 1 shows the growth of total country, Outer Island and urban population in South Tarawa up to the latest census in 2005.

Since 1963² the average exponential growth rate of the total population of Kiribati has been 1.8% while that of Outer Islands has been 0.9% and that of South Tarawa is 4%. These figures reflect the impacts of internal, inward migration from Outer Islands to South Tarawa. If these trends continue, the total population of Kiribati is expected to exceed 113,000 and South Tarawa is likely to have well over 60,000 people by 2020. If a low estimate of consumption rate of 50 L/person/day of reticulated water is assumed for South Tarawa then demand has already exceeded the current estimated sustainable yield of Bonriki and Buota water reserves. In some of the Outer Islands and North Tarawa, there are relatively large fresh groundwater reserves capable of sustaining higher populations than currently, however, in most cases the actual quantities of water available for extraction remain to be ascertained.

Table 2 provides a crude estimate of the sustainable yield of atolls in Kiribati and an estimate of the maximum population that is likely to be sustained by fresh groundwater resources. This is based on the estimated sustainable yields in ADB 2004 study *Promotion of Effective Water Management Policies and Practices*. In Table 2 it has been assumed that the design per capita demand is 100L/person/day. This figure allows for a small quantity of water for agriculture and industry.

² Census data in 1921 may have included data from the Ellis Islands (Tuvalu).

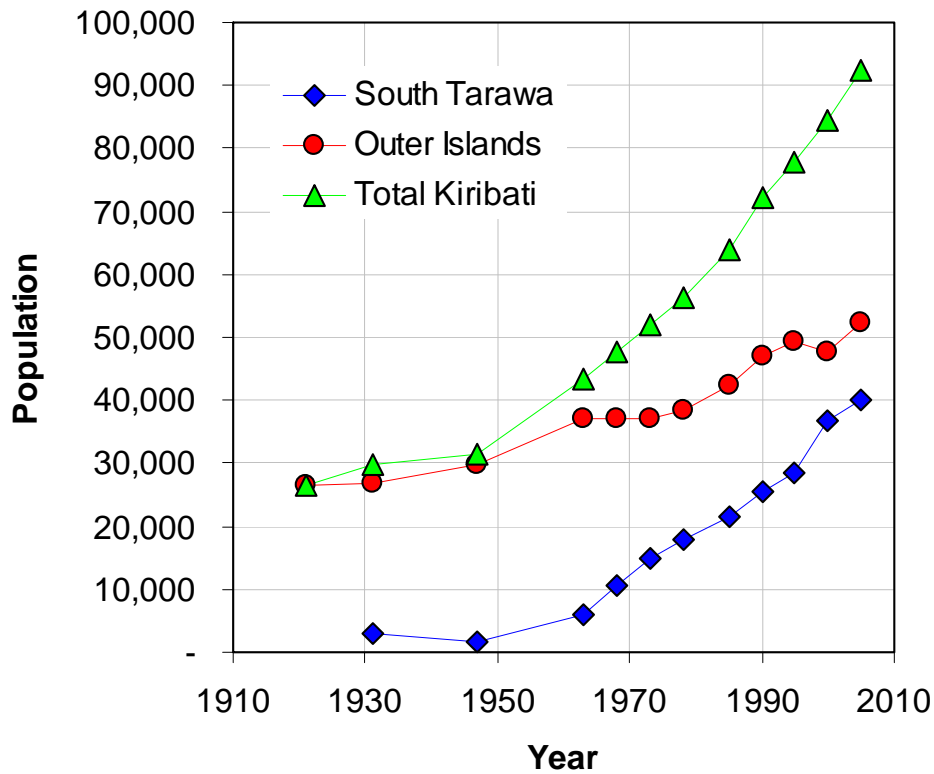


Fig. 1 Growth in total Kiribati, Outer Island and urban South Tarawa populations.

The current PUB design figure water supply in for South Tarawa is 250 L/household/day. The assumption here is that safe water will be the limitation for population support. No attempt has been made to determine if these populations would encroach on water reserves, thereby limiting the volume of safe groundwater available. In these rough estimates of the sustainable fresh groundwater extraction rates and maximum populations that can be supported by groundwater resources, no allowance for rainwater harvesting has been made.

The estimated maximum population of the nation in Table 2 that can be sustained by the estimated groundwater resources is about 580,000. From the exponential total population growth curve in Figure 3.1 it is expected that this population will be reached in the year 2110 if this population growth rate continues. Of the island groups in Table 3.2, The Phoenix group has by far the smallest estimated groundwater sources and accounts for the fact that all but one island in the group are uninhabited. South Tarawa stands out in Table 3.2, since the estimated maximum population that may be safely sustained from the groundwater reserves at Bonriki and Buota is half the present population. On South Tarawa, the agricultural demand is smaller and people are expected to supplement their water requirements from domestic wells, many with dubious quality water, and some from stored rainwater. On this estimate we would predict that the population on South Tarawa has reached its sustainable limit. It is emphasised here that the numbers in Table 3.1 are a guide only. The available safe groundwater resources of most of these islands and atolls have yet to be assessed. This knowledge constraint makes overall management of groundwater in the country extremely difficult.

Table 2 Estimated sustainable groundwater yield and estimated maximum population sustained by groundwater assuming a demand of 100 L/person/day.

