



Technical Assistance Consultant's Report

Project Number: TA 4456 - KIR
December, 2007

Kiribati. Preparing the Outer Island Growth Centers Project – Phase 2 (Water Supply and Sanitation)

Working Papers (Volume 2)

Working Paper No 5: Social and Poverty Analysis

(Financed by the Asian Development Bank)

Prepared by the designated Project Team Members, TA 4456 - KIR

Sinclair Knight Merz (SKM)

Melbourne, Australia

For Ministry of Finance and Economic Development (MFED)
 Ministry of Line and Phoenix Islands Development (MLPID)

This consultant's report does not necessarily reflect the views of ADB or the Government concerned, and ADB and the Government cannot be held liable for its contents. (For project preparatory technical assistance: All the views expressed herein may not be incorporated into the proposed project's design.)

Asian Development Bank

Report Structure – Volume 2

The Working Papers contained in this volume detail work completed in Kiritimati Island, Kiribati, during October - December, 2007, in respect of a feasibility study undertaken for a proposed ADB investment project in water and sanitation. The feasibility study was undertaken as the main output of Phase 2 of the *TA No. 4456 - KIR: Preparing the Outer Island Growth Centers Project (Kiritimati Island)*.¹

The results of the TA are contained within 3 main reports;

- the Executive Report (Volume 1);²
- the Working Papers (Volume 2 - the current volume) which provide the detail of the overall feasibility study and the summary Executive Report, and
- the draft Kiritimati Island Development Plan (KIDP - Volume 3) which addresses overarching island development issues and directions on Kiritimati Island.

The Working Papers are contained in this volume in the following order;

1. Hydrology
2. Water Supply
3. Sanitation
4. Economic and Financial Analysis
5. Social and Poverty Analysis
6. Initial Environmental Examination
7. Summary Initial Environmental Examination
8. Environmental Information and Assessment
9. Institutional Arrangements for Improved Island Planning and Development
10. Existing Infrastructure Survey for Water and Sanitation

¹ The team comprised Paul Jones, Development/ Planner/Team Leader, Tony Falkland, Civil Engineer and Water Resources, Tony McDonald, Environmental Adviser, Jonathan Powell, Community Development Adviser, Marcus Napud, Economist and Ian White, Water Resources/Engineer. Ms. Makurita Bauro proved liaison support to the TA while based in Tarawa. Special thanks to Ms. Maketara Ioane, Resource Economist, from the MLPID and GoK TA counterpart for her valuable assistance and support in Kiritimati Island.

² A draft ADB Report and Recommendations to the President (RRP) was also prepared for internal ADB consideration. The Executive Report is based on the information contained in the draft RRP.



Technical Assistance Consultant's Report

Project Number: TA 4456-KIR
March, 2008

Kiribati: Preparing the Outer Island Growth Centers Project – Phase 2 (Water Supply and Sanitation)

Working Paper No. 5: Social and Poverty Analysis (Volume 2)

(Financed by the Asian Development Bank)

Prepared by Jonathan Powell
Sinclair Knight Merz (SKM)
Melbourne, Australia

For: Ministry of Finance and Economic Development (MFED) and
Ministry of Line and Phoenix Islands Development (MLPID)

This consultant's report does not necessarily reflect the views of ADB or the Government concerned, and ADB and the Government cannot be held liable for its contents. (For project preparatory technical assistance: All the views expressed herein may not be incorporated into the proposed project's design.)

Asian Development Bank

Table of Contents

1. Introduction And Project Summary.....	1
1.1 INTRODUCTION.....	1
1.2 PROJECT CLASSIFICATION	1
1.3 PROJECT SUMMARY	3
1.3.1 Part A: Physical Infrastructure.....	3
1.3.2 Part B: Project Support.....	3
2. Stakeholder Analysis And Participation Strategy.....	6
2.1 MAJOR STAKEHOLDER GROUPS	6
2.2 STAKEHOLDER INTEREST AND CAPACITY FOR INVOLVEMENT IN PROJECT DESIGN AND IMPLEMENTATION	9
2.2.1 Executing Agency and Related Structures	9
2.2.2 Government Institutions	9
2.2.3 Government Enterprises	12
2.2.4 Private Sector.....	12
2.2.5 Churches & Community Groups.....	12
2.2.6 Project Communities	14
2.2.7 Capacity of Stakeholders for Project Involvement.....	15
2.3 CONSULTATION AND PARTICIPATION	15
3. Household Survey.....	20
3.1 METHODOLOGY.....	20
3.2 SUMMARY: KEY IMPLICATIONS OF THE HOUSEHOLD SURVEY FOR PROJECT DESIGN	21
4. Social And Poverty Analysis.....	22
4.1 POLICY SETTING	22
4.1.1 National Development Strategy (2004-2007)	22
4.1.2 ADB Poverty Reduction Policy	22
4.1.3 Millennium Development Goals (MDGs)	23
4.2 POVERTY AND HARDSHIP IN KIRIBATI AND KIRITIMATI ISLAND	24
4.2.1 Defining Poverty in Kiribati	24
4.2.2 Poverty Line Analysis and the Household Economy	25
4.2.3 Poverty Impact Ratio	28
4.2.4 Household Income and Affordability.....	29
4.2.5 Dependency Ratio.....	30
4.2.6 Landlessness and Overcrowding	31
4.3 SOCIAL SAFETY NETS.....	31
4.4 SOCIO-CULTURAL NORMS AND VALUES	32
4.5 PUBLIC HEALTH	34
4.6 WOMEN AND VULNERABLE GROUPS	36
4.7 EMPLOYMENT OPPORTUNITIES	37
4.8 CBOs AND NGOs	38
5. Community Mobilization, Awareness And Education.....	39
5.1 INTRODUCTION.....	39
5.2 COMMUNITY MOBILIZATION	39

5.3	INFORMATION, DISSEMINATION, EDUCATION AND AWARENESS	40
5.4	COMMUNITY RESOURCE MANAGEMENT	41
6.	Social Action Plan And Mitigation Measures.....	42
7.	References.....	46

List of Annexes

A	Results and Analysis of Household Survey	48
B	Household Survey	74
C	Summary Poverty Reduction and Social Strategy (SPRSS)	82

List of Tables

Table 2.1	Project Stakeholders	6
Table 2.2	Percentage of Kiibati Population by Region	13
Table 2.3	Population Projection for Kiritimati Island in 2007	14
Table 2.4	Project Population for Kiritimati Island in 2015 including Village Distribution	14
Table 2.5	Consultation and Participation Plan	17
Table 3.1	Stratified Sampling Based on Number of Households	20
Table 4.1	Income and Expenditure Per Capita Per Annum by Village	26
Table 4.2	Percentage of Person Aged 15+ Years by Economic Activity	27
Table 4.3	Poverty Incidence in Kiribati and Kiritimati Island	27
Table 4.4	Project Poverty Impact Ratio	29
Table 4.5	Range of Informal Activities for Kiritimati Island	32
Table 4.6	Morbidity for Kiritimati Island for 2002 - 2007	35

List of Figures

Figure 1.1	Social and Poverty Framework during Project Preparation	2
Figure 1.2	Kiritimati Island – Location Growth Villages	5
Figure 3.1	Household Survey Sample by Villages	20
Figure 4.1	ADB Poverty Reduction Strategy	23
Figure 4.2	Kiritimati Island Expenditure Distribution (Lorenz Curve)	30

Acronyms

ADB	Asian Development Bank
AusAID	Australian Agency for International Development
C&P	consultation and participation
CBO	Community Based Organization
DBK	Development Bank of Kiribati
FPL	Food Poverty Line
GIS	Geographic Information System
GoK	Government of Kiribati
HDI	Human Development Index
HH	Household
ICC	Island Church Council
IDEA	information, dissemination, education and awareness
IPSA	Initial Poverty and Social Analysis
JSS	Junior Secondary School
KLLPB	Kiritimati Local Land Planning Board
KIDP	Kiritimati Island Development Plan
KPC	Kiribati Protestant Church
KUC	Kiritimati Urban Council
KWASP	Kiritimati Water and Sanitation Project
LMDK	Land Management Division Kiritimati (Division of MELAD)
MDGs	Millennium Development Goals
MELAD	Ministry of Environment, Lands and Agriculture Development
MEYSD	Ministry of Education, Youth and Sport Development
MFED	Ministry of Finance and Economic Development
MFMRD	Ministry of Fisheries and Marine Resources Development
MHMS	Ministry of Health and Medical Services
MISA	Ministry of Internal and Social Affairs
MLPID	Ministry of Line and Phoenix Island Development
NDS	National Development Strategy
NGO	Non Government Organization
NPRS	National Poverty Reduction Strategy
NPV	Net Present Value
PDMCs	Pacific Developing Member Countries
PIR	Poverty Impact Ratio
PL	Poverty Line
PPN	Project Preparatory Note
PPTA	Project Preparatory Technical Assistance
RERF	Revenue Equalisation Reserve Fund
RCC	Roman Catholic Church
RRP	Report and Recommendation to the President
SDA	Seventh Day Adventist Church

SOE	State Owned Enterprise
SPRSS	Summary Poverty Reduction and Social Strategy
TA	Technical Assistance
TOR	Terms of Reference
UFW	unaccounted for water

1. Introduction and Project Summary

1.1 Introduction

This Working Paper represents the field work undertaken by the Social Advisor¹, from October to December 2007, as part of TA 4456-KIR: Preparing the Outer Islands Growth Centers Project – Phase 2 (Water Supply and Sanitation).

The Working Paper contributes to two main outcomes of the TA, namely: (i) the feasibility study for the proposed water supply and sanitation project; and (ii) the overarching Draft Kiritimati Island Development Plan (KIDP). The Draft KIDP was prepared during Phase 1 of the TA and subsequently updated in concurrence with the feasibility study.

This body of work, the 'design phase', has been guided by the overarching *ADB Social and Poverty Framework*, which is shown in Figure 1.1. The paper commences with an analysis of Project stakeholders and follows with the key results from the Household Survey (detailed results and analysis of the HH Survey are shown in Annex 1). Chapter 4 includes an analysis of the social and poverty issues in Kiritimati Island and those issues with direct relevance to the Project. An abstract of this analysis is the Summary Poverty Reduction and Social Strategy (SPRSS), which is contained in Annex 3. Chapter 5 discusses the proposed Community Mobilization component, including the Information, Dissemination, Education and Awareness (IDEA) Program. The final chapter of the Working Paper is the Social Action Plan for the proposed Project, which draws on the analysis provided in the proceeding chapters.

1.2 Project Classification

The Project has been assigned a targeting classification of targeted intervention, with a focus on the Millennium Development Goals (TI-MDG). Whilst the project is concerned with providing an enabling environment for economic growth in Kiritimati Island, the primary outcome of the intervention is its contribution to Goal 7 of the MDGs. The project is also unique in that it targets 100% of the Kiritimati Island population by providing outcomes for both 'poor' and 'non-poor' beneficiaries, which is in line with I-Kiribati social equality norms.

In summary, the project classification² entails:

Sector: Water Supply, Sanitation and Waste Management
Subsector: Water Supply and Sanitation

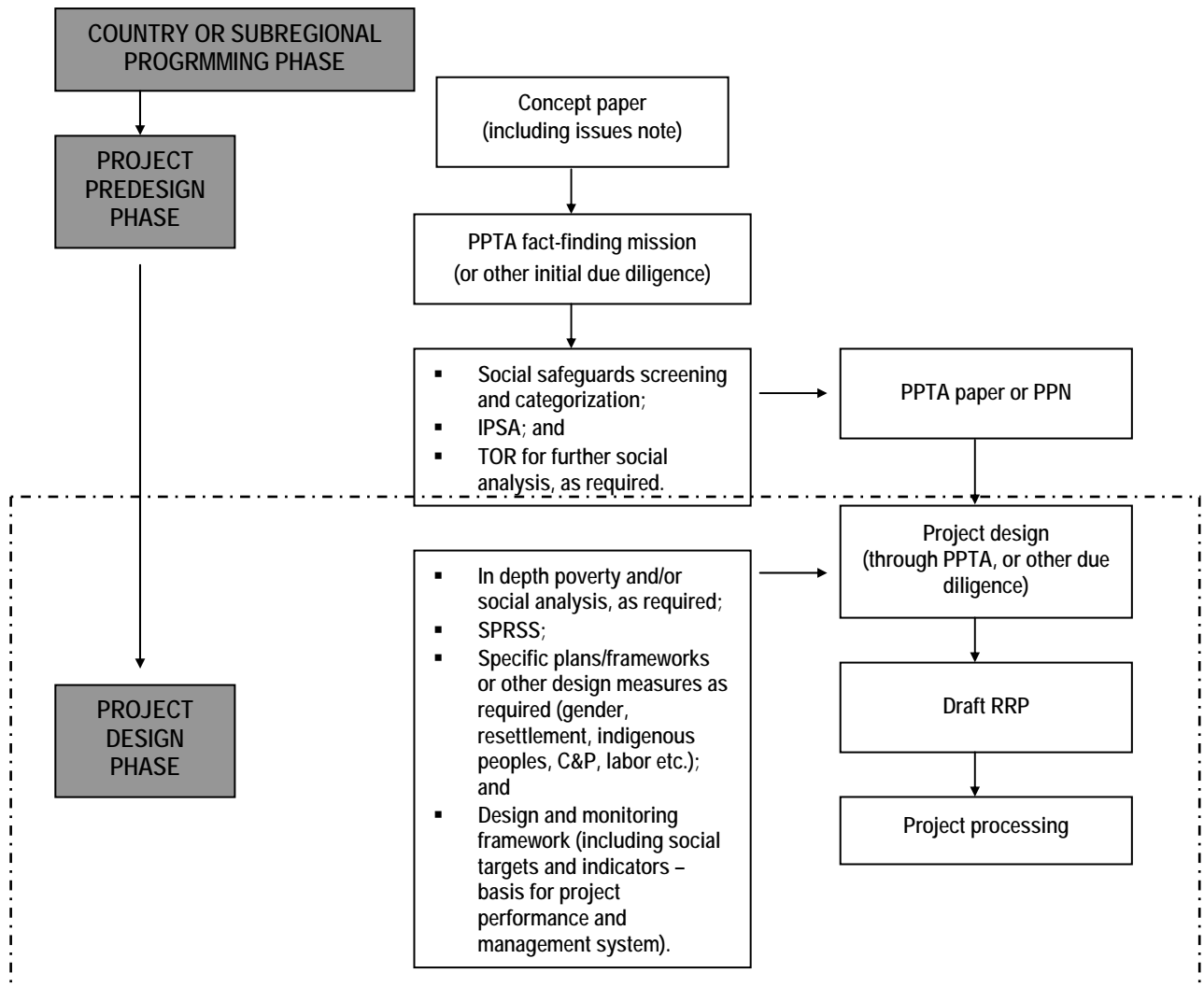
Theme: Inclusive Social Development; and Environmental Sustainability
Subtheme: Human Development

Classification: Targeted Intervention

¹ The Social Advisor acknowledges the assistance of the TA Counterpart, Ms Mwaketara Ioane, who also contributed to the development of the Working Paper.

² In accordance with ADB *Handbook on Social Analysis*, 2007.

Figure 1.1 Social and Poverty Framework During Project Preparation



Key: C&P – consultation and participation; IPSA – initial poverty and social analysis; PPN – project preparatory note; PPTA – project preparatory technical assistance; RRP – report and recommendation of the President; SPRSS – summary poverty reduction and social strategy; TOR – terms of reference.