Atoll/Island	Island Group	Estimated Sustainable Yield (m ³ /day)	Estimated Max Population	Population 2005
Banaba	Gilbert	?	?	301
Makin		<i>2790</i>	<i>27900</i>	2388
Butaritari		<i>8755</i>	<i>87550</i>	3267
Marakei		<i>626</i>	<i>6260</i>	2738
Abaiang		<i>2766</i>	<i>27660</i>	5478
Tarawa (North)		<i>4620</i>	<i>46200</i>	5704
Tarawa (South)		2000	20000	40212
Maiana		<i>1315</i>	<i>13150</i>	1909
Abemama		<i>3156</i>	<i>31558</i>	3398
Kuria		<i>1867</i>	<i>18665</i>	1081
Aranuka		<i>1263</i>	<i>12634</i>	1158
Nonouti		<i>1722</i>	<i>17216</i>	3176
Tabiteuea (North)		<i>2025</i>	<i>20248</i>	3603
Tabiteuea (South)		<i>537</i>	<i>5370</i>	1306
Beru		<i>1155</i>	<i>11554</i>	2238
Nikunau		<i>978</i>	<i>9776</i>	1912
Onotoa		<i>404</i>	<i>4040</i>	1611
Tamana		<i>480</i>	<i>4795</i>	869
Arorae		<i>1381</i>	<i>13806</i>	1254
Kanton	Phoenix	<i>483</i>	<i>4831</i>	41
Orona (Hull)		<i>142</i>	<i>1418</i>	?
Enderbury		<i>181</i>	<i>1812</i>	0
Birnie		<i>68</i>	<i>680</i>	0
Rawaki (Phoenix)		<i>227</i>	<i>2270</i>	0
Manra (Sydney)		<i>272</i>	<i>2719</i>	0
Mackean		<i>181</i>	<i>1812</i>	0
Nikumaroro (Gardner)		<i>344</i>	<i>3440</i>	0
Teraina (Washington)	Line	<i>7268</i>	<i>72682</i>	1154
Tabuaeran (Fanning)		<i>6546</i>	<i>65464</i>	2536
Kiritimati (Christmas)		2000	20000	5094
Malden		<i>1105</i>	<i>11047</i>	0
Starbuck		<i>725</i>	<i>7253</i>	0
Vostock		<i>53</i>	<i>534</i>	0
Millennium (Caroline)		<i>200</i>	<i>1999</i>	0
Flint		<i>340</i>	<i>3398.30137</i>	0
Total		<i>57,974</i>	<i>579,740</i>	92,428
Total (Outer Island)		<i>55,974</i>	<i>559,740</i>	52,216

Note: Figures in **Bold** represent careful estimates of sustainable yield. Figures in *italics* represent crude estimates.

Cultural and Traditional Practices

There are several cultural aspects and traditions which impact on the current situation of water and sanitation in South Tarawa.

Land ownership

Land ownership is fundamental to the I-Kiribati way of life. Land ownership traditionally infers ownership of groundwater, provides fishing rights, harvesting rights, and is a social security system. Children who do not care for their parents can be disinherited. Landless people traditional to do not subsistence support. Land ownership has been central to the long and costly disputes that occurred between owners of the declared water reserves and the Government. The question of ownership of water reserves and groundwater for public supply will need to be firmly faced before any expansion of water sources into North Tarawa. Involvement of landowners in water reserve protection and the conferring of non-polluting land use rights, such as coconut harvesting would seem to be culturally appropriate.

Family obligations

Family obligations are paramount to I-Kiribati. The first obligation is to providing for the family. This is evident in the way households tamper with the water reticulation system so that supplies and pressure down gradient are reduced. While some village structure still exists in South Tarawa, urbanisation and squatting has seen a breakdown in traditional village authority which potentially might have constrained more extreme non-social behaviour in using reticulated water. Family obligations also mean that it is normally not possible for a household to discourage relatives from Outer Islands squatting on their land in South Tarawa.

Preference for Groundwater

I-Kiribati express a broad preference for groundwater. This is said to be partly because rainwater mixed with toddy does not taste as good as when mixed with groundwater. Given the general condition of groundwater in South Tarawa, this preference has major health implications.

Personal threat

There is a general belief that if an enemy can get some part of you, such as hair or nail clippings, they can perform black magic against you. This has been frequently cited as one of the reasons why compost toilets are unpopular in Kiribati. Unfortunately this prejudice was backed up by the very poor experiences with composting toilets in the AusAID Kiritimati Water Supply and Sanitation Project. It will be extremely difficult in the future to overcome these prejudices.

It is clear, in South Tarawa, that a fundamental problem is the clash between the practices, traditions and mores of traditional subsistence culture with the demands of a highly urbanised society. Transformation will require behavioural change which is a long term process. It is apparent that recognition of this needs to be built into any governance reform process.

Governance issues

A review has been conducted on previous studies, policy statements and ministerial directives, draft water plans, and development plans in the Republic of Kiribati. These have revealed opportunities for improvements in the governance of the water sector.

Numerous community consultations in Kiribati and studies have demonstrated a well-developed understanding at all levels of the intimate linkages between society and water. Current water and sanitation policy however is *ad hoc* and fragmented and is not embedded within a framework of sustainable development. There is an urgent need for a National Water Policy to enunciate a national vision for water and sanitation and to provide a clear direction for government authorities and the community. The draft National Water Policy developed here under the EU Pacific Water Governance Project uses previous policy statements and community consultations to develop policy goals and objectives which have as an objective the sustainable development, management and use of water resources and which are based on community endorsed priorities.

In order to implement policy, it is necessary to have in place appropriate management systems. Currently, three government departments have explicitly stated responsibilities in water and at least four others (see Fig 2.) have administrative responsibilities that impinge on the water sector. Although other agencies have activities in the water and sanitation sector, some may be without legislative basis. Previous projects and reviews have recommended improved coordination between government ministries and clearer definitions of roles in the water sector. In order to implement policy, it is also necessary to form partnerships with the community and industry. The proposed National Water and Sanitation Coordination Committee (see Fig. 2), whose terms of reference have been developed under the EU Pacific Water Governance Project is one mechanism for ensuring that coordination in the government sector occurs, that partnerships with community and industry are formed and that government policy is implemented.

Another mechanism necessary for the implementation of policy is the enactment of supporting water legislation. While regulations exist specifically for the operation of the PUB, there is no equivalent set of regulation for Outer Islands. Draft National Water Legislation was drawn up in 1992 and has been with the Office of the Attorney General since that time. It has yet to be enacted. In addition water supply services operated in the designated growth centre of Kiritimati appear to be without legislative basis.

A Draft 10 Year National Water Master Plan was prepared under a UNCTD project in 1992 and subsequently revised up to 2000 by the Water Engineering Unit and the Public Utility Board of the then ministry of Works and Engineering. This plan is in urgent need of upgrading. In order to be effective it must analyse the current situation in water and sanitation, identify the priority and urgent tasks to be addressed and use the yet-to-be developed national water policy as a framework for implementation. The recent Kiribati Water Sector Road developed under the ADB 2004 Sectoral Strategy and Action Program *Promotion of Effective Water Management Policies and Practices* provides some guidance in the development of a strategic plan. The revised strategic water plan must also provide an analysis of the sectoral responsibilities. The proposed National Water Policy provides both the justification and the guiding principles for the Plan. The proposed National Water and Sanitation Coordination Committee provides the mechanism for overseeing and coordinating the implementation of policy and the Plan, for reviewing and reporting progress and policy effectiveness, for engaging the community at the National level and for fostering community participation at the village level. One of the critical issues identified here is that projects need to be integrated but above all long term is change is to be achieved.

The Kiribati Case Study

Kiribati and Colombia were the first countries in the world to be selected under the Global Environmental Facility (GEF) Strategic Priority on Adaptation.

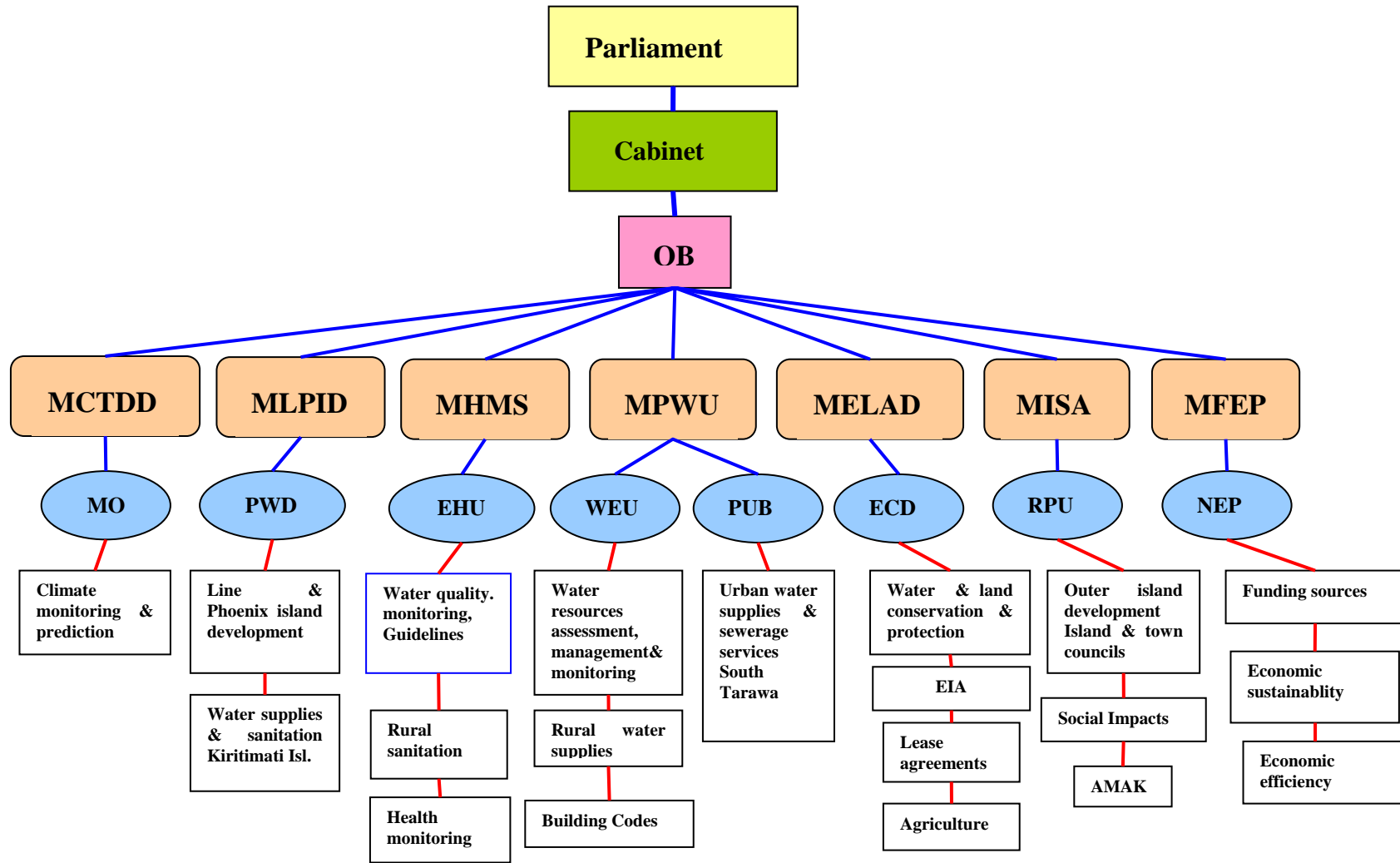


Fig. 2 Kiribati Water Sector Organisational & Responsibility Diagram

The World Bank implemented project *Kirabati Adaptation Program – Pilot Implementation Phase (KAPII)*, supported by AusAID and NZAID has recently been signed. The Development of National Water Policy is a keystone Technical Assistance Activity in the Water Component of KAPII. Planning for this activity assumes that a Water Resources Steering Committee will be in place to oversee and review the development of National Water Policy and other water activities in KAPII.

The EU Pacific Water Governance pilot programme for Kiribati is focussing on development of initiatives at the national level but with major implications at the island and village levels and is aimed to blend seamlessly into the water component of KAPII. The programme is being run over a 10-12 month period based on brief inputs from the Australian National University to assist country facilitation of the process and development of a strategy. A key element in this process is the re-establishment of National Water and Sanitation Coordination Committee.