Source: ADB, 2007, 'Handbook on Social Analysis – A Working Document', p.21

1.3 Project Summary

The principal objective of the Project is to improve the development potential of Kiritimati Island and the health of the population and the environment through a program of improvements in water supply and sanitation. This will be supported by community education, information and awareness.

The Project consists of two parts: Part A: Physical Infrastructure; and Part B: Project Support. Part A comprises water supply and sanitation while Part B comprises institutional strengthening, community mobilization and project management and implementation support.

1.3.1 Part A: Physical Infrastructure

The Project will supply potable water to approximately 11,300 persons living in 2 major growth areas of London to North Tabwakea (Growth Area 1) and Main Camp to New Banana (Growth Area 2.) The Project will also supply improved water supply to the villages of Banana and Poland. The Project will rehabilitate the existing water supply system including: (i) new pumps and meters at galleries; (ii) a new reticulation system to Banana; (iii) replacement of head tank at Banana; and (iv) repairs to leaks; head tanks, galleries and extraction points. Other infrastructure improvements will include: (i) a new main trunk line Decca to London; (ii) new head tanks and stands (including 3 Tabwakea, 1 London, 1 New Banana); (iii) installation of new galleries at Decca, Four Wells and Banana lenses; (iv) extension of the trunk main from Main Camp to New Banana village; (v) provision of 500 litre supply tanks to all houses and provision of 10,000 litre rainwater tanks and gutters to a small number of community buildings; (vi) local reticulation systems from header tanks and connection to new houses; (vii) new water treatment facilities at the header tanks; and (viii) plant and operational equipment. The location of the main villages including London (Ronton) to North Tabwakea (Growth Area 1) and Main Camp to New Banana (Growth Area 2) is shown in Figure 1.2.

To minimize contamination of the groundwater and make potable and non potable water supply safer, the Project will replace all septic tanks where septic tanks exist with sealed polyethylene tanks connected to polyethylene effluent trenches (evaporation basins). Pour flush pedestal will be provided to all households who do not have a toilet. For household greywater, polyethylene effluent trenches will be provided. Both trench systems will be overlain with rubble and sand. For Tabwakea and Banana villages, where groundwater is suitable for non potable uses, a well will be provided to all households who do not have a well. For those households with an existing well, assistance will be provided to improve the well walls and above-ground casing, including secure covers. A covered sludge collection and evaporation center will be provided outside of the urban areas for the disposal and drying of sludge into compost. A sludge removal truck, as well as other plant and equipment, will be provided.

1.3.2 Part B: Project Support

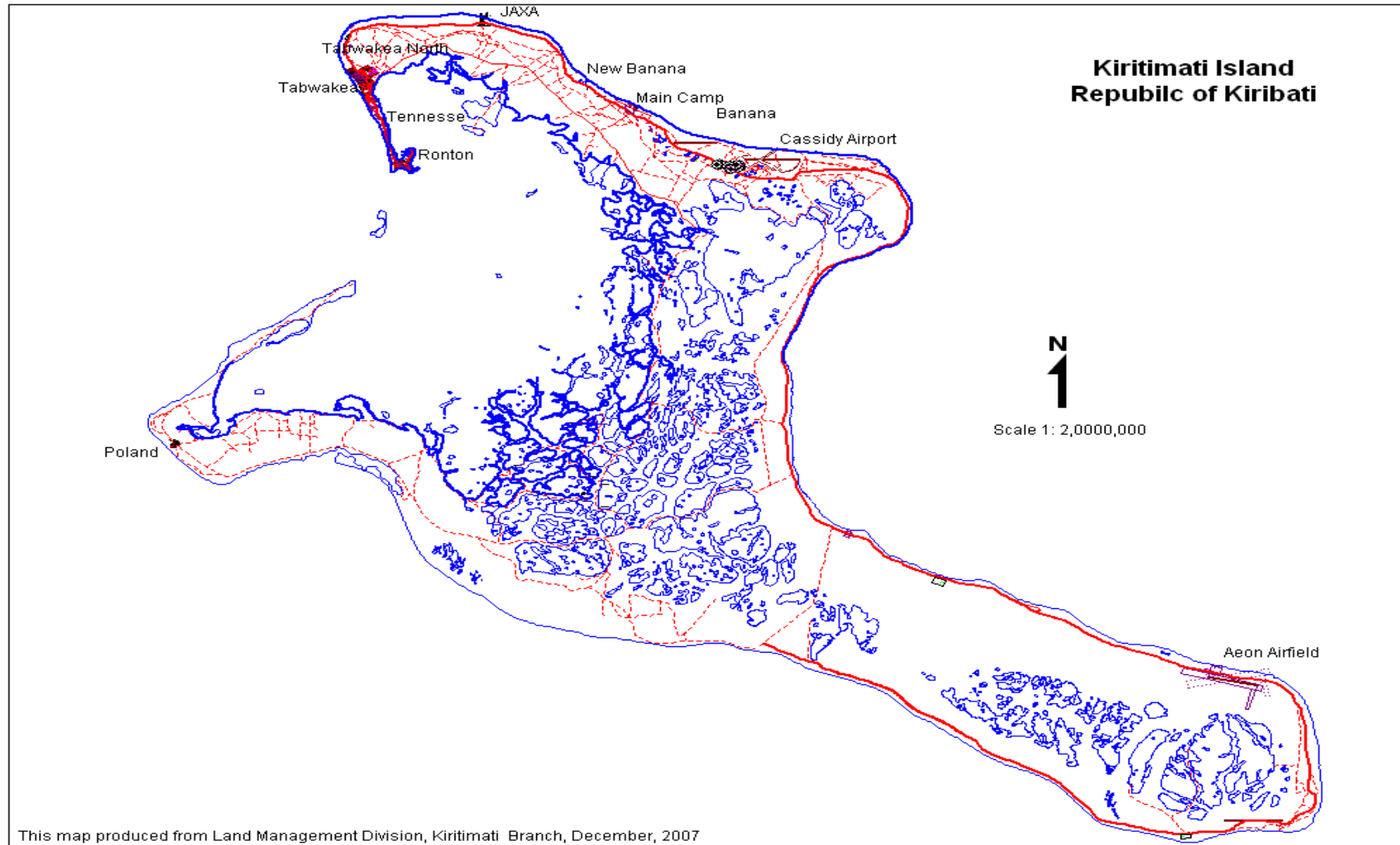
The Project will strengthen the institutional base needed for the sustainable delivery and management of water supply and sanitation services, including

monitoring of groundwater in the water reserves. The Project will provide a program of activities directed at enhancing the capacity of the Water and Sanitation Division in the Ministry of Line and Phoenix Islands Development (MLPID) to be economically, financially and environmentally sustainable. This will ensure as far as possible that the Water and Sanitation Division can provide a safe, reliable and efficient water supply and sanitation service to the community. In this context, the Project will support improvements to the management, finance, accounting, administration (including billing and collections), operations, maintenance and water supply and water quality monitoring capacities of the Water and Sanitation Division.

The Project will strengthen the participation of beneficiaries and enhance community awareness and understanding of the water supply and sanitation system being provided by the Project. At a broader level, the Project will also seek to influence values in regard to how the community views, uses and manages the water resource and the broader environmental assets of Kiritimati Island. Community development initiatives under the Project will seek to enhance ownership by the community and its leaders of the improved water supply and sanitation systems. Initiatives will include the: (i) promotion of water conservation to reduce demand on the reticulated potable water supply system, (ii) promotion of community water resource management to value and protect the key groundwater lenses at Decca, Four Wells, Banana and New Zealand Airfield, (iii) safe use of well water including well construction, (iv) why the need for good sanitation and hygiene practices and their relationship to personal and environmental health, and (v) awareness of activities that pollute the groundwater including human wastes, pigs, dogs and other animals.

Support will be provided to address Project management, design, tender management, supervision of construction and coordination, assistance in Project performance management and evaluation, and water resource and environmental monitoring. The Project Management Consultant (PMC) will provide operational support, conduct training and staff development activities, and build capacity with counterparts of the Water and Sanitation Division in project management.

Figure 1.2 Kiritimati Island – Location of Main Growth Villages (Ronton to Tabwalea North, and Main Camp to New Banana)



2. Stakeholder Analysis and Participation Strategy

The stakeholder and participation analysis has included the following key steps:

- Identifying major stakeholder groups;
- Determining stakeholders' "stakes" and interest in the Project;
- Analysing stakeholders' capacity for Project involvement; and
- Providing a plan for consultation and participation during Phase 2 of the TA.

Table 2.1 provides a list of the stakeholder groups relevant to the Project at the national, Kiritimati Island and community levels. Section 2.2 presents an analysis of the Project stakeholders, their interest and ability for involvement in the Project. Section 2.3 details the plan for consultation and participation from the various Project stakeholders and the method and purpose of the interaction.

2.1 Major Stakeholder Groups

Table 2.1 Project Stakeholders

Stakeholder Category	National Level	Island (Kiritimati) Level	Community / Village Level
Executing Agency and related structures	Ministry of Finance and Economic Development (MFED)		
Government Institutions	Ministry of Line and Phoenix Island Development (MLPID) Ministry of Internal and Social Affairs (MISA) Ministry of Environment, Lands and Agriculture Development (MELAD)	MLPID Main Office - Administration - Water & Sanitation Division - Development Planning & Statistics Division - Civil & Technical Division Kiritimati Urban Council (KUC) - MELAD Kiritimati (Land Management Division; Wildlife Conservation) - Kiritimati Local Land Planning Board	Island Councillors (8) - London (3) - Tabwakea (3) - Banana (1) - Poland (1) - Council Clerk, Social Development Officer

Stakeholder Category	National Level	Island (Kiritimati) Level	Community / Village Level
	Ministry of Health and Medical Services (MHMS) Ministry of Fisheries and Marine Resource Development (MFMRD) Ministry of Education, Youth and Sport Development (MEYSD)	<ul style="list-style-type: none"> - Kiritimati Hospital & Laboratory - MFMRD Kiritimati 	<ul style="list-style-type: none"> - London Clinic - Tabwakea Clinic - Banana Clinic - Poland Clinic - Itoini Mainiku High School (Terawanbakoa) - Saint Francis High School (Terawanbakoa) - TRW Junior Secondary School (Tennessee) - Banana Primary School - Poland Primary School - Tennessee Primary School
Government Enterprises		<ul style="list-style-type: none"> - Captain Cook Hotel Limited - Development Bank of Kiribati (DBK) - Bobotin Kiribati Limited 	
Private Sector		Retail & Wholesale <ul style="list-style-type: none"> - JMB Enterprises - Dojin Tourism & Accommodation <ul style="list-style-type: none"> - Dive Kiribati - Various 1-2 star lodges and guest houses Pet Fish	Retail & Wholesale <ul style="list-style-type: none"> - Numerous mini and small general stores
Churches & Community Groups		Island Church Council (ICC) Roman Catholic Church (RCC)	<ul style="list-style-type: none"> - Noel Catholic Church (London) - St Teresa's Catholic Church (Tabwakea) - Saint Francis Catholic Church (Terawanbakoa) - Banana Catholic Church - St Stanislaus

Stakeholder Category	National Level	Island (Kiritimati) Level	Community / Village Level
		<p data-bbox="756 338 975 398">Kiribati Protestant Church(KPC)</p> <p data-bbox="756 555 935 584">Church of God</p> <p data-bbox="756 629 959 658">Church of Christ</p> <p data-bbox="756 703 1011 763">Seven Day Adventist (SDA)</p> <p data-bbox="756 775 1034 869">Church of Jesus Christ for Latter Day Saints (Mormon)</p> <p data-bbox="756 880 927 909">Bahai Church</p> <p data-bbox="756 1021 932 1081"><i>Unimane – Te Ekonikabanei</i></p> <p data-bbox="756 1093 1011 1178"><i>Nei Baneawa</i> (Combined Women's Association)</p> <p data-bbox="756 1189 1023 1256"><i>Roro n rikirake</i> (Youth Groups)</p>	<p data-bbox="1086 264 1289 324">Catholic Church (Poland)</p> <ul style="list-style-type: none"> <li data-bbox="1086 338 1246 367">- London KPC <li data-bbox="1086 378 1283 407">- Tabwakea KPC <li data-bbox="1086 418 1315 479">- Itoini Mainiku KPC (Terawanbakoa) <li data-bbox="1086 490 1251 519">- Banana KPC <li data-bbox="1086 530 1241 560">- Poland KPC <li data-bbox="1086 571 1347 631">- Tabwakea Church of God <li data-bbox="1086 642 1347 703">- Tabwakea Church of Christ <li data-bbox="1086 714 1251 743">- London SDA <li data-bbox="1086 777 1347 871">- Tabwakea Church of Jesus Christ for Latter Day Saints <li data-bbox="1086 882 1262 943">- London Bahai Church <li data-bbox="1086 954 1267 1014">- Banana Bahai Church <li data-bbox="1086 1093 1337 1187">- Numerous Women's Associations as part of churches <li data-bbox="1086 1198 1305 1292">- Numerous Youth Groups as part of churches
Project Communities			<ul style="list-style-type: none"> <li data-bbox="1086 1308 1187 1337">- London <li data-bbox="1086 1348 1230 1377">- Tennessee <li data-bbox="1086 1388 1222 1417">- Tabwakea <li data-bbox="1086 1429 1275 1458">- Terawanbakoa <li data-bbox="1086 1469 1235 1498">- Main Camp <li data-bbox="1086 1509 1251 1538">- New Banana <li data-bbox="1086 1550 1187 1579">- Banana <li data-bbox="1086 1590 1177 1619">- Poland

2.2 Stakeholder Interest and Capacity for Involvement in Project Design and Implementation

2.2.1 Executing Agency and Related Structures

Ministry of Finance and Economic Development (MFED)

The MFED aims to achieve a viable and sustainable economy that can provide an adequate standard of living for the people of Kiribati. Key tasks of the MFED include assessing and advising on the appropriateness of government spending programs, including the effectiveness of government expenditure, ensuring there are proper financial accountability and associated reporting arrangements in place, effective management of the Revenue Equalisation Reserve Fund (RERF) to help finance Government expenditures and maintain the value of the fund, and effective monitoring of Ministry Operation Plans and budgets. The MFED are based in Tarawa³ and are typically the executing agency for ADB and donor support to Kiribati. However, if the Project is seeking to develop Kiritimati Island as a key growth center then greater autonomy from central government in Tarawa may be preferred, subject to other viable options being available.

2.2.2 Government Institutions

Ministry of Line and Phoenix Island Development (MLPID)

The MLPID (or LINNIX) is responsible for the provision of a broad range of Government services in the Line and Phoenix Islands⁴. Primarily in Kiritimati Island these include: (i) infrastructure services such as power and water supply; (ii) government offices and housing; (iii) revenue collection; (iv) surveillance of wildlife closed areas; and (v) support services for government owned companies (see Section 2.2.3). The MLPID's management of the above Government services is generally poor; with the power, water and housing divisions and all government enterprises currently operating with substantial losses and are heavily subsidised by central government from Tarawa⁵. Despite this, MLPID provides a government platform across most sectors in Kiritimati Island (including water and sanitation) and as such is the most likely Implementing Agency for the Project. The Project should also look at other potential implementation models that may enhance the sustainability of the Project, namely the quality of operation and maintenance of the resources and other system components.