Activities under this pilot programme will include:

- Discussions with stakeholders over past recommendations on water governance, particularly policies and institutional frameworks, and their application in Kiribati, together with past experiences in whole-of-government and community participation approaches;
- Initiation of processes that will lead to the re-establishment of a National Water and Sanitation Committee that includes community and NGO representatives;
- Initiation of broadly-based consultations and discussions on the basic elements of a Draft National Water and Sanitation Policy and
- Revision and restructuring of a Draft 10 year National Water and Sanitation Plan.

Phase I

In Phase I of this case study, the literature review and consultations with government agencies, NGO's and donor agencies have helped identify governance issues and problems in the country in the water and sanitation sector. A major impediment identified was the lack of a coordinated approach by government to problems in the water and sanitation sector previous impediments to the establishment of a whole-of-government approach to the water and sanitation sector. Each agency was relatively narrowly focussed and in competition so that there were no mechanisms for identifying priorities or broad strategic approaches that include community and NGO participation. There was also no attention given to policy development or implementation. Instead a "band-aid" approach was being followed and there was no systematic working through of a strategic plan.

In Phase I it was critically identified that a whole-of-government approach was the catalyst for improved governance. The first project brief developed was then concerned with the re-establishment of a National Water and Sanitation Coordination Committee. Because of previous problems with such committees it was decided to attempt to house this under the National Strategic Policy and Risk Assessment Unit of the Office of the President.

The next project discussed was the drafting of National Water and Sanitation Policy. This had to be consistent with previous Government policy statements and had to clearly identify a planned series of policy outcomes.

The final project was the redrafting on a strategic National Water Plan that built on previous plans but provided an up-to-date review of the current situation, the opportunities and threats and identified priority tasks to be implemented.

These three governance project are directly relevant to improved governance. They promote an open, transparent, participatory, communicative, sustainable, equitable, coherent, incentive-based, efficient, sustainable, integrative and ethical approach to water and sanitation management and use. They allow the design of public policies that have as their goal the sustainable development, management and use of water resources. The approach also involves the building of social acceptance through the inclusion of community representatives and support for them and the development of strategies to implement them.

Governance Project Designs

1. Re-establishment of the National Water and Sanitation Committee

Project Aim

To facilitate the re-establishment of the Kiribati National Water and Sanitation Committee

Tasks

1. Review previous documents relevant to past National Committees.
2. Identify factors which impeded the function of previous Committees.
3. Interview key stakeholders about the need and function of a National Committee.
4. Prepare a background briefing on the past operation and need for such a Committee.
5. Propose a structure and *modus operandi* for the Committee.
6. Prepare a general goal and terms of reference for the Committee.
7. Discuss the terms of reference with stakeholders.
8. Revise outputs.

Inputs

1. Advice from key government agencies and community groups in the water sectors.
2. Advice from key players in the sector in the Pacific.
3. Relevant documents and reports.
4. Critical review of background document and terms of reference.

Outputs

1. Background document on the need for a National Water and Sanitation Coordination Committee, NWSCC.
2. Draft document detailing the strengths, proposed mission, aims, terms of reference, coordination, reporting and composition
3. Meetings with relevant stakeholders to discuss implementation

Resources

1. Necessary reports.
2. Time allocation by stakeholder personnel in Tarawa.
3. Time allocation by key participants for review.

Anticipated Outcomes

1. Improved appreciation of the importance of the NWSCC.
2. Re-establishment of the whole-of-government and community NWSCC.
3. Improved coordination, more transparency, openness and better collegiality in the water and sanitation sector.
4. Involvement of the community in the sector at the National level.

This project approach was endorsed by all key stakeholders.

2. Drafting of National Water Policy**Project Aim**

To develop a first draft of the National Water Policy for discussion by the NWSCC.

Tasks

1. Review previous documents relevant to water policy in the Pacific.
2. Review past Cabinet and Ministerial statements on water and sanitation.
3. Interview key stakeholders about the need for National Water Policy.
4. Develop overall policy goals and policy intent statements.
5. Prepare a rough draft National Water Policy.
6. Circulate to all potential members of NWSCC.
7. Circulate to reviewers.
8. Revise after comments.
9. Find a champion to promote National Water and Sanitation Policy.

Inputs

1. Advice from key government agencies and community groups in the water sectors.
2. Advice from key players in the sector in the Pacific.
3. Relevant documents and reports.
4. Critical review of rough draft policy.

Outputs

1. Rough draft National Water and Sanitation Policy
2. Meetings with relevant stakeholders to discuss features of the Policy.

Resources

1. Necessary reports.
2. Time allocation by stakeholder personnel in Tarawa.
3. Time allocation by key participants for review.

Anticipated Outcomes

1. Improved appreciation of importance of national water policy.
2. A discussed and reviewed draft national policy.
3. Clear strategic national directions and priorities in the water sector for the next 10 years for government agencies and the community.
4. Improved confidence in the donor community.

This project approach was endorsed by all key stakeholders.

3. Complete Revision of the National Water Plan

Project Aim

To completely revise the National Water Plan for discussion by the NWSCC using the draft National Policy as framework.

Tasks

1. Review other Plans in the Pacific.
2. Review the 1992 and revised 2000 Draft Plans.
3. Interview key stakeholders about the need for a National Water Plan and the required features.
4. Incorporate an analysis of the current performance in the delivery of water and sanitation services.
5. Prepare a rough draft National Water Plan.
6. Circulate to all potential members of NWSCC.
7. Circulate to reviewers.
8. Revise after comments.
9. Find a champion to promote the National Water Plan.

Inputs

1. Advice from key government agencies and community groups in the water sectors.
2. Advice from key players in the sector in the Pacific.
3. Relevant documents, plans and reports.
4. Critical review of rough draft plan.

Outputs

1. Rough draft National Water and Sanitation Policy
2. Meetings with relevant stakeholders to discuss features of the Policy.

Resources

1. Necessary reports and plans.
2. Time allocation by stakeholder personnel in Tarawa.
3. Time allocation by key participants for review.

Anticipated Outcomes

1. Improved appreciation of importance of national water plans.
2. A discussed and reviewed draft national plan.
3. Clear understanding of the current situation.
4. Full support for priorities and strategic national directions for the next 10 years from government agencies and the community.
5. Improved confidence in the donor community.
6. Improved health.
7. Improved access to water.

This project approach was endorsed by all key stakeholders.

These tasks will be pursued in Phase II of this work.

Phase II Progress

A background paper on past experiences and suggestions on a whole-of-government approach to water and sanitation has been circulated to all stakeholders together with a discussion document that sets out the case for the re-establishment of a National Water and Sanitation Coordination Committee that includes community and NGO representation. Positive comments on these discussion papers have led to the development of a Draft Terms of Reference for the Proposed National Water and Sanitation Coordination Committee which is now under consideration by government agencies and NGOs.

A key strategy here, to avoid the institutional rivalry over leadership of the Committee has been to have the Committee convened and coordinated by the National Strategic Policy and Risk Assessment Unit, NSPRAU, of the Office of the President. This suggestion received complete support by all organisations in the water and sanitation sector. The suggested structure of the NWSCC is shown in Figure 3.

A problem with this strategy is that the NSPRAU does not appear to have the human resources necessary to coordinate this position. A proposal brief has been prepared for the long term funding for such a position and is discussed below.

The suggested overall goal of the NWSCC is to:

coordinate, facilitate and enhance Government and community activities in the water and sanitation sector to ensure that communities have access to water of suitable quality and appropriate quantities and to appropriate sanitation to meet all reasonable health, environmental, and development needs

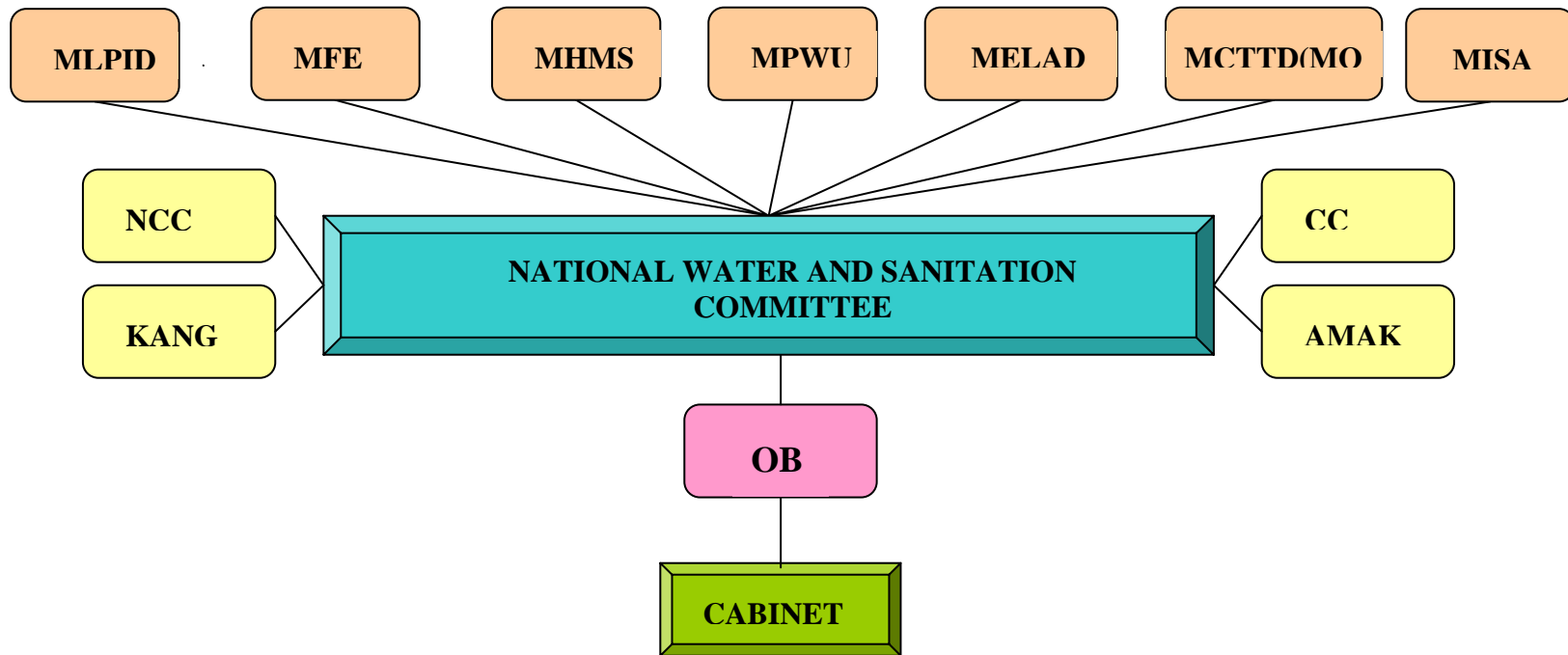
The suggested aims of the Committee are to:

1. *Promote the sustainable management, conservation and use of water and related land resources by implementing Government policy and by coordinating and enhancing Government and community activities and involvement.*
2. *Facilitate and enhance initiatives to raise the quality of life by improving the quality and availability of safe water and decreasing illness and infant mortality rates due to water-borne diseases.*
3. *Coordinate and facilitate information gathering and assessment, policy and instrument development and review, and identification of other needs for the water and sanitation sector throughout Kiribati.*
4. *Provide broadly-based strategic advice to the Government of Kiribati, the community, non-government and donor organisations on the nation's water resources and sanitation service and their management and use.*

While the proposed terms of reference for the Committee are to:

1. Coordinate and enhance the strategic activities of Government Ministries in the water and sanitation sector to ensure sustainable management.
2. Facilitate and coordinate the review and assessment of water and sanitation-related policies, regulations, plans, instruments and standards and make recommendations to Government on policy development, program implementation and potential improvements.