Kiritimati Urban Council

The Kiritimati Urban Council (KUC), administered by the Ministry of Social and Internal Affairs (MISA), was established in April 2004 for the promotion of local services, primarily within the urban villages of Kiritimati Island. The KUC consists of councillors from each of the eight urban wards (3 in London, 3 in Tabwakea, 1 in Banana and 1 in Poland), one nominated member from the Combined Women's Association (*Nei Baneawa*) and one nominated member from the *Unimane*⁶. The KUC is currently responsible for local by-laws, waste

³ Tarawa is 3,000 kilometres west of Kiritimati Island, centrally located in the Gilbert Island Group.

⁴ The inhabited islands in the Line Islands Group include Kiritimati (Christmas), Tabuaeran (Fanning) and Teraina (Washington), whilst the only inhabited island in the Phoenix Islands Group is Canton.

⁵ Refer to institutional capacity in TA 4456-KIR Phase 2 Financial and Economic Working Paper.

⁶ *Unimane* in I-Kiribati culture are the 'old men' or 'community wise men' and are usually over 65 years.

collection, social development (interaction with Women's Associations and Youth Groups), distribution of the elderly pension and local business licenses. The KUC is still in its infancy in Kiritimati Island and admits that it does not have the capability or capacity to maintain and operate a system such as the water supply and sanitation. The KUC, with appropriate support, could play an active role in community mobilization as it has established linkages with the community through councillor representation, appointment of village wardens, and social development networks.

Kiritimati Local Land Planning Board

The Kiritimati Local Land Planning Board (KLLPB) is comprised of government staff from MLPID, MELAD and other government agencies such as Commerce and TSKL. KLLPB is tasked with planning for land use development on the island, including future growth and implementation strategies. The KLLPB a key stakeholder for the Project as the growth of Kiritimati Island is complex – linked to (i) sustainable yield estimates for potable water; (ii) natural resource constraints; (iii) tourism and environmental protection constraints; and (iv) population growth from both natural increase and in-migration from the Gilbert Islands Group. Consultation with the KLLPB during project implementation is vital to ensure that there is alignment of infrastructure provision with land use planning and future demand, within the parameters mentioned above.

Ministry of Environment, Lands and Agriculture Development

In Kiritimati Island there are three divisions of MELAD in operation, namely the Land Management Division, Wildlife Conservation Office and the Agriculture Development Division.

Land Management Division Kiritimati (LMDK)

The LMDK is responsible for the leasing of land for private households, government owned enterprises and for business, collecting rent arrears, executing government policies relating to land management and licenses for extractive industries, such as gravel removal. The LMDK are a key agency for Project implementation, particularly in relation to the release of land for development, which should be undertaken within the existing urban centres and in line with the four growth parameters mentioned above. LMDK has been the recipient of a number of ADB Advisory Technical Assistance projects and their GIS and surveying capabilities will be a vital asset for the detailed engineering design and construction supervision team.

Wildlife Conservation Office

Since 1977, the Wildlife Conservation Office has aimed to: (i) survey and monitor seabird populations; (ii) enforce strict exclusion from conservation zones; (iii) control feral cats and pigs; (iv) support the development of tourism; and (v) provide Conservation Education Programs. The terrestrial and aquatic ecology of Kiritimati Island is unique – of high conservation value and also of high economic value from tourism⁷. Increases in population will continue to place pressure on the environment, threatening the islands unique

⁷ Tourism activities in Kiritimati Island include fly and deep sea fishing, bird watching, snorkeling / diving and short island tours for day tourists from cruise ships.

biodiversity. The project will need to work closely with the Wildlife Conservation Office to cultivate a shift in knowledge, attitudes and practices of residents (current and future) towards the management and conservation of the environmental resource.

Agriculture Development Division

This division of MELAD, which is based at the Agricultural Research Centre in New Banana village, is expected to have limited involvement in the project. The division could be utilised as part of the community mobilization activities, particularly with replacement coconut plantation siting, establishment and management, if the Project requires removal of coconut palms from the Decca, Four Wells and Banana groundwater lenses, particularly near production galleries.

Ministry of Health and Medical Services (MHMS)

The MHMS is present in Kiritimati Island through (i) London Hospital; (ii) Health Clinics in Tabwakea, Banana and Poland villages; and (iii) administrative staff and public health officers. The MHMS provides the following free services in Kiritimati Island: (i) general outpatient and inpatient care; (ii) emergency care; (iii) midwifery, maternal and child health; (iv) limited dental care; (v) laboratory services; (vi) ambulance services; (vii) provision of medication; (viii) medical tours to Fanning and Washington Islands; and (ix) public health education and awareness programs. MHMS is at the 'front line' of public health and as such are key stakeholders and allies in implementing programs to increase the health and well-being of Kiritimati Island residents. The Project should seek to involve and strengthen MHMS in on-going public health awareness / education and water quality sampling / testing programs (including monitoring of public health as one measure of improved water and sanitation services).

Ministry of Fisheries and Marine Resources Development (MFMRD)

The Kiritimati Island Division of the Ministry of Fisheries and Marine Resources Development (formerly the Ministry of Natural Resources Development) has operated for more than 20 years, aiming to provide services for the management of existing marine resources in the lagoon, reef and open ocean areas. Like the Wildlife Conservation Office, the MFMRD will be key stakeholders in the future management and conservation of the island's natural resources.

Ministry of Education, Youth and Sport Development (MEYSD)

In Kiritimati Island, the MEYSD manages three primary schools (Banana, Poland and Tennessee – for ages 6-11 years), one junior secondary school (Tennessee JSS – for ages 12-14 years) and two secondary / high schools (both in Terawanbako village – for ages 15-18 years). MEYSD can play an important role in the community mobilization and public education / awareness components of the Project, given that 39% of the population, and the future managers of Kiritimati Island, are under the age of 15 years⁸. A number of the schools in Kiritimati Island have water management and water processes as

⁸ Refer to 2005 Kiribati Census.

part of the school syllabus⁹. However the tangible outcomes of this knowledge are not clearly evident in changed water management practices. These programs provide a platform for the Project to build upon and develop changed practices, as school age children are key access points for behavioural change in water and sanitation, hygiene, education, public health awareness and environmental education.

2.2.3 Government Enterprises

As with other parts of Kiribati, the majority of economic sectors in Kiritimati Island are dominated by state owned enterprises (SOEs). The vast majority of SOEs are running at a loss, however as a form of social safety net, they do provide a high number of jobs for the island. The largest SOE is the Captain Cook Hotel, which is the main tourist provider on the island, with some 60 staff. SOEs will be Project stakeholders for the provision of water supply and sanitation services and as such should be informed of any proposed changes to the system.

2.2.4 Private Sector

The 2005 Census showed that 11% of households in the Line Islands Group are involved in private business. Most private industry is concerned with either (i) wholesale or retail sales; and (ii) tourism-related business including accommodation. At present, the private sector is being constrained by a number of factors, namely: (i) Lack of Access to State Lands; (ii) Type of Land Tenure; (iii) Lack of Business 'Know How' and Skills; (iv) Uncertainty of Transport Services; (v) Quality of Physical Infrastructure Services; (vi) Lack of Autonomy from Tarawa; (vii) Poor Information Flow; (viii) Community Service Obligations versus Commercial Operations; (ix) Public Service Efficiency; (x) Access to Capital; and (xi) Island Development Coordination and Governance¹⁰. Despite these constraints, the private sector continues to grow and develop on an incremental basis. The Project should build on the successes of private enterprise, where possible, and involve members of the private sector in the community mobilization process. This has already received positive feedback from a number of business owners¹¹.

2.2.5 Churches & Community Groups

Churches

Churches and religion play a key role in the socio-cultural makeup in Kiritimati Island and Kiribati as a whole. The vast majority of I-Kiribati families are part of either the Roman Catholic Church (55%) or the Kiribati Protestant Church (36%) (see Table 2.2 below). The church plays an important role in the Kiritimati Island community, namely: (i) caring for spiritual, social, physical and mental needs; (ii) promoting healthy living through a good diet, drinking clean water and exercising; (iii) running workshops/training session on family life, counselling and health; (iv) organising events for women's association and youth groups; and (v) cultural and sports events.

⁹ Current syllabi cover topics such as water pollution, water scarcity, the water cycle, linkages between low quality water and sickness and climate change / global warming.

¹⁰ Refer to Draft KIDP, p.89 (TA 4456-KIR Phase 1B).

¹¹ Personal Communication, 26 November 2007, Private Sector Focus Group, London.

Table 2.2 Percentage of Kiribati Population by Religion

Religion	% of Pop'n
Roman Catholic Church (RC)	55
Kiribati Protestant Church (KPC)	36
Seventh Day Adventist Church (SDA)	2
Bahai Church	2
Church of Jesus Christ and the Latter Day Saints (Mormon)	3
Other	1
<i>Total</i>	<i>100</i>

Source: 2005 Census

Religion and belonging to a “church family” provides the community with a sense of belonging and purpose. The churches are the most prominent community group within I-Kiribati society and as such provide the Project with a solid platform for community mobilization and community development activities. This structure also provides an avenue for the Project to address public health awareness and education programs – in coordination with Church Ministers and senior church members (Elders / Deacons).

Unimane

There are approximately 30 *unimane* in Kiritimati Island at present. The decision-making powers of the Unimane Association appear to be limited in Kiritimati Island, with traditional leadership and influence diminishing with the changing social order in Kiribati. Instead, community level leadership occurs primarily through the church and its associated committees. Nevertheless, the Project should maintain close linkages with the *unimane* and *unaine* (‘old women’) as customary I-Kiribati systems mean that there is a tradition of community involvement in governance (including management of resources).

Nei Baneawa (Women’s Associations)

The Women’s Associations operate within churches in Kiritimati Island, with the Roman Catholic, KPC and SDA groups the most active. The groups meet on a regular basis to share food, discuss future program activities, work on sewing or handicraft projects and discuss family / community issues¹². One elected member of the women’s association represents women’s issues on the KUC. The Project should seek to involve the women’s associations as much as is feasible, as women are closely involved in the management of water in the household and have shown consistent interest in participating in community decision-making.

Roron-rikirake (Youth Groups)

Like the Women’s Associations, the majority of churches in Kiritimati Island have an active youth group, with between 10 and 50 regular participants per group. Youth group leaders are often requested to represent the church or youth society at the KUC and other government meetings. The Project should

¹² Personal communication, Women’s Association Focus Group, 31 October 2007, London.

aim to involve the youth, where possible, in decision making and community mobilization activities¹³.

Other Associations

There are a number of other groups, both formal and informal, that operate to represent and support various business organizations. These groups represent industries such as: (i) commercial pet fish; (ii) hotels and guesthouses; (iii) diving; (iv) commercial fishing; (v) fly-fishing guides; and (vi) other small business activities.

2.2.6 Project Communities

The current population for Kiritimati Island is estimated to be 5,965 persons¹⁴.

Table 2.3 Population Projection for Kiritimati Island in 2007

Village	Gender		Total
	Male	Female	
London	1,099	1,034	2,133
Tabwakea	1,145	1,048	2,194
Banana	724	640	1,364
Poland	140	134	274
<i>Total</i>	3,108	2,857	5,965

Source: 2005 Kiribati Census and South Pacific Commission (Demography Division)

Assuming the same growth projection (7.99% p.a.), the population in Kiritimati Island is expected to reach approximately 11,300 persons in 2015, with the two key growth areas planned for Tabwakea North / Terawanbakoa and New Banana / Main Camp (Table 2.4), with only minor population increases in London, Banana and Poland villages.

Table 2.4 Project Population for Kiritimati Island in 2015, including Village Distribution

Village	Total
London	2,350
Tabwakea	3,550
New Banana / Main Camp	3,500
Banana	1,400
Poland	500
<i>Total</i>	11,300

A key assumption of the Project is the provision of improved water supply and sanitation for both the present population and to accommodate, where possible, for growth to a planning horizon (and Project population) of 2015. Therefore, given that the Project will incorporate all villages in Kiritimati Island, the Project beneficiaries will be an initial 5,965 persons at present and a target

¹³ Initial consultation with youth groups indicate that young people in Kiritimati Island are eager to be involved in community resource management, yet currently suffer from low levels of opportunity and as such low confidence.

¹⁴ Refer to 2005 Kiribati Census, which indicated 5,115 residents in 2005. The projected 2007 population is derived from the 2000-2005 growth rate of 7.99% p.a.

population of 11,300 persons in 2015. The later target may be reached prior to, or after 2015 depending on factors such as in-migration, birth and death rates etc.

At present there are 591 water supply customer in Kiritimati Island; 516 active customers and 75 disconnected customers. Of the active customers there are 434 household connections, 21 government connections and 61 business connections. Within the Project planning horizon of 2015, it is expected that the numbers of active customers will be 1,166, comprising 1,069 household connections, 21 government connections and 76 business connections.

2.2.7 Capacity of Stakeholders for Project Involvement

In general, the capacity of stakeholders is diverse. There are a small number of groups that can play a significant role in increasing the effectiveness of Project implementation. The existing church groups provide a stable platform on which community mobilization and awareness / education programs can build. Likewise, the women's groups and youth groups (also attached to the churches) have shown a keenness to be involved in community decision-making and should be supported where possible. The private sector is also keen to play a role in both improved infrastructure services and environmental conservation and natural resource management. The business owners acknowledge the clear linkages between sound environmental management and economic (tourism) growth. By contrast, the vast majority of government institutions and government owned enterprises demonstrate limited management capability and a reluctance to involve the community in decision making processes.

All levels of schooling should be closely involved with the Project, across the public health awareness / education and community mobilization components. There are existing programs and syllabus which could be enhanced to add value to the water and sanitation education and awareness messages.

2.3 Consultation and Participation

Participation was ensured during the implementation of the TA through a variety of consultation methods with key stakeholders; at the level of central government departments, government owned enterprises and the urban council, and at the level of project communities, churches and other community groups. A survey of 87 households (13% of households in Kiritimati Island) was undertaken. Prior to commencement of the survey, announcements on local radio¹⁵ ran to share the Project goals and objectives and to encourage active participation from the community in the upcoming surveys. The Household Survey confirmed the need to upgrade both water supply and sanitation services in all Project villages. Detailed analyses of the results of the Household Survey are contained in Annex 1.

A number of focus groups were held with churches, government and community groups, namely: (i) Kiritimati Urban Council; (ii) Island Church

¹⁵ Radio Kiritimati broadcasts across all of Kiritimati Island and also to Tarawa.

Council; (iii) youth group leaders; (iv) women's association; (v) hotel, pet fish, diving and fisherman associations; and (vi) the private sector. In addition to group meetings, individual meetings were held with a number of households and individuals as part of both field observations and design validation.

The Stakeholder Analysis and Community Participation Plan (Table 2.5) was developed within the social and poverty analysis framework and provided the platform for effective interaction with Project stakeholders.