Fig. 3. Proposed Structure for the National Water and Sanitation Coordination Committee



3. Provide the Government with broadly-based, coordinated, strategic advice on priorities for water and sanitation and on water-related development opportunities.
4. Provide a national forum for the discussion of water and sanitation-related issues.
5. Coordinate and facilitate an annual, national, island-based assessment report on the quality and quantity of water resources, water consumption, rainwater harvesting and demand for water and encourage strategic systematic monitoring.
6. Coordinate and facilitate assessments of risks in the water and sanitation sector and possible adaptation strategies in relation to global change and extreme events.
7. Enhance and coordinate strategies to improve community understanding of and participation in water and sanitation use and planning and in furthering water conservation and protection.
8. Coordinate the review and assessment of, and prioritise and make recommendations on proposals for water and sanitation-related projects.

During the Phase II visit progress towards re-establishing the NWSCC was discussed. It has emerged that the Ministry of Health and Medical Services has taken the lead and has written to the Permanent Secretary of the Office of the President requesting the Cabinet to reconvene the Committee. Also during the visit the draft policy was discussed. Copies of the draft policy have been circulated to all relevant agencies and organisations and are currently under review.

A draft National Water Resources Policy, NWRP, *Water for Healthy Communities, Environments and Sustainable Development* was prepared following the Phase I country visit. The policy is consistent with regional initiatives and with previous policy statements and Ministerial directives. The draft NWRP is intended to provide the framework for the conservation, sustainable use and management of Kiribati's water resources and for the provision of safe and adequate water to island communities. It represents the vision of the people of Kiribati for the water sector.

The overall policy goal is:

To ensure that communities have affordable access to sustainable water supply systems providing water of suitable quality and appropriate quantities and to appropriate sanitation to meet all reasonable health, environmental, and development needs

The intended policy outcomes are:

1. Improved public health due to a decrease in water-borne diseases;
2. Equitable access to safe freshwater;
3. Sustainable water supply systems;
4. Protection of freshwater resources from adverse impacts of human activities;
5. Better knowledge of the quantity and quality of fresh water resources;
6. Efficient allocation of water to various users;
7. Improved risk assessment and management for the water sector;
8. Greater public awareness of water resources issues;
9. Enhanced water and sanitation educational programs;
10. Increased stakeholder involvement in water protection of freshwater sources;
11. Increased community participation in the conservation and management of water and water sources
12. More effective governance, monitoring and assessment of water resources;
13. Increased ability to respond quickly to water crises;
14. Strengthened institutional capacity and training in the water sector;

15. Clear identification of roles and responsibilities;
16. Improved levels of cost recovery;
17. Improved access to donor and loan schemes.

A start was made at reviewing and completely rewriting of the National Water Plan. A draft Plan, *National Plan and Strategies for Sustainable Water Management and Use* has subsequently developed and has been sent to selected key agencies and personnel for review. This National Plan aims to respond to the identified priorities and government policy agenda in Kiribati's water and sanitation sector and to provide a framework for the sustainable supply of appropriate quantities water of adequate quality and sanitation services to meet community, health, environmental and development needs and to benefit all I-Kiribati. This Plan cannot be seen in isolation and builds on a number of earlier assessments, studies, and documents and uses the draft National Policy as an underpinning framework.

During the course of the Phase II visit it became obvious that the National Strategic Policy and Risk Assessment Unit of the Office of the President, OB, does not have sufficient resources to coordinate the NWSCC. A proposal was therefore developed for external support for a resource officer for OB to coordinate the whole-of-government-community NWSCC. It was proposed that this could be part of a funding package under EU EDF10.

EU EDF10 Proposal

During the course of the Kiribati case study under the EU Pacific Water Governance Project, a number of strategic priority issues were identified in which donor investment has the potential to have longer term benefits. These projects, which were identified by I-Kiribati agency staff are briefly described here. All are directed at the UN's Millennium Declaration Goal "*to halve by the year 2015 the proportion of the world's population who are unable to reach or afford safe drinking water*" and "*to stop the unsustainable exploitation of water resources*". Infant mortality rates in Kiribati, due to water-borne diseases are amongst the highest in the Pacific.

The first project seeks to improve governance by resourcing the National Water and Sanitation Coordination Committee through the provision of a resource officer to support the National Water and Sanitation Coordination Committee. This Committee will provide an integrated, whole-of-government and government-community partnership approach to management and planning of the water and sanitation sector in Kiribati. It is shown that the issues faced in Kiribati in this sector are amongst the most critical in the world. Previous projects have identified the lack of a coordinated approach involving all relevant government agencies and community organisations in developing long term strategies is hampering progress in the water and sanitation sector. The appointment for 10 years of a resource officer within the Strategic National Policy and Risk Assessment Unit in the Office of the President to assist the National Committee will provide the required strategic approach. It is also suggested that a mentoring team be appointed to provide encouragement and support for the resource officer. The estimated cost of this project is 360K€ over 10 years.

The second project is the first 5-year phase of a four phase, 20 year Outer Island Water Supply Project. This is intended to increase access to safe water in rural areas and enhance the amenity and attractiveness of Outer Islands in order to lower the inward migration rate to urban South Tarawa. Priorities for Outer Island water supply systems have already been determined under an ADB project with the highest priority islands, Nonouti, Abemama, Banaba, Abaiang, Tabuaeran

(Fanning) and Kuria. This project will build on assessments undertaken under the KAPII project. Solar powered groundwater pumping, storage and distribution systems will be repaired or installed in selected islands and rainwater collection and storage systems will also be constructed. In addition, a scheme will be encouraged to facilitate the purchase of private household rain tanks. In the Island of Banaba the dilapidated but sophisticated rainwater collection systems built in the 1960's will be refurbished as a high priority. This project will include the enhancement of community participation in the management and protection of the freshwater sources at the village level and will incorporate a scheme for ensuring the financial sustainability of maintenance and operation. The two major outcomes planned are the reduction of the infant mortality rate due to water-borne diseases and the increase in amenity of Outer Islands. The cost of the first 5 year phase of this project is estimated to be 5M€

The third project addresses the urgent needs of urban South Tarawa where demand for safe reticulated water is probably already equal to the sustainable extraction rate from current groundwater sources. The rate of exponential increase in population there has been about 4% since 1963 due to both natural growth and inward migration. The incidence of diarrhoea and dysentery there is disproportionately high particularly in densely populated areas. Refurbishment of the South Tarawa reticulated treated freshwater system under the ADB SAPHE project was completed in December 2005. The SAPHE project concentrated mainly on improving the bulk water supply component of the water supply system. It did not address the nearly 50% leakages that occur in the urban distribution systems to households and it provided improved connections to only 41% of households. This project aims to increase the number of households with improved connections to 80%, to decrease leakage to 25% and to install water meters to initiate charging for consumed water. This project is estimated to cost 1.3M€ over 3 years.