Table 2.5 Consultation and Participation Plan

Stakeholder Group	Justification for Inclusion in Project Design	Type of Participation	Participation Methods		Time Line (By Project Week)	Cost Estimate
			Which Method	Responsibility		
Central Government Ministries						
Ministry of Line and Phoenix Island Development (MLPID)	Implementing Agency and likely Loan Project Implementation Agency Responsible for island development	Shared Decision Making	Meetings, Workshops, Counterpart TA Staffing	All Project Team Members	Ongoing, with Tripartite Meetings in Weeks 3, 6 and 8	Tripartite Meetings & Workshops – A\$1,000 (including catering)
Ministry of Environment, Lands and Agriculture Development (MELAD)	Key Ministry for Land Planning, Land Supply Administration and Environment / Conservation	Shared Decision Making	Meetings, Workshops, Counterpart TA Staffing	Team Leader, Environmental Specialist	Ongoing	Nil
Ministry of Health and Medical Services (MHMS)	Key Ministry for Social Welfare Responsible for water quality testing	Consultation	Meetings	Team Leader, Social Adviser, Infrastructure Engineer	Ongoing	Nil
Ministry of Finance and Economic Development (MFED)	Executing Agency Key Ministry for Financial and Economic Analysis	Consultation	Dialogue Progress Reports	Project Economist	Ongoing	Nil

Stakeholder Group	Justification for Inclusion in Project Design	Type of Participation	Participation Methods		Time Line (By Project Week)	Cost Estimate
			Which Method	Responsibility		
Other Government Stakeholders						
Kiritimati Urban Council	Community-elected representatives for each urban centre on the island	Consultation and Shared Decision Making	Meetings, Workshops	Project Team	Ongoing, with interaction at Council Meetings in Weeks 2 and 7 / Individual Meetings during HH Survey Period	Nil
Kiritimati Local Land Planning Board	Responsible for land use planning	Consultation	Meetings	Team Leader	Ongoing	Nil
Community and Community Groups						
Project Communities / Households	Direct project beneficiaries	Consultation	Surveys, Focus Groups	Social Adviser, Team Leader	Week 2 (Focus Group) / Weeks 3 to 5 (Surveys) / Weeks 6 and 7 (Project Design Validation Meetings)	Household Survey and Existing Infrastructure Survey - A\$4,000 / Validation Meetings
Churches	Key community pillars and source of support for communities within I-Kiribati society Provide guidance on household and personal hygiene	Consultation	Focus Groups	Social Adviser, Team Leader	Weeks 3 and 4	Focus Group – A\$100
Schools	Key access point for behavioural change in water and sanitation hygiene education and environmental	Consultation	Meetings	Social Adviser, Environmental Specialist	Weeks 4 and 5	Nil

Stakeholder Group	Justification for Inclusion in Project Design	Type of Participation	Participation Methods		Time Line (By Project Week)	Cost Estimate
			Which Method	Responsibility		
	education					
Unimane and Nei Baneawa	Recognized group within community with strong understanding of water and sanitation issues; contemporary voice for women and women's affairs	Consultation	Focus Group	Social Adviser	Week 4 and 5	Focus Groups – A\$100
Youth Associations / Youth Groups	Growing percentage of the population; future managers of island resources	Consultation	Focus Group	Social Adviser	Weeks 4 and 5	Focus Group – A\$100
Private Sector and Government Enterprises						
Business Owners (Private & Government Owned)	Drivers of economic growth (inc. employment provision)	Consultation	Individual Meetings	Social Adviser, Environmental Specialist	Weeks 3 to 7	Nil

3. Household Survey

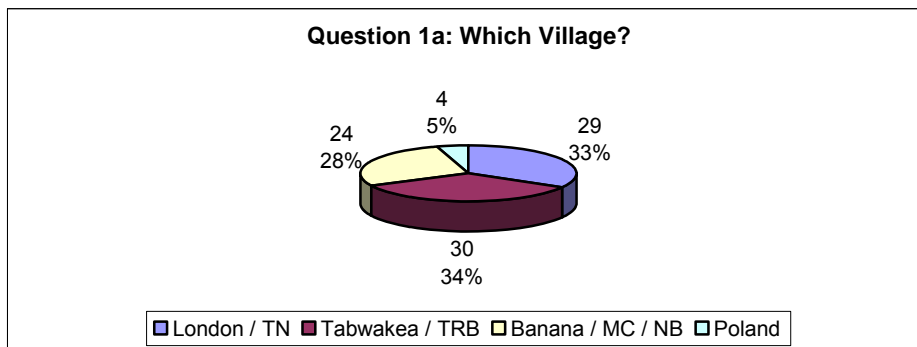
3.1 Methodology

In order to assess water usage, aspirational needs and willingness to pay, a survey of the Kiritimati Island population was undertaken during October 2007. In accordance with the *ADB Handbook on Social and Poverty Analysis*, a survey sample of approximately 10% of the population was selected as a fair representation. To further enhance population representation, the survey sample was stratified in accordance with numbers of households in Kiritimati Island, based on the 2005 Census (see Table 3.1 and Figure 3.1).

Table 3.1 Stratified Sampling Based on Number of Households

Village	2005 Census		2007 Household Survey	
	No. of HH	% of Total HH	No. of HH	% of Survey HH
London	266	37.9%	29	33.3%
Tabwakea	252	35.9%	30	34.5%
Banana	151	21.5%	24	27.6%
Poland	33	4.7%	4	4.6%
Total	702	100.0%	87	100.0%

Figure 3.1 Household Survey Sample by Villages



Village Key: TN – Tennessee; TRB – Terawanbako; MC – Main Camp; NB – New Banana

A survey team of four was assembled from the MLPID Employment Register and trained in undertaking the household survey. The training focused on accuracy and completeness of data collection. The survey was tested and a small number of questions refined to improve clarity. The survey was also translated into I-Kiribati, allowing faster enquiry and completion by the survey team.

Each household was surveyed by a team of two persons. One surveyor would be responsible for undertaking the survey with the respondent, whilst the other surveyor would take additional notes and other observations. This provided additional information and also confirmation / validation of responses, particularly to open-ended questions.

3.2 Summary: Key Implications of the Household Survey for Project Design

A detailed analysis of the household survey results is contained in Annex 1, with a copy of the survey shown in English and I-Kiribati in Annex 2. The key findings and implications of the survey for the project design are shown in the following table.

Key Issue	Implication for Project Design
Household Size	Design for households of 9-10 persons each and not the national average of 6.3 persons or Kiritimati Island average of 6.7 persons.
How much water each day?	London and Poland should be planned for approx. 70-80 l/p/d as these villages have limited or no access to usable groundwater. Tabwakea and Banana should be planned for approx. 50-60 l/p/d as these villages have access to reasonable quality groundwater for non-potable uses.
Multiple sources for multiple uses (including wells)	The design needs to incorporate multiple water sources (potable and non-potable) for multiple household uses where possible. For Tabwakea and Banana, where residents have access to groundwater, new well construction and improvements for existing wells should be supported for non-potable use.
Utilising rainwater	The design needs to incorporate rainwater tanks into the available options for potable water supply. Ability of private leaseholders to afford rainwater tanks needs to be factored into the design.
Lack of supply	A key objective of the Project needs to be to improve the supply of potable water to a standard that all households have supply for 24 hours a day, 7 days per week (particularly for Banana village).
More than one HH on one lease plot	Provision should be made for additional connections and household low-flow tanks for lease plots which have more than one household residing there.
Water quality	The design needs to ensure that adequate treatment occurs for piped water along the entire system.
Public health	The Project should incorporate an education and awareness program to continue promoting household water treatment techniques and the linkages to public health.
Willingness to pay	The Project should maintain the practice of charging households for provision of water and ensure that billing is regular and accurate, based on reliable metering systems.
Type of sanitation system	The design should be aimed at supplying pedestal toilets with either cistern or bucket flush facilities to <u>all</u> households. The ability of private leaseholders (both now and in the future) to afford these systems needs to be a high priority.
Compost toilets	The Project should <u>not</u> install compost toilets because of very low community and government acceptance of the technology.
Cleaning septic tanks	The Project needs to ensure that all septic systems are cleaned out under a regular and systematic pumping regime. The Project also needs to ensure that any education and awareness program includes instruction in proper use and maintenance of septic systems.

4. Social and Poverty Analysis

4.1 Policy Setting

The Government of Kiribati and the ADB have assessed poverty in Kiribati in increasing detail over recent years and as a result developed policies and strategies to promote poverty reduction and social development. To provide a context for the social and poverty (hardship)¹⁶ analysis for this Project, a brief discussion on the National Development Strategy, ADB Poverty Reduction and the Millennium Development Goals is provided.

4.1.1 National Development Strategy (2004-2007)

The National Development Strategy (NDS), 2004-2007, sets out the development framework for Kiribati for the current period¹⁷. The NDS has six key policy objectives, namely; (i) promote economic growth through prudent investment, (ii) provide for equitable distribution of opportunities and wealth including development of Kiritimati Island, (iii) increase the efficiency and performance of the public sector (iv) equip people to manage change especially in education, health and culture, (v) ensure the sustainable use of physical resources and (vi) protect and use financial reserves wisely. The Ministry of Finance and Economic Development (MFED) is currently preparing a new draft NDS which is expected to be released in quarter 1, 2008. The new plan, called the Kiribati Strategic Development Plan, 2008-2011, has 6 major policy areas, namely, (i) economic growth and poverty reduction, (ii) education, (iii) health, (iv) environment, (v) governance, and (vi) infrastructure.

To address the imbalance of social and economic development between the Gilbert Group to the west and the Line Islands to the east, the GoK announced in 2004 a strategic emphasis on promoting outer island growth centers. Kiritimati Island has been designated as the main potential growth island in Kiribati.¹⁸ The strategy as outlined in the NDS for Kiritimati Island identifies many potential opportunities including eco-tourism, agriculture (primarily copra), fisheries and space telecommunications. The NDS also targets Kiritimati Island as accommodating an increasing island population migrating from the overpopulated islands in the Gilbert Group, particularly South Tarawa.

4.1.2 ADB Poverty Reduction Policy

ADB's poverty reduction strategy establishes poverty reduction as its overarching goal. The three pillars of the ADB's Poverty Reduction Strategies (Good Governance, Social Development and Equitable, Pro-poor Growth) recognises that no single answer or specific policy which will provide strategies for hardship alleviation¹⁹. The strategy provides that ADB enter into a partnership with each government to develop a National Poverty Reduction Strategy (NPRS) which will also support ADB's operational strategy for the

¹⁶ Poverty is defined differently in the Pacific Region, see description in Section 4.2.1.

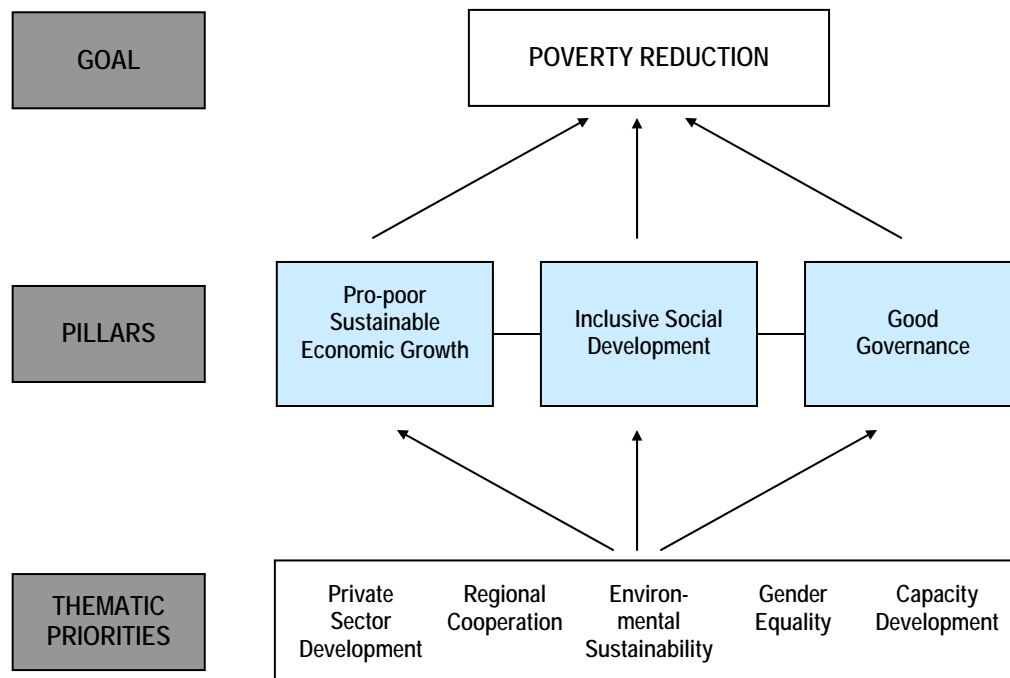
¹⁷ The MFED is currently preparing a new draft NDS which is expected to be released in Q1, 2008

¹⁸ Other potential growth islands nominated by Government include Tabituea North (southern Gilbert Group) and Butaritari (northern Gilbert Group). Based in MISA, UNDP has been Undertaking Island profiling as a basis to identify other potential growth centers.

¹⁹ ADB (2002) 'Kiribati Poverty Assessment – Assessment of Hardship and Poverty'

country. A Poverty Partnership was also established between the Government of Kiribati and the ADB in September 2003 and promotes a vision which is in line with the three poverty reduction pillars shown in Figure 4.1, namely pro-poor economic growth, inclusive social development and good governance²⁰. ADB identifies five thematic priorities which support these pillars: (a) gender equality, (b) environmental sustainability, (c) private sector development, (d) regional cooperation, and (e) capacity development²¹.

Figure 4.1 ADB Poverty Reduction Strategy



Source: ADB, 2007, 'Handbook on Social Analysis – A Working Document', p.2

4.1.3 Millennium Development Goals (MDGs)

The Government of Kiribati's commitment to Goal 7 of the MDGs, environmental sustainability, is of greatest relevance to this Project. In particular, within Goal 7 are two key targets: (i) halving the proportion of people without sustainable access to safe drinking water by 2015 (Target 10); and (ii) increased access to improved sanitation by 2015 (Target 11).

In South Tarawa, the piped water supply serves around 67% of the urban population while in Kiritimati Island, piped water is accessed by approximately 69% of households²². Therefore, for this Project to assist the GoK in achieving Target 10 of the MDGs for Kiritimati Island, the Project should aim to supply a minimum of an additional 16% of households (or 98 HHs) with access to sustainable and safe piped drinking water. At present in Kiritimati Island, 62% of households have access to pedestal toilets (43% with cistern

²⁰ Refer to ADB (2002) 'Poverty Partnership between GoK and ADB', p.2

²¹ Refer to ADB (2007) 'Handbook on Social Analysis – A Working Document', p.3

²² Current water supply is based on TA 4456-KIR Existing WSS Infrastructure Survey (432 households of 624 in total)

flush and 19% with bucket flush), 3% have access to squat toilets, 13% compost toilets, 9% pit latrine, 52% bush, 48% access the ocean and lagoon beaches and 14% of households have no access to any form of sanitation²³. In order to assist the GoK in achieving Target 11 of the MDGs for Kiritimati Island, the Project should aim to improve sanitation for an additional 23% of households (or 144 HHS as a minimum), that is, 14% of households who have no access to any sanitation system (high priority) and the 9% of households who access pit latrines.

4.2 Poverty and Hardship in Kiribati and Kiritimati Island

4.2.1 Defining Poverty in Kiribati

As defined in the ADB-GoK Poverty Partnership, the term poverty refers to a deprivation of essential assets and opportunities to which every human is entitled. Generally in the Pacific region, poverty of opportunity is of greater concern than income poverty. Poverty or poor, (*te kainnano ni kainnano* in I-Kiribati), is particularly offensive in Kiribati and causes insult when used to describe a person or group of people. Hardship, or *te maiu ni kanganga*, is the term commonly used in Kiribati and describes one who is having difficulty in providing for the family's needs, is living on credit or is *bubuti*, that is, regularly begging from relatives and friends²⁴.

ADB's most recent assessment of hardship and poverty in Kiribati found that that the level of absolute poverty in Kiribati is low²⁵. In Kiribati, hardship most commonly manifests itself not through income poverty but through poverty of opportunity, e.g. lack of access to basic services, land, infrastructure, employment opportunities, standards of good governance and equal opportunities across gender and age²⁶. People who lack income, assets or family support were considered to be facing considerable hardship when assessed during the ADB Hardship in Kiribati study in 2005²⁷. The following categories of people were identified as among the most disadvantaged and therefore most likely to be experiencing hardship:

- Large families with low incomes;
- People who are unemployed due to having left school early;
- People without assets and property;
- Employed people who have visitors (long term or regular) that do not contribute to the household budget;
- People who are not productive or lazy, and always ask for *bubuti* (assistance for basic needs from immediate or wider family members);
- Those in poor health;
- Single mothers with several children and little income;
- Elderly people with no children (and therefore no safety net beyond the Government Pension; A\$40/month);

²³ Households access more than one type of sanitation system. Data sourced from TA 4456-KIR Island Wide Infrastructure Survey and TA 4456-KIR Household Survey.

²⁴ *Bubuti* in this context is referring to regular demands for resources, which is distinctly different from the traditional I-Kiribati practice of reciprocal sharing.

²⁵ Refer to ADB (2005) '*Priorities of the People: Hardship in Kiribati*'

²⁶ Refer to ADB (2002) '*Kiribati Poverty Assessment – Assessment of Hardship and Poverty*'

²⁷ The ADB Hardship in Kiribati study also included fieldwork in Kiritimati Island.

- 'Orphans' (including children whose parents have died and who are separated), and children of alcoholic parents;
- People living in overcrowded, unsanitary conditions;
- 'Homeless' people, who do not live on their home islands and have no means to build their own homes where they live (commonly referred to as squatters, who most often stay in or adjacent to a church or community *maneaba*);
- Alcoholics;
- People who are paid to cultivate *bwaibwai* (a local yam) and catch fish for others; and
- People without access to bank loans or other lines of credit²⁸.

4.2.2 Poverty Line Analysis and the Household Economy

The Poverty Line, as defined by the ADB²⁹, is a calculation of the minimum income (or expenditure) required, firstly, to provide an individual with a basic subsistence diet, (measured in terms of the minimum daily calorie intake required for human survival, which is internationally benchmarked at 2,200 calories/day), termed the "Food Poverty Line", plus, secondly, an additional allowance to meet the costs of basic non-food expenditure. Together these two components make up the Poverty Line.

Income/expenditure levels, living conditions and levels of consumption of own food production differ widely throughout Kiribati, particularly between South Tarawa and the Outer Islands. Due to the marked differences between these conditions, two poverty lines have been calculated; one for South Tarawa households and the other for outer island households.

For the Outer Islands, the Food Poverty Line (FPL)³⁰ is estimated to be A\$167 per capita per annum (pc p.a.) in 1996 prices, which equates to A\$202 pc p.a. in 2007, whilst South Tarawa is estimated to be A\$600 pc p.a. in 1996 prices, which equates to A\$725 pc pa. This difference reflects the much higher level of consumption of own-production food that is possible in the outer islands compared to South Tarawa. Adjusting for the estimated requirement for additional non-food basic-needs expenditure to give a minimum standard of living in each location, indicates a Poverty Line (PL) of A\$907 pc p.a. in South Tarawa and A\$243 pc p.a. in the outer islands (2007 prices).

Due to the uniqueness of Kiritimati Island, assessing it against both the Food Poverty Line and Poverty Line of South Tarawa and the outer islands is complex. For the purposes of this study, it has been assumed that Kiritimati

²⁸ This also includes government employees who are casual staff. Only permanent staff can apply for credit from the Development Bank of Kiribati.

²⁹ Refer to ADB (2002) '*Kiribati Poverty Assessment – Assessment of Hardship and Poverty*', p.4

³⁰ Basic Needs Poverty and Food Poverty lines for South Tarawa and the Outer Islands were calculated using data from the 1996 HIES (South Tarawa, Onotoa and Butaritari) and a model subsistence diet (based on an adult food requirement of 2200 calories/day) provided by the Nutrition Unit of the Ministry of Health. The diet was costed separately for South Tarawa and Outer Island households to take account of the varying availability of own-production food. The results and conclusions must however be treated with some caution as the 1996 HIES data is not considered to be very robust or reliable. The results of the 2006 HIES are available (only in draft format) and initial analysis of income and expenditure shows reasonable correlation with the analysis presented from the 1996 HIES.

Island villages (particularly Tabwakea, Banana and Poland) are more reflective of outer island villages in wider Kiribati due to:

- Large distances from markets in South Tarawa and elsewhere (i.e. Fiji, Australia and USA), and as such high transport costs;
- Relatively high prices for staple food products such as rice, flour and sugar (when compared with prices in South Tarawa);
- High levels of consumption of own-production food such as coconut products, fish, fruit and some vegetables; and
- Large proportion of the population involved in informal employment activities such as fishing, copra cutting, bread making, preparing roof thatching, sewing, local cigarette making and handicrafts.

The exception to this assumption in Kiritimati Island is the village of London. The majority of residents in London live in government housing, with one or more household members involved in formal government employment. The majority of these houses have piped water supply and septic sanitation systems (comprising a pedestal toilet with cistern or bucket flush, and septic tank of concrete block construction). Table 4.1 shows the average income for London is 37% higher (A\$1,602 pc p.a.) than the reported average for Kiritimati Island (A\$1,172 pc p.a.) and is more than twice the average income of households in Tabwakea (A\$788 pc p.a.).

Table 4.1 Income and Expenditure Per Capita Per Annum by Village

	Average Income ^c	Average Expenditure	Net Income
Kiribati ^a	\$1,418	\$1,530	-\$112
South Tarawa	\$1,531	\$1,756	-\$225
Outer Islands	\$1,324	\$1,313	\$11
Kiritimati ^b	\$1,172	\$992	\$180
London	\$1,602	\$1,292	\$310
Tabwakea	\$788	\$878	-\$90
Banana	\$1,131	\$798	\$334
Poland	\$1,186	\$834	\$352

Notes:

^a – Data from 2006 HIES (Draft Only – November 2007)

^b – Data from TA 4456-KIR Household Survey

^c – Information in Table 4.1 does not include income from subsistence activity.

The lowest recorded income pc p.a. was for the village of Tabwakea, which was also the only village in Kiritimati Island to show a negative net income (-A\$90 pc p.a.). Both of these figures reflect the lower level of formal employment in Tabwakea village compared with London and to a lesser degree Banana and Poland villages. It is also observed that Tabwakea derives a much larger proportion of its income (and potential expenditure savings) from subsistence and informal activities. The income and expenditure data for Tabwakea provides an indication of the type of future private leasehold migrants to Kiritimati Island: (i) high levels of unemployment; (ii) greater reliance on the natural environment for own-production/subsistence activities (including fishing and coconut products for own consumption, on-

selling and housing); and (iii) greater propensity for social instability due to increased levels of hardship.

Whilst average income is below both the Kiribati national (A\$1,418) and outer islands (A\$1,324) averages, net income across the majority of Kiritimati Island is much greater. Average income is also lower in Kiritimati Island. This may be due to limited financial data on subsistence activities. Subsistence activities may be shown by default in the available data as reduced costs for food products. The high proportion of subsistence activity in the Line Islands³¹ when compared with South Tarawa and the Kiribati average and this may account for some of the reductions in expenditure costs in Kiritimati Island (see Table 4.2). Table 4.2 also shows that a much greater proportion of the population are involved in economic activities (i.e. excluding 'unemployed' and 'not active') – 52.7% in the Line Islands compared with 38.3% across the whole of Kiribati.

Table 4.2 Percentage of Persons aged 15+ Years by Economic Activity

Economic Activity	South Tarawa	Line Islands	Kiribati
Wages & Salaries	30.8%	21.5%	22.8%
Own Business	3.5%	11.0%	4.2%
Subsistence	4.1%	20.2%	11.3%
Unemployed	38.4%	33.2%	38.2%
Not Active	23.2%	14.1%	23.5%
Total	100.0%	100.0%	100.0%

Source: 2006 HIES (Draft), p.13

Based on the results of the expenditure analysis from the TA Household Survey, 16% of the population in Kiritimati Island are below the FPL for outer islands of A\$202 pc p.a. and 24% below the PL for outer islands of A\$243 pc p.a. (Table 4.3).

Table 4.3 Poverty Incidence in Kiribati and Kiritimati Island

% of Households Below	Recorded Income		Recorded Expenditure	
	Food Poverty Line (FPL)	Poverty Line (PL)	Food Poverty Line (FPL)	Poverty Line (PL)
South Tarawa ^a	46	59	39	51
Outer Islands ^a	65	69	39	50
Kiritimati ^b	7	11	16	24
London	0	7	3	3
Tabwakea	13	17	20	33
Banana	8	13	17	29
Poland	0	0	75	75

Notes:

^a – Data from 1996 HIES

^b – Data from TA 4456-KIR Household Survey

³¹ Refer to 2006 HIES Survey for Kiritimati Island and Tabuaeran (Fanning)

Encouragingly, the percentage of Kiritimati Island households below the PL and FPL for both income and expenditure is less than those recorded in South Tarawa and the outer islands. This is recognition of the increased economic opportunities available in Kiritimati Island; that is, supporting the economic data which indicates a higher percentage of the population in the Line Islands who are involved in private business - 11% compared with 3.5% in South Tarawa and 4.2% across all of Kiribati.

The incidence of poverty relating to expenditure was highest in the villages of Tabwakea and Banana, with 20% and 17% respectively for FPL and 33% and 29% respectively for PL. Therefore, the poverty line analysis depicts higher levels of (economic) hardship in the villages where private leasehold and freehold land is most common. By contrast, those living in Government housing (i.e. London village) experience low levels of (economic) hardship.

Despite the high levels of hardship in Tabwakea village, very few residents suffer from hunger or malnutrition. Residents are able to legally access common land and sea resources (such as fish and coconut products) as long as resources are harvested outside the designated protected areas on the island. As part of the AusAID KWASP design process, comment was sort from residents regarding life in Kiritimati Island³². They noted that “here you can live without money – fish, coconuts and toddy” and “free to take coconuts and make money” and “no hardship, easy living”. Balanced with access to common resources on State lands is the high dependence on imported staple food, such as rice, flour, sugar and tinned meats. Kiritimati Island often experiences shortages of these staple foods due to irregular shipping and this can raise household food expenditure appreciably³³.

There are a high percentage of households shown to be below the poverty line in Poland, however this is perceived to be more of a reflection on the small number of households surveyed (4) and not a reflection on the poverty or hardship levels of Poland residents. Field observations on two separate missions to Poland indicate that like other villages in Kiritimati Island, there are no visible signs of malnutrition or hunger. If households require additional income for a specific reason, then it is common in Poland for the men of working age to spend between 1 week and 2 months in the field cutting copra, which is in relative abundance on the southwest side of Kiritimati Island. This product is then on-sold to London (then Tarawa) and the revenue distributed to the Poland workers and retail / wholesale outlets in Kiritimati Island.

4.2.3 Poverty Impact Ratio

The Project Poverty Impact Ratio (PIR) is shown in Table 4.4. The net benefit to the government/ economy is **-4,046,000** due to the relatively high infrastructure costs when compared with the low level of financial returns from water supply services (FIRR is 4.21% compared to economic opportunity cost

³² Refer to Ranck (1995) Socio-cultural Factors of Importance in the Design and Maintenance of Water Supplies for Kiritimati Island

³³ For instance, bags of rice, which usually trade for between A\$20-25/bag can rise to as much as A\$80/bag during periods of limited supply. Shipping, on average, is every 2-3 months from Tarawa.

of capital of 10%). The net benefits to labor is approximately 133,000 as a result of higher income for workers during the project implementation compared to current economy activities. For consumers, the net benefit is 4,227,000 due primarily to the increase in water supply combined with the avoidance of medical costs and income losses due to reduced incidence of water-borne diseases. This results in a PIR of 2.98, indicating that the poor (i.e. those in economic hardship) in the labor and consumer's group will benefit the most from the Project.

Table 4.4 Project Poverty Impact Ratio

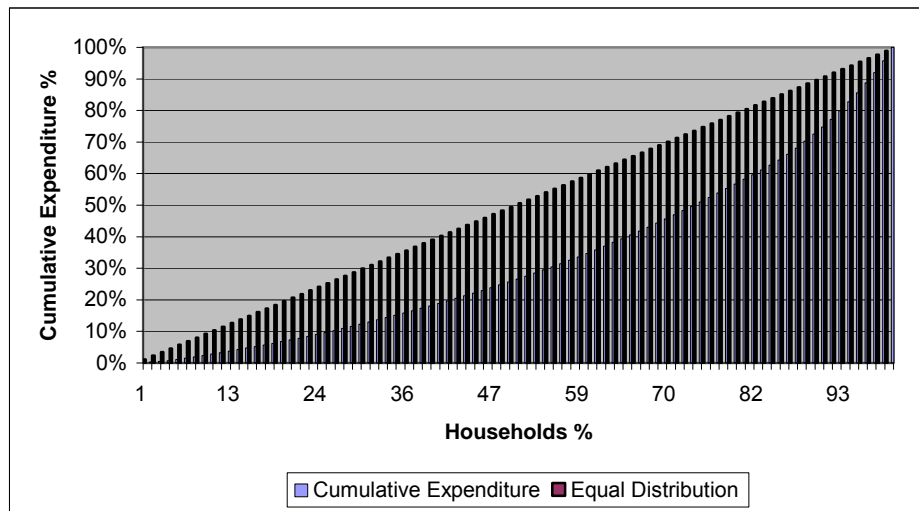
	Government/ Economy	Labor	Consumers	Total (,000)
Economic Returns <u>Less</u>				
Financial Returns	637	133	4,227	4,997
Financial Returns	(4,683)			(4,683)
Benefits	(4,046)	133	4,227	314
Proportion of Poor (%)	3	33	24	
Benefits to the Poor	(121)	44	1,014	937
Poverty impact ratio				2.98

4.2.4 Household Income and Affordability

Traditional I-Kiribati culture is structured around equality and even distribution of resources through the practice of *bubuti*³⁴. As this egalitarian framework begins to breakdown, from increasing monetisation, there is an increasing inequality between different sections of the community. This is also a growing trend in Kiritimati Island, as displayed in the differences between the villages of London and Tabwakea. As shown in Table 4.1 above, residents in London earn on average more than two times that of the residents from Tabwakea.

Figure 4.2 displays the Lorenz Curve for expenditure distribution, plotting (actual) cumulative expenditure against equal distribution. The figure suggests that around 74% of households account for 50% of expenditure and that the 26% of households with the highest levels of expenditure account for the other 50% of total expenditure (i.e. H26 – 50%; L74 – 50%). This very closely reflects the expenditure distribution in South Tarawa, which showed 75% of households account for 50% of expenditure and that 25% of household account for the other 50% of total expenditure.

³⁴ Refer to ADB (2002) 'Kiribati Poverty Assessment – Assessment of Hardship and Poverty', p.8

Figure 4.2 Kiritimati Island Expenditure Distribution (Lorenz Curve)

There are economic benefits for the villages of Tabwakea and Banana through the promotion of well water for some non-potable uses. This will be a key strategy in combating some of the inequalities between these villages and London village. It is estimated that London residents require 90 l/p/d of piped water supply, whereas Tabwakea and Banana residents, with access to well water, only require 60 l/p/d of piped water supply. Therefore, on average households in Tabwakea will potentially save A\$51 per month in water bills and average households in Banana potentially save A\$45 per month³⁵.