Planned Phase III Work

In Phase III of this work it is planned to present the draft National Water Resources Policy, NWRP, *Water for Healthy Communities, Environments and Sustainable Development* to the SOPAC STAR Water Committee meeting in Honiara at the end of September for comment and suggestions from colleagues from around the Pacific. The revised Draft Policy will also be presented to the NWSCC for discussion in Tarawa. This phase will provide a feedback loop to revise and enhance the policy.

Also during Phase III, the “*National Plan and Strategies for Sustainable Water Management and Use*” will be discussed at the STAR Water Committee meeting in Honiara for suggestions and comments. The refined version of the Plan will then be presented for discussion by the NWSCC in Tarawa. The aim of the Phase III work will be to have the NWSCC transmit its version of the Policy and Plan to Cabinet.

Gaps in This Approach

This project has concentrated on addressing the governance problems at the national level where major opportunities for improvement were identified. Previous work and the analyses conducted as part of this work have revealed that the reason that previous, expensive water and sanitation projects in Kiribati have had limited success has been the failure to engage the community in the projects and the failure to achieve community ownership of the project. Given the highly dispersed, rural, small villages throughout the Republic's islands, it is extremely doubtful if any centralised Ministry can deliver efficient and safe water surfaces at the village level without the

involvement of villages and community ownership of the project. The task of forming village level water and sanitation committees and groundwater source protection committees is beyond the scope of this project but needs urgently addressing.

Relevant References

- ADB (2004). Sectoral Strategy and Action Program. Promotion of Effective Water Management Policies and Practices. Asian Development Bank TA No 6031 – REG (TAR: 35494-01), prepared by Sinclair Knight Merz and Brisbane City Enterprises.
- AIDAB (1993). Field Appraisal, Kiribati – South Tarawa Sanitation and Project Request. Pacific Regional Team, Centre for Pacific Development and Training, June 1993.
- Alam K., Falkland A. and Mueller. N. (2002). Sustainable Yield of Bonriki and Buota Freshwater Lenses, SAPHE Project, Hydrogeology Component. Tarawa, Kiribati, February 2002.
- Crennan L (2002). Awareness, Proceedings of the Pacific Regional Consultation on Water in Small Island Countries. Fiji.
- Daniell T.M. (1983). Investigations employed for determining yield of the groundwater resources of Tarawa Atoll, Kiribati. Proc. Meeting on Water Resources Development in S. Pacific. United Nations Water Resources Series. No. 57, 108-120.
- Falkland A. (1983). Christmas Island (Kiritimati) Water Resources Study, Republic of Kiribati. Department of Housing and Construction, prepared for Australian Development Assistance Bureau.
- Falkland A. (1984). Christmas Island (Kiritimati) Water Resources Study, Republic of Kiribati. Supplementary Report Department of Housing and Construction, prepared for Australian Development Assistance Bureau.
- Falkland A. (1992). Kiritimati (Christmas Island) Water Supply Project Design Document, Republic of Kiribati. Report HWR92/681. Hydrology and Water Resources Branch, ACT Electricity and Water. prepared for Australian International Development Assistance Bureau.
- Falkland A. (1992). Review of Tarawa Freshwater Lenses, Republic of Kiribati. Report HWR92/681. Hydrology and Water Resources Branch, ACT Electricity and Water. prepared for Australian International Development Assistance Bureau.
- Falkland, T. (1999b). Draft report. Impact of the 1998/1999 drought on Kiribati water supplies and recommended actions. March 1999. Australian Agency for International Development, Canberra.
- Falkland, T. (2002). Synopsis of information on freshwater and watershed management in Pacific Islands Region. International Waters Programme, Technical Report 2002/02.
- Falkland A. (2003). Review of Groundwater Resources Management for Tarawa. Kiribati SAPHE Project : Mid-Term Review, Loan No 1648-KIR (SF). Ecwise Environmental report No EHYD 2003/10, prepared on behalf of Asian Development Bank.
- Falkland A. (2004). Abaiang, Kiribati, Groundwater Investigation Report, October-November 2003. Ecwise Environmental report No EHYD 2003/43, prepared as part of Asian Development Bank TA No 6031 – REG on behalf of Sinclair Knight Merz and Brisbane City Enterprises, January 2004.