Even though the percentage of households below the poverty line in Kiritimati Island is below the national average, there still remain a number of households that would require assistance to cover the capital cost of water and sanitation system improvements. As such, the project proposes to implement 'lifeline tariffs' that allow households to spread the capital cost of pipe connections, septic tanks etc. over a 6-12 month period rather than incur a higher initial setup cost.

4.2.5 Dependency Ratio

Based on the income and expenditure analysis of the Household Survey, the dependency ratio for Kiritimati Island is 0.75 (i.e. 1 income earner for every 3 dependents). The Kiribati national dependency ratio is 0.76³⁶, which is mid-ranking among Pacific Developing Member Countries (PDMCs) of the ADB. As noted by the ADB, the relatively high dependency ratio in Kiribati reflects: (i) a combination of high birth rate, (ii) 39% of the population being below 15 years, and (iii) approximately 1,500 working age adults (mostly males –

³⁵ The savings are derived by calculating the "without a well" and "with a well" scenarios. For example, in Tabwakea, with an average household size of 11.3 persons and without a well they would use on average 90 l/p/d, which equates to 30.51KL/month. Using the new water tariff (A\$1.20/KL for the first 18KL and then A\$5.00/KL thereafter, the "without a well" scenario would cost the Tabwakea household on average A\$84.15/month. The "with well" scenario, assuming only 60 l/p/d of piped water is used, this equates to 20.34KL and A\$33.30/month. Therefore the potential average saving per month is A\$50.85.

³⁶ Refer to 1996 HIES

equivalent to 7.5% of the resident male labour market) are working overseas³⁷.

4.2.6 Landlessness and Overcrowding

One of the most significant factors affecting hardship in Kiritimati Island is overcrowding and landlessness. Both of these factors stem from delayed land releases for private leasehold plots. In June 2005 the Government approved the process for releasing up to 600 private leasehold plots in Kiritimati Island. The first 300 plots include: (i) 150 for existing Kiritimati Islands residents; and (ii) 150 for residents from South Tarawa. As an indication of the demand for leasehold plots, 699 applications were filed with MELAD (LMDK) by the closing date (March 2007) for the 150 Kiritimati Island residents plot release. The extremely slow pace at which land is released in Kiritimati Island³⁸, combined with steady migration from Tarawa, is continuing to cause overcrowding issues in London, Banana and particularly Tabwakea village³⁹. The vast majority of landless families are able to reside with extended family members. However, sometimes there is insufficient space and they must then be housed in, or adjacent to, church *maneabas*, or squat as illegal tenants on state land.

4.3 Social Safety Nets

As hardship becomes a more prevalent issue in I-Kiribati society, the Government of Kiribati has instituted three policy initiatives to assist, namely: (i) copra subsidy; (ii) elderly pension; and (iii) free Junior Secondary Schooling (JSS). The copra subsidy accounts for 25% of the selling price for copra (equivalent to A\$0.15/kg). At present there are 61 persons (30 men and 31 women) receiving the elderly pension in Kiritimati Island, which is available to all who are 70 years or older and equates to A\$40/month. The elderly pension is administered by the Kiritimati Urban Council on behalf of MISA. Lastly, the number of JSS students taking advantage of no tuition fees in Kiritimati Island is 387⁴⁰.

As discussed in Section 4.3.6, the I-Kiribati society is based around the concept of sharing and reciprocal relationships. The practice of sharing resources has provided an effective social security net, particularly for those with a higher chance of experiencing hardship in Kiritimati Island. These include, but are limited not to, people who are: (i) unemployed or not in permanent employment (which can affect their ability to access credit); (ii) living in overcrowded conditions; (iii) landless and/or squatting; (iv) widows, orphans and the aged; and (v) households which only have one income source, formal or informal.

The State owned land in Kiritimati Island, and more specifically the natural resources available from this land, is also another important social safety net.

³⁷ Refer to ADB (2002) 'Kiribati Poverty Assessment – Assessment of Hardship and Poverty', p.10

³⁸ There are a range of views at senior Government levels as to: (i) how quickly; and (ii) what type of land tenure system should be applied to Kiritimati Island. This debate has led to the land release program being deferred over the last 4 years.

³⁹ Refer to ADB (2004) TA 4257-KIR Supporting Land Use Management on Kiritimati Island: Final TA Report Volume 1, p.15

⁴⁰ MEYSD records show 387 JSS students in 2007: 130 in Form 1, 140 in Form 2 and 117 in Form 3.

A number of respondents from the TA Household Survey and other anecdotal evidence clearly shows that a large percentage of the population enjoy living in Kiritimati Island, when compared with either South Tarawa or their 'home island' in the Gilbert Islands Group. These natural resources also allow a large proportion of the population to obtain income from the informal sector. Table 4.5 demonstrates the wide array of informal activities undertaken in Kiritimati Island and also the potential economic return from each. Income derived from 'free access' to the island's natural resources, such as fish and coconut products, figure strongly.

Table 4.5 Range of Informal Activities for Kiritimati Island

Main Informal Activity	Kiribati name	Value Estimate (AUD)
Baking - bread/cakes	<i>kariki</i>	1 loaf (2 halves) - \$2.00
Sweets and candy	<i>kanre</i>	\$0.20 per candy
Block making	<i>karao buriki</i>	\$1.80 per block
Roof thatching	<i>raranga ato</i>	\$2.50 per thatch
Money lending	<i>tango mwane</i>	10% interest
Cigarette making	<i>ni moko</i>	\$0.30 per local cigarette
Toddy	<i>timbakatai</i>	\$1.00 per cup
Cordial	<i>kaimaimai</i>	\$5.00 per bottle
Coconut oil	<i>karaoan te bwa</i>	\$5.00 per bottle
Coconut string	<i>te kora</i>	\$3.00 per 20 metre
Ice block making	<i>karao aiti</i>	\$0.20 per ice block
Hairdressing	<i>arao ira</i>	Free/contribution
Sewing	<i>te itutu</i>	\$2.00 per hour
Fishing products (tuna jerky)	<i>te ika eg. taari</i>	\$1.00 per cupful
Handicrafts	<i>karao bwain Kiribati</i>	\$5.00-\$10.00 for a canoe
Vegetables/fruit growing	<i>te ununiki</i>	\$2.00 per cabbage
Food 'street' vendors	<i>kamwarake</i>	\$2.50 per plate
Hiring DVD / Burn CD or DVD	<i>tango birim / karaoan te CD, DVD</i>	\$2.50/day; \$5-10 each
Boat hire	<i>tangoan te booti</i>	\$15.00 per day
Passport photos	<i>passport tamnei</i>	\$2.50 per photo
Secondhand clothes	<i>kaboan kinikai</i>	\$1.00-\$10.00 per item
Copra harvesting	<i>oro ben</i>	\$0.60 per kilogram
Sleeping mats	<i>kie ni matu</i>	\$50.00 per single mat

Source: Draft KIDP, 2006 and LMDK and MLPID, December, 2007

4.4 Socio-Cultural Norms and Values

As discussed in Section 4.2.4, Kiribati is a society in transition, moving from a society based on a subsistence lifestyle to one interspersed with modern ways of living. While access to land and the extended family were once the cornerstone for survival, this is being increasingly replaced by monetization and an aspirational society. The break up of the *kainga* (a small group of

extended families descended from a common ancestor⁴¹) as the basic social, political and economic organization in Kiribati society is a symptom of this transition. The preference for more western societal structures has increased the self-reliance and independence of households (*mwenga*) in Kiribati. This is true for South Tarawa and especially for Kiritimati Island, where a large proportion of the population are emigrants from outer islands. As such, family kinship reciprocal arrangements exist but are not as strong and as far reaching as on one's home island where complex extended family arrangements can exist. Notably, churches and their wider associations such as youth groups and women's associations, still fulfil some of the traditional role of the *kainga* in I-Kiribati society. The I-Kiribati culture however is still characterized by equality orientated social norms and as such the project is aimed at all Kiritimati Island residents, both poor and non-poor.

Kiribati culture has for generations enabled the I-Kiribati to live sustainably within their environment. Traditionally, I-Kiribati have obtained fresh and brackish water from shallow wells and practiced beach and bush defecation which is the preferred form of toilet on outer islands. This is supported by lessons learnt from other water and sanitation project in Kiribati which note that although "safer" sanitation systems had been installed, beach defecation had only decreased slightly, indicating a reluctance to depart from traditional practices. Recent surveys in South Tarawa and Kiritimati Island⁴² indicate that even when people have access to a cistern-flush toilet, many prefer to practice beach and to lesser degree, bush defecation. Migration to and from home outer islands only perpetuates these practices in the higher density urban village setting. The social taboos associated with handling human waste within I-Kiribati culture is one key explanation as to why the trial of compost toilets under the KWASP failed. The concept of waste retention (i.e. in the compost toilets) is contrary to the I-Kiribati desire to 'wash away' waste after defecation; a practice which is possible using flush toilets and beach defecation. The challenge for the I-Kiribati is to appreciate that such outer island norms and values cannot be sustained in an urban village setting if impacts on their health and the wider environment are to be realized. This will require generational change.

It is also a practice within I-Kiribati society of not undertaking systematic planning for the future. One should concern oneself only with the issues of today; tomorrow is in "God's hands". For many, day to day survival for themselves and family members is their main preoccupation. This mindset of living for today is important in understanding the attitude and approach taken to planning and operation and maintenance of public and private assets. In the context of water and sanitation infrastructure, this presents a challenge for Project sustainability as there needs to be a clear understanding and linkage between the actions of today and the effect and consequences of these actions on the availability of natural resources (e.g. water) for future generations.

⁴¹ MacKenzie, *Kiribati Adaptation Project: Social Assessment Final Report*. 2006.

⁴² See TA4456-KIR Household Survey and ADB (2003), '*Promotion of Effective Water Management Policies and Practices Final Report*'.

There is also a strong aversion to change within I-Kiribati society, as it may result in some individuals and groups benefiting at the expense of others. As such, any community or institutional changes should be framed around long-term goals as short-term programs will inevitably struggle to achieve their objectives.

4.5 Public Health

Kiribati has the fourth lowest human development index (HDI) of all the Pacific developing member countries⁴³ (PDMCs) at 0.515⁴⁴. Average life expectancy at birth is 63.6 years, which is attributed to high infant and child mortality associated with respiratory disease and diarrhoea (the second highest incidence among PDMCs after Papua New Guinea).

The recorded morbidity cases for Kiritimati Island (2002-2007) are listed below in Table 4.6; showing that on average the most common illnesses are (i) cold/flu – 75%; (ii) respiratory illnesses – 22%; (iii) fever – 15%; and (iv) diarrhoea – 5%. The total percentage of the population suffering from water-borne illness is 6.27%, based on available health data. Significantly, these statistics only reflect the number of people who attended the village clinics/hospital and as such the actual number of people with water-borne illness (diarrhoea, dysentery and some hepatitis) is likely to be much higher, perhaps as much as 5 times higher⁴⁵. Therefore, for the purposes of this Project, it has been assumed that approximately 30% of the population suffers from water-borne illness each year.

Diseases related to water and sanitation includes: diarrhoea diseases, urinary tract infections, infectious hepatitis (hepatitis A and E viruses), typhoid, skin, ear and eye infections among others. Vector-borne diseases (e.g. those transmitted through organisms such as mosquitoes or ticks from infected individuals to other persons, or from infected animals to human beings) include: diarrhoea, typhoid, cholera, dysentery, tuberculosis, anthrax, ophthalmia, intestinal worms, skin disorders, pneumonia, parasitism, malaria, and hepatitis A.⁴⁶

In estimating the potential health benefits or health cost savings attributable to the Project an assumption of 30% reduction in waterborne/ vector-borne diseases was used. This assumption reflects the estimated health impact of

⁴³ Refer to ADB (2002) *'Kiribati Poverty Assessment – Assessment of Hardship and Poverty'*

⁴⁴ HDI is a summary composite index that measures a country's average achievements in three basic aspects of human development: (i) health (life expectancy at birth), knowledge (combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio), and a decent standard of living (GDP per capita (PPP US\$)) (Human Development Report Office of UNDP).

⁴⁵ Personal Communication, Head Doctor, Kiritimati Island Hospital, 19 November 2007.

⁴⁶ Kundsen A.B., Sloof, R. Vector-Borne Disease Problems in Rapid Urbanization: New Approaches to Vector Control. *Bulletin of the World Health Organization* 1992; 70(1): 1-6.

water supply, sanitation and hygiene interventions as presented in the *World Development Report: Investing in Health* (World Bank, 1993).⁴⁷

Table 4.6 Morbidity for Kiritimati Island for 2002-2007

Medical Condition	2002	2003	2004	2005	2006	2007 ^a	Total	Average p.a.	% of Pop'n p.a. ^b
Diarrhoea	196	162	126	262	477	88	1,311	238.4	4.83%
Dysentery	30	68	27	118	119	26	388	70.5	1.43%
Pneumonia	12	38	105	47	76	114	392	71.3	1.44%
Other ARI ^c	531	1,081	987	1,453	1,279	568	5,899	1,072.5	21.72%
Meningitis	1	1	0	1	0	1	4	0.7	0.01%
Conjunctivitis	92	57	110	147	428	19	853	155.1	3.14%
STD ^d	1	7	6	1	4	3	22	4.0	0.08%
Malnutrition	0	0	1	0	30	6	37	6.7	0.14%
Acute Fever	703	1,921	517	602	470	69	4,282	778.5	15.77%
Hepatitis	0	0	0	0	4	0	4	0.7	0.01%
Others ^e	1,938	3,750	3,153	4,934	3,712	2,834	20,321	3,694.7	74.83%
Food poisoning	22	0	0	0	0	0	22	4.0	0.08%
Scabies	12	0	0	0	0	0	12	2.2	0.04%
Mental illness	2	0	0	0	0	0	2	0.4	0.01%
Tuberculosis	2	0	0	0	0	0	2	0.4	0.01%
Leprosy	0	0	2	0	0	0	2	0.4	0.01%
<i>Total</i>	<i>3,542</i>	<i>7,085</i>	<i>5,034</i>	<i>7,565</i>	<i>6,599</i>	<i>3,728</i>	<i>33,553</i>	<i>6,101</i>	

Source: Ministry of Health and Medical Services, South Tarawa, 2007

Notes:

^a – Only January to July data is available for 2007.

^b – Percentage of the population per annum is calculated by dividing the average occurrence per annum by the average population per annum for the specified period.

^c – ARI refers to Acute Respiratory Illness.

^d – STI refers to Sexually Transmitted Infections.

^e – Others refers to medical conditions such as colds and flu.

Health benefits are assumed to accrue starting from 2011 (the Project's start of full operations) and include income loss avoidance and medical cost avoidance as a result of reduced illness. Through an improved environmental situation, the population exposed to water-borne diseases will be reduced, with associated reduction in medical costs and in the number of workdays and school days lost due to sickness. The medical costs savings to children, the elderly, women, and those in hardship would be greater as they are most vulnerable to such diseases. Women have a greater chance of disease given the increased contact with water from household responsibilities (especially cooking and washing) and as such will benefit disproportionately from the improvement in sanitation, water quality and village environment as a result of the Project. The poor, living disproportionately more under unsanitary conditions (i.e. the 23% of households, approximately 1,370 persons with pit

⁴⁷ A 40% reduction in diseases achievable through feasible interventions for water supply and sanitation problems was derived from the product of the efficacy of the interventions and the proportion of the burden of disease that occurs among the exposed. The efficacy estimates assumed the implementation of improvements in sanitation, water supply, hygiene, drainage, garbage disposal, indoor air pollution and crowding of the kind being made in poor communities in developing countries. *World Development Report: Investing in Health* (World Bank, 1993). Given that drainage, waste disposal and air pollution are not components of this project, a projected 30% reduction in diseases is more appropriate.

latrines or no sanitation systems), will gain more than the average population in terms of better environmental and living conditions.

Given the above assumptions, it is estimated potential annual health benefits are projected to range between A\$33,100 and A\$52,700 from 2011 to 2040. The net present value (NPV, using a 10% discount rate) of health benefits that is attributable to the Project during the period 2011 to 2040 is estimated at A\$451,000. For the full health benefits of the Project to be realized, improvements are also required in: (i) public health education; (ii) higher standards of personal hygiene; (iii) disease prevention and control; and (iv) improved housing and living conditions. The IDEA Program (see Section 5) will seek to address points (i) and (ii), while the Revolving Fund will provide opportunities for households to improve housing and living conditions through a low interest loan scheme.

4.6 Women and Vulnerable Groups

The Project adopted a participatory approach to incorporating gender considerations, acknowledging that women play a vital role in the water and sanitation sectors. Women are the primary managers of domestic water and promoters of home and community-based sanitation activities, waste disposal and environmental management.

Women in I-Kiribati Society

The role of women in traditional I-Kiribati culture is one of primary caregiver and household level decision maker. However, community level decision making is largely the domain of men within I-Kiribati society, which is supported by the very low number of women in politics. Women do occupy a number of the senior positions within Government and compose 51.5% of the workforce (37% in paid employment).⁴⁸ Girls slightly outnumber boys within the school environment. Women are also generally reluctant to share openly when men are present, particularly in a *maneaba* setting. As such, the Project interacted with the Women's Association and other women separate from any 'male influences'. A primary aim of the IDEA Program will be to work closely with women and churches, most likely through the Women's Association, as they are the key conduit for education and awareness activities at the household level.

Vulnerable Groups

There are some groups in Kiritimati Island that are currently experiencing some form of hardship, as discussed in Section 4.2.1. The most prevalent amongst this group are the unemployed and/or landless, who are largely concentrated in the villages of Tabwakea and Banana. Households which only have one income earner are also vulnerable, particularly if the "breadwinner" is unable to work because of illness or other reason. Based on the TA Household Survey, 27.6% of households (some 24 of 87) fit this profile.

Income levels in Tabwakea and the ability of households to pay utilities is of concern moving into Project implementation. One or more strategies may be

⁴⁸ ADB (2002) *'Kiribati: Monetization in an Atoll Society – Managing Economic and Social Change*

required to ensure that vulnerable households in Tabwakea are not disadvantaged by increased water tariffs, water connection fees and increased capital costs for sanitation infrastructure. One strategy may be to provide a temporary connection loan, repaid over a number of instalments (6-18 months) for water connection fees. Another strategy for large households, in order to avoid large water bills, would be to have a number of water connections, therefore maximising the lower tariff of A\$1.20/KL for the first 18KL each month.

Children are also acknowledged as a vulnerable group with respect to water and sanitation. Special programs (a MEYSD-MLPID agreement) could be devised so schools receive the highest possible water and sanitation services, such that children are not disadvantaged.

Incorporating the Needs and Aspirations of Women and Vulnerable Groups

The Project has made a concerted effort to incorporate the needs and aspirations of women and vulnerable groups into the project design, many of which were evident from the TA Household Survey⁴⁹. The Project acknowledges that women require water for a range of household uses. As a result the Project is encouraging the continued use of well water, where possible, for non-potable purposes such as flushing toilets, feeding pigs and watering gardens. The Project is also aiming to ease the burden of collecting well water or water from neighboring areas by supplying piped water to all households (for drinking, cooking, bathing, washing and cleaning). For both existing and new wells, the Project will be supplying a *Tamana* pump, which will also ease the burden of collecting well water for non-potable uses. All vulnerable groups will also benefit from the Project, as the Project area covers all households in Kiritimati Island, including community and government institutions. As such, it is proposed that all residents of Kiritimati Island will be able to benefit from improved water supply and sanitation, including greywater.

4.7 Employment Opportunities

Low-income households should also be the primary target for employment generation as part of the construction (and potentially operation) phases of the Project. Approximately 25-30 construction jobs will be created for the water supply component and another 25-30 construction jobs for the sanitation component. Up to 10 jobs will also be created as part of the IDEA Program, which will require staff with expertise in drama, story telling, graphic art, printing / reproduction and trainers. Given the high dependency ratio in Kiritimati Island (0.75), this injection of medium-term employment (1-2 years) will directly benefit up to 280 persons (or 4.7% of the population). The improvement of water supply and sanitation services in Kiritimati Island will also improve tourist facilities, in turn increasing the income potential of residents, both poor and non poor.

⁴⁹ 66% of participants in the TA Household Survey were women.

If procurement of Project infrastructure (i.e. polyethylene septic tanks, evaporation basins and low-flow tanks) is contracted for local production (rather than international production with high shipping costs) then an additional employment benefit will be available.

4.8 CBOs and NGOs

At present there are no NGOs or other support groups through which people in hardship can seek assistance. This means that these people must rely on the extended community, government and the churches for support. There are a number of areas in which NGOs and community based organizations (CBOs) could play a significant role, such as: (i) community education; (ii) environmental management and conservation; (iii) micro-enterprise development and micro-credit schemes; (iv) training and capacity building of community groups and government; and (v) tourism development.

5. Community Mobilization, Awareness and Education

5.1 Introduction

Lessons learnt from a plethora of projects in the Pacific Region indicate that greater involvement of Project communities in the planning, implementation, monitoring and on-going maintenance can enhance project sustainability. This premise remains true for water and sanitation projects, when the community is adequately educated of the project aims, objectives and benefits/risks. The following discussion is provided as a foundation on which further work can be undertaken during the Project implementation phase. The community development phases would include: (i) mobilizing the community and creating an environment of cooperation and enthusiasm; (ii) ensuring the community is educated, aware and equipped to undertake change; and (iii) involving communities to a greater extent in the management of Kiritimati Island's natural resources (e.g. fisheries, terrestrial ecology, water resource management and protection).

5.2 Community Mobilization

There are a small number of existing organizations within the Project communities (such as church groups) that provide a community development platform upon which implementation activities could develop.

The first step in the mobilization process will be to assess each of the community organizations in greater detail. Specifically, the groups would need to be assessed with regards to: (i) group cohesiveness and commitment; (ii) group capability, including coverage and quality of leadership, stability, and capacity for building consensus and settling disputes; (iii) group knowledge and skills, including managerial, technical, financial, and entrepreneurial skills and experience with similar projects; and (iv) group motivation and capacity to change, represented by attitudes / aspirations toward change and a recognition of need for change.

An initial activity could be to involve community organizations, through appropriate representation (i.e. Community Steering Committee), in the review of Project assumptions and initial designs (particularly if there has been a long delay between the current PPTA and project implementation). The Community Steering Committee could be made up of representatives from groups such as the: (i) *unimane*; (ii) Women's Association; (iii) Island Church Council; (iv) youth groups; (v) Kiritimati Urban Council; and (vi) tourism and fishing associations.

The Community Steering Committee could also assist the Project implementation in the following areas:

- Provide a forum for voicing community needs and concerns in relation to the project;
- Provide comment on draft Project designs and proposed technology;
- Assist in identifying areas for education and awareness programs and suggested target audiences;
- Provide comment on draft education material;

- Recommend the appropriate mechanisms to disseminate the information;
- Make community members aware of any planned education or training activities and encourage their attendance;
- Disseminate information about the Project, including construction schedules, revolving fund application processes, potential community contracting opportunities, and community action days for resource management; and
- Most importantly, champion Project sustainability through improving ownership of the proposed systems by the wider community and its leaders.

The community mobilization phase should also assess the ability of community groups to be involved with water resource management and potentially the operation and maintenance of the water supply and sanitation systems. An assessment of establishing Community Water Resource Management (User) Groups could also be undertaken. Each “user group” could be developed using the existing KUC ward systems⁵⁰, with additional wards added in Banana and New Banana / Main Camp to reflect relative village population sizes.

5.3 Information, Dissemination, Education and Awareness

An Information, Dissemination, Education and Awareness (IDEA) Program will be developed by the Project Management Consultants, in close consultation with the Community Steering Committee (or similar), to assist the target population to improve their understanding of the close interrelationship between hygiene, water, sanitation, and health.

The IDEA Program would assist Project implementation through the following initiatives: (i) promotion of water conservation to reduce demand on the reticulated potable water supply system; (ii) promotion of community water resource management to value and protect the key groundwater lens; (iii) safe operation of wells for non-potable uses; (iv) the relationship between good sanitation and hygiene practices and personal and environmental health; (v) awareness of activities that pollute the groundwater, including human faecal waste, solid waste and animal waste; and (vi) advising on Project progress and varying institutional-individual responsibilities.

The key initiatives of the IDEA Program could be developed using activities such as:

- posters / fact sheets;
- radio programs;
- drama / songs;
- community resource manuals;
- school activity packs;
- postage stamps; and

⁵⁰ The Existing KUC ward system includes 8 wards: 3 wards in London, 3 wards in Tabwakea, 1 ward in Banana and 1 ward in Poland.

- IDEA workshops and training of public health staff, village leaders, school teachers, women's association members and other identified participants.

The IDEA Program would also have an environmental protection component, which is discussed in greater detail in the Initial Environmental Examination.

5.4 Community Resource Management

As part of the IDEA Program, it is envisaged that a greater emphasis on water resource management be adopted. The Engineering and Hydrology personnel within the TA Team have looked to foster community ownership of the groundwater reserves by assigning identifiable groundwater lens to supply specific villages (i.e. Decca lens to supply piped water to London village and Four Wells lens to supply piped water to Tabwakea village).

The Water component of the IDEA Program would look to build on this concept and involve Water User Groups in greater management of the groundwater lenses.

Lessons learnt from previous projects in Kiribati demonstrate that changes require a long time frame. This is also the case for community mobilization and action. Numerous programs provide the initial motivation to address issues, yet cannot maintain momentum and fully embed a changed culture.

Indicative issues to be addressed under the Community Resource Management program could include:

- The importance of groundwater resources and why;
- The consequences of adverse impacts on the environment, and what it means for the existing and future population; and
- Clarifying roles and responsibility so the community, household and individual share responsibility; rather than "it's the role of the government".

6. Social Action Plan and Mitigation Measures

In accordance with the ADB's *Handbook on Social Analysis*, the following social action plan and mitigation plan aims to balance social fairness with economic sustainability. Special measures have been put in place for women and the vulnerable within the Kiritimati Island community. The plan also includes provisions for monitoring and evaluation, identifying responsibilities for actions, time frames in which these actions will occur, and some key indicators, which reflect those included in the Design and Monitoring Framework (Appendix 1 of the Draft RRP).

The plan draws upon a number of lessons learnt from previous water and sanitation projects and also previous community development and participation projects in Kiribati. It also seeks to address issues across four broad social risk categories, namely: (i) individual / household; (ii) economic; (iii) environmental; and (iv) socio-cultural / governance.

Issues / Risks	Mitigation Measure	Responsibility	Timing of Measures	Indicators
<p>1. Overcrowding and landlessness</p> <ul style="list-style-type: none"> ▪ Large households and stretched services ▪ Unchecked migration from Gilbert Group 	<ul style="list-style-type: none"> ▪ Timely release of private leasehold plots to ease overcrowding ▪ Excluding passenger movement from Tarawa to Kiritimati ▪ Substantially increasing the boat fare from Tarawa to Kiritimati 	<p>MELAD</p> <p>GoK; MLPID</p>	<ul style="list-style-type: none"> ▪ Q1 2008 ▪ Q1 2008 	<ul style="list-style-type: none"> ▪ Island development is well planned and coordinated ▪ Island land use and environment strategy is implemented ▪ Government controls incoming migration to the island
<p>2. Affordability</p> <ul style="list-style-type: none"> ▪ Inability of low-income HHs to afford initial water supply connection fee ▪ Unwillingness to pay on-going monthly water fees as shown by poor payment history ▪ Continuation of illegal connections to water supply ▪ High initial costs of new sanitation infrastructure 	<ul style="list-style-type: none"> ▪ Connection loan for low-income earners paid back over a 6-12 month period as part of monthly billing ▪ Incentives for on-time, payment in full (i.e. 10% saving or ticket in raffle draw) ▪ Community mobilization activities promoting equality and customer / client expectations ▪ Improved system O&M and customer service ▪ Subsidy from GoK to support provision of initial sanitation infrastructure (i.e. septic tank) for private leaseholders ▪ Revolving fund established to support HH infrastructure improvements 	<p>MLPID, Project communities</p> <p>MLPID, Project communities</p> <p>Project communities; MLPID</p> <p>GoK, MLPID, PMC</p>	<ul style="list-style-type: none"> ▪ Throughout the project for new water supply connections ▪ Implementation and post-implementation ▪ Implementation and post-implementation ▪ Throughout the project for new sanitation infrastructure 	<ul style="list-style-type: none"> ▪ Program is established and loans are being repaid in require time ▪ Increased collection of outstanding debt ▪ Increased collection rates for on-going water billing ▪ Number of illegal connections is less than <5% ▪ Effective O&M system in place ▪ Customer service complaints reduced ▪ Sanitation systems are installed in low-income HHs ▪ Revolving fund is established and frequented by low-income HHs for housing improvements

Issues / Risks	Mitigation Measure	Responsibility	Timing of Measures	Indicators
<ul style="list-style-type: none"> ▪ Household operation and maintenance of sanitation systems (inc. toilet paper) 	<ul style="list-style-type: none"> ▪ IDEA Program to support other alternatives to toilet paper ▪ Regular maintenance by MLPID of government housing to prevent water wastage 	MLPID, PMC (IDEA Team), Project communities	<ul style="list-style-type: none"> ▪ Implementation and post-implementation 	<ul style="list-style-type: none"> ▪ Alternatives trialled and low-income HHs utilizing system ▪ Effective O&M system in place ▪ Customer service complaints reduced
<p>3. Public Health</p> <ul style="list-style-type: none"> ▪ Water-borne illness remains at current levels or increases 	<ul style="list-style-type: none"> ▪ Improved water supply and sanitation infrastructure ▪ Ensure water quality and environmental health monitoring systems are established and operating effectively ▪ Ensure IDEA Program is targeting key audiences of women and children, encouraging improved water management and personal hygiene 	MLPID, PMC (IDEA Team), Project communities	<ul style="list-style-type: none"> ▪ Implementation and post-implementation 	<ul style="list-style-type: none"> ▪ System are established and operating effectively ▪ Reduced incidence of waterborne diseases by 30% from current levels ▪ Reduced medical costs for treatment of waterborne disease from current average ▪ IDEA Program – number of programs with women’s associations, schools, youth groups and other groups ▪ Water User Groups established and operating effectively
<p>4. Socio-cultural norms</p> <ul style="list-style-type: none"> ▪ HHs continue to utilize well water for all potable and non-potable uses ▪ Traditional sanitation habits (beach and bush defecation) continue 	<ul style="list-style-type: none"> ▪ Continued education and awareness support from IDEA Program ▪ Water monitoring and dissemination of results to consumers ▪ Continued education and awareness support from IDEA Program 	<p>PMC (IDEA Team), Project communities</p> <p>PMC (IDEA Team), Project communities</p>	<ul style="list-style-type: none"> ▪ Implementation and post-implementation ▪ Implementation and post-implementation 	<ul style="list-style-type: none"> ▪ Well water used only for flushing toilets ▪ Reduced incidence of waterborne diseases ▪ % of population using unimproved sanitation systems decreased

7. References

Asian Development Bank. (2001) *Handbook for Integrating Poverty Impact Assessment in the Economic Analysis of Projects*, Asian Development Bank, Manila.