- Falkland, A. (2005). Kiribati Adaptation Program, Phase II, Terms of Reference for Technical Assistance Activities (Water Component). World Bank.
- Falkland, A. (2005). Water resources investments report. Kiribati Adaptation Program, Preparation for Phase II Project, Government of Kiribati and World Bank, July 2005.*
- Falkland A. and White I. (2001). Groundwater Investigations, Tarawa, Kiribati – Visit Report, 31st Oct – 6th Nov 2001, SAPHE Project, Hydrogeology Component, Tarawa, Kiribati.
- Falkland, A.C. and Woodroffe, C.D. (1997). Geology and hydrogeology of Tarawa and Christmas Island, Kiribati. Chapter 19 In H.L Vacher and T. Quinn (eds). Geology and Hydrogeology of Carbonate Islands. Developments in Sedimentology. pp 577-610. Elsevier Science.*
- Falkland A., White I. and Turner B. (2003). Report on Abatao-Tabiteuea Groundwater Investigations, Tarawa, Kiribati. Ecowise Environmental report No EHYD 2003/42, prepared for Original Engineering Consultants, Japan and SAPHE Project Management Unit, Bairiki, Tarawa, December 2003.
- Falkland A., White I. and Turner B. (2004). Report on Bonriki and Buota Groundwater Investigations, Tarawa, Kiribati. Ecowise Environmental report No EHYD 2004/128, prepared for Original Engineering Consultants, Japan and SAPHE Project Management Unit, Bairiki, Tarawa, December 2004.
- Government of Kiribati (2006). Project Completion Report, Sanitation, Public Health and Environmental Improvement Project, Loan: 1648 KIR (SF).
- Government of Kiribati (2006). The National Water & Sanitation Coordinaton Committee: Strengths, Proposed Mission, Aims, Terms of Reference, Coordination, Reporting and Composition. Draft for Discussion. EU Water Governance in the Pacific, (Prepared by I. White) June (2006).
- Government of Kiribati (2006). Water for Healthy Communities, Environments and Sustainable Development: Draft National Water Resources Policy for Discussion. EU Water Governance in the Pacific, (Prepared by I. White) July (2006).
- Jones P. (2001). Towards a Sustainable Management Plan for the Security and Protection of the Bonriki and Buota Water reserves, Tarawa. Prepared for Asian Development Bank, February 2001.
- Metai E. (2000). Project Document, Water Systems for Kiribati Outer Islands. Water Engineering Unit. Ministry of Works and Energy.
- Metutera T. (1992). Water resources assessment, planning, development and management in Kiribati. Proceedings of the United Nations Department of Economic and Social Development (UNDES) Workshop on water resources management techniques for small islands, Suva, Fiji, Report INT-88-R41, p.320-328.
- Metutera T. (1994). Kiribati Country Paper. Proceedings of the UNESCO/SOPAC/UNDDSMS Pacific Water Sector Planning, Research and Training Workshop. Honiara, Solomon Islands, pp. 30-32.
- Metutera T. (1996). Maximising and augmenting freshwater resources in Kiribati. in Sourcebook of alternative technologies for freshwater augmentation in small island developing states. Part C –

Case Studies, Technical publication Series No 8, International Environmental Technology Centre (ITEC) and SOPAC.

Metutera T. (2002). Water management in Kiribati with special emphasis on groundwater development using infiltration galleries. Case study presented as part of Theme 1, Water Resources Management, at the Pacific Regional Consultation Meeting on Water in Small Island Countries, Sigatoka, Fiji , 29 July - 3 August 2002.

MFED (2004). National Development Strategies, 2004-2007, Ministry of Finance and Economic Development, Republic of Kiribati, 2004.

Overmars, M., and Butcher, A. (2001). Water Resource Assessment, Banaba (Ocean Island), Republic of Kiribati, SOPAC Technical Report 334.

PUB (2004). Business Plan, 2004-2006. Public Utilities Board, 2004.

Samoa Department of Land, Surveys and Environment (2006). Draft National Water Resources Policy.

Samoa Water Authority (2006). Draft National Water Services Policy.

Samoa Water Authority (2006). Water for Life: Draft Water sector Plan and Framework for Action.

Shalev Z. (1992). Draft 10 year national water master plan. United Nations Department of Technical Cooperation for Development. Project KIR/87/006.

SOPAC (2001). *An integrated approach to rainwater harvesting analysis using GIS and recommendations for roof-catchment legislation in Tuvalu*. SOPAC Technical Report 290, prepared by P.Dawe.

SOPAC (2004). *Harvesting the Heavens: A manual for participatory training in rainwater harvesting*. SOPAC Miscellaneous Report 0544.

SOPAC (2004). *Harvesting the Heavens: Guidelines for rainwater harvesting in Pacific Island Countries*. Compiled by SOPAC for the United Nations Environment Programme in conjunction with the Tonga Community Development Trust and funded by the Swedish International Development Agency. SOPAC Report JC0178.

SOPAC and ADB (2002), Proceedings of the Pacific Regional Consultation on Water in Small Island Countries, Country Papers – Kiribati. Sigatoka, Fiji Islands, 19 July – 3 August (2002) pp 78-92.

SOPAC and ADB (2003), Pacific Regional Action Plan on Sustainable Water Management. Asian Development Bank and South Pacific Applied Geoscience Commission, Suva, Fiji.

WEU (2000). Draft Water Master Plan. Prepared by Eita Metai, Ministry of Works and Energy and others. (this document is an updated version of Ze'ev Shalev, 1992).

White I. (2003). Kiribati Freshwater Resources Technical Committee, Draft Discussion Paper, ACIAR Project LW1/2001/050, CRES, Australian National University, Canberra

White, I. (2006). Coordination of the Water and Sanitation Sector: Background to the Kiribati National Water and Sanitation Coordination Committee, Report to EU Water Governance in the Pacific. CRES, Australian National University, June 2006

- White I., Falkland A., and Scott D. (1999). *Droughts in Small Coral Islands: Case Study, South Tarawa, Kiribati*. UNESCO-IHP-V Technical Documents in Hydrology No. 26, UNESCO, Paris, 55 pp.
- White I., Falkland, A., Crennan, L., Jones, P., Metutera, T., Etuati, B. and Metai, E. (1999). *Groundwater recharge in low coral islands Bonriki, South Tarawa, Kiribati. Issues, traditions and conflicts in groundwater use and management*. UNESCO IHP-V, Technical Documents in Hydrology, No. 25, UNESCO, Paris, 37 pp.
- White I., Falkland A., Crennan L., Metutera T., Etuati B., Metai E., Perez P. and Dray A. (2002). Hydrology of and conflicts over shallow groundwater use and management in low coral islands. Low-lying Coastal Areas – Hydrology and Integrated Coastal Zone Management, International Symposium, Bremerhaven, Germany, 9- 12 September 2002.
- White I., Falkland A., Etuati B., Metai E. and Metutera T. (2002). Recharge of Fresh Groundwater Lenses: Field Study, Tarawa Atoll, Kiribati. *In Hydrology and Water Resources Management in the Humid Tropics*. Proc. Second International Colloquium, Panama, Republic of Panama, 22-26 March 1999, pp 299-322, UNESCO-IHP-V Technical Documents in Hydrology, No 52, UNESCO Paris