_____. (2002) *Kiribati: Monetization in an Atoll Society – Managing Economic and Social Change*, Pacific Studies Series, Asian Development Bank, Manila.

_____. (2002) *Poverty Partnership between the Government of Kiribati and the Asian Development Bank*, Asian Development Bank, Manila.

_____. (2003) *TA 6031-REG Promoting Effective Water Management Policies and Procedures – Final Report*, Asian Development Bank, Manila.

_____. (2004) *TA 4257-KIR Supporting Land Use Management on Kiritimati Island: Final TA Report Volume 1*, Asian Development Bank, Manila.

_____. (2006a) *Kiribati Country Strategy and Program Update*, Asian Development Bank, Manila.

_____. (2006b) *Cultures and Contexts Matter: Understanding and Preventing HIV in the Pacific*, Asian Development Bank, Manila.

_____. (2007) *Handbook on Social Analysis: A Working Document*, Asian Development Bank, Manila.

Coffey MPW & FSP. (2002) *Community Development and Participation Initiatives Project: TA 3109-KIR – Final Report*, Asian Development Bank, Manila.

Commonwealth of Australia. (2005) *Gender Guidelines: Water Supply and Sanitation*, Australian Agency for International Development (AusAID), Canberra.

Government of Kiribati. (2004) *National Development Strategies: 2004 – 2007*, Ministry of Finance and Economic Development, Tarawa.

_____. (2007) *(Draft) Analytical Report on the 2006 Kiribati Household Income and Expenditure Survey*, National Statistics Office, Tarawa.

Harrison, G.E. (1980) *Socio-economic Aspects of the Proposed Water Supply Project for South Tarawa, Kiribati*, Department of Housing and Construction, Canberra.

International Water Management Institute. (Date Unknown) 'Taking a multiple-use approach to meeting the water needs of poor communities brings multiple benefits' in *Water Policy Briefing*, Issue 18, Colombo, Sri Lanka.

Kundsen, A.B. & Sloof, R. (1992) 'Vector-borne disease problems in rapid urbanization: New approaches to vector control' in *Bulletin of the World Health Organization*, vol. 70, no. 1, pp.1-6.

MacKenzie, U.N. (2004) *Kiribati Adaptation Project: Social Assessment Final Report*, Tarawa.

Ranck, S. (1995) *Socio-cultural Factors of Importance in the Design and Maintenance of Water Supplies for Kiritimati Island, Kiribati*, AIDAB, Canberra.

Sinclair Knight Merz (2006) *Draft Kiritimati Island Development Plan (KIDP)*, Asian Development Bank, Manila.

_____. (2006) *TA 4456-KIR Phase 1B – Working Paper 4: Social Assessment*, Asian Development Bank, Manila.

World Bank. (1993) *World Development Report: Investing in Health*, World Bank, Washington DC.

Annex A Household Survey Results and Analysis

A.1 Survey Results and Analysis

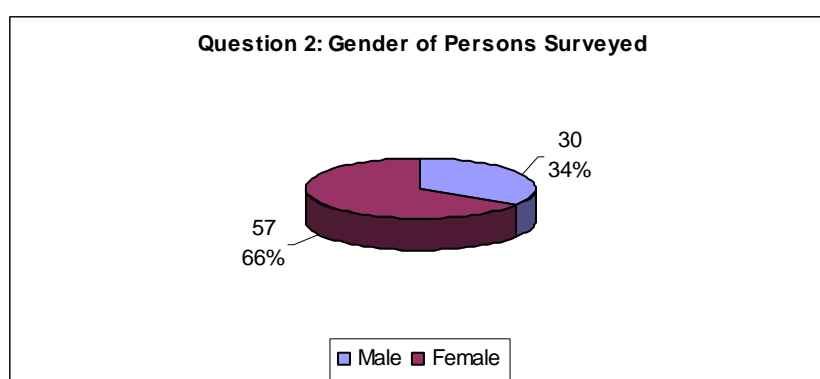
The following results are presented in accordance with the questions in the Household Survey (see Annex 2). Analysis and description is provided on each question, with some comparisons made between the survey sample, Kiritimati Island and national Kiribati data¹.

A.1.1 Background Information

Gender

As discussed in Section 3.1, the survey was undertaken in a stratified manner to ensure an appropriate cross-section of the community was sampled. Likewise, the survey was targeted at both men and women respondents. Figure A.1 shows the relative percentages for men and women surveyed, 34% and 66% respectively.

Figure A.1 Number of Men and Women Surveyed

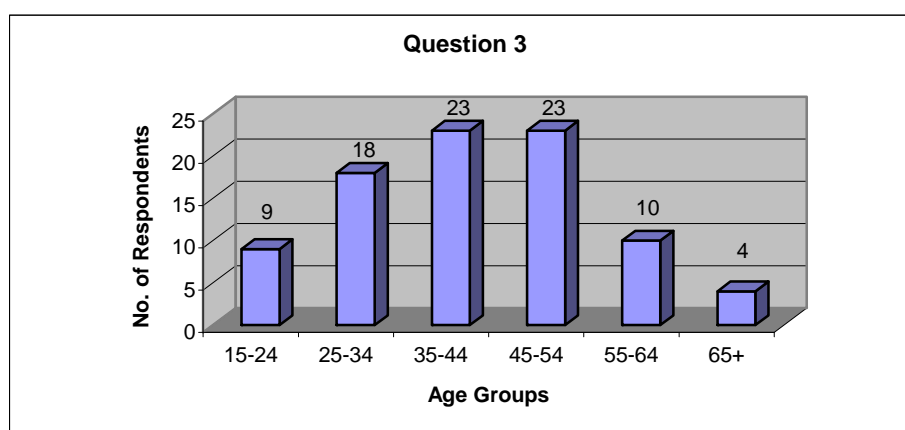


Care was taken by the survey team to ensure a mix of respondents. However the higher number of women surveyed is a reflection of the high proportion of women in Kiribati who are the primary caregivers and as such are at home during the day – i.e. when the survey was being conducted. The higher proportion of women surveyed has the positive effect of strengthening the quality of the data collected. This is due to women being the manager of the household, particularly in relation to water usage (cooking, bathing, washing and other domestic uses) and financial management.

Age

The survey covered a wide range of age groups (Figure A.2), with the majority of respondents in the 35-44 and 45-54 age groups. The average age of the respondents was 41.5 years.

¹ Kiritimati Island and Kiribati data is based on the 2005 Census.

Figure A.2 Age Classification

Household Size

The average household size of the surveyed properties was 9.5 persons, which is substantially higher than the 2005 Census figures for Kiritimati Island and Kiribati; 6.7 persons and 6.3 persons respectively (Figure A.3a). This large difference is largely due to high household numbers in Tabwakea village (11.3 persons) and Banana village (10.1 persons). Approximately 16% of households have 13 or more persons (Figure A.3b). One of the key issues affecting the large household size in Tabwakea is multiple families living on one lease (with relatives) whilst awaiting new land releases in other parts of Tabwakea or New Banana / Main Camp. Some of these are new immigrants to Kiritimati Island and other residents are first and second generation families granted land following colonial copra production in the late 1970s. Visual observations and anecdotal evidence suggests that London is also experiencing overcrowding; sometimes up to 20 persons sharing a two roomed government house. The slow rate of land release by the Government will continue to foster hardship within the community. This places greatest pressure on villages such as Tabwakea, where a much larger proportion of the population are unemployed or rely on informal income sources such as fishing and cutting copra.

The high household size in Banana village may be due to the village being contained (in surface area) for the last 10-15 years due to the village's proximity to the Banana freshwater lens. The slow release of lease plots will also be contributing to overcrowding on existing leases and government houses. The relatively low household size in Poland, when compared with the overall survey results, may be because more than 20 of their youth are boarding at schools in London, Tabwakea Fanning Island or South Tarawa.

Key Implication for Project Design No. 1: The household water supply and sanitation systems need to be designed for households of 9-10 persons each and not the Kiribati national average of 6.3 persons or the Kiritimati Island average of 6.7 persons.

Figure A.3a Average Household Size, including Comparisons with 2005 Census for Kiritimati Island and Kiribati

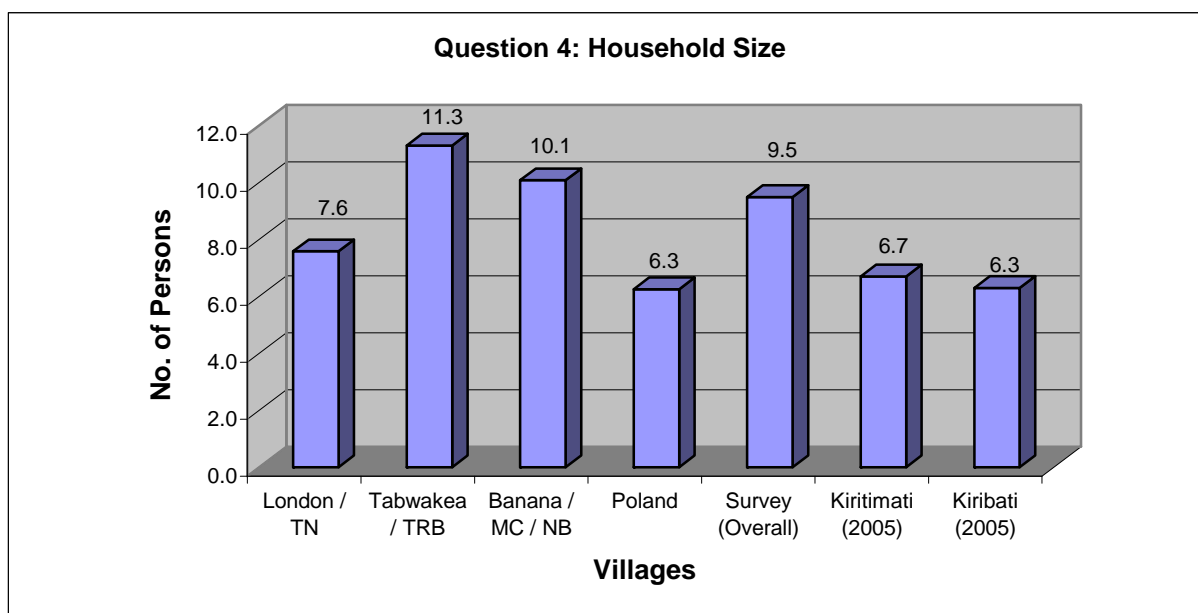
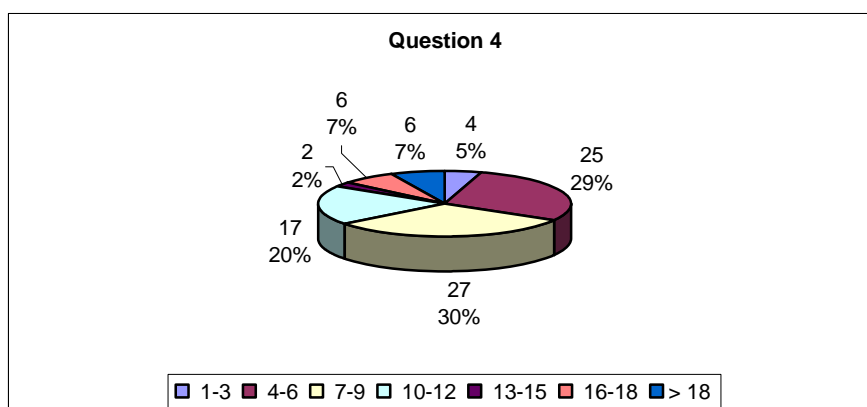


Figure A.3b Household Size by Breakdown of No. of Persons



Housing

The distribution of housing across the survey was relatively evenly split between government and private dwellings (Figure A.4). The largest variations are noticeable at the village level, where London, Banana and Poland villages are dominated by government housing, whilst Tabwakea is dominated by private housing (Figure A.5). This reflects the government’s policy of Tabwakea (and future land developments north of Tabwakea) as a private leaseholding village.

Figure A.4 Type of House/Dwelling

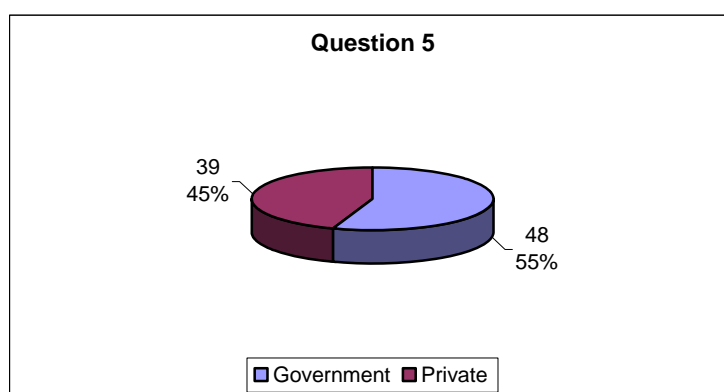
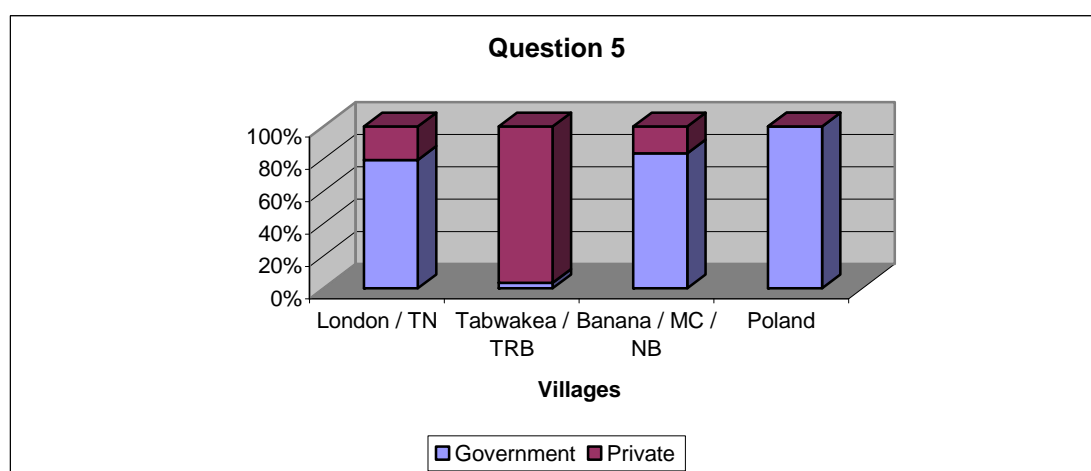


Figure A.5 Type of House/Dwelling by Villages



Village Preference

Following the testing phase, an additional question was added to the Background Information section to assess the respondent’s preference for continuing to live in their current village, or potentially live in another village in Kiritimati Island. Some 25% of respondents indicated that they would prefer to live in another village in Kiritimati Island (Figure A.6). Of those that would prefer to live in another village, the majority (63%) suggested Tabwakea (Figure A.7). The home villages of those that would prefer to live in another village are mostly from London and Banana; 46% and 36% respectively (Figure A.8).

A theme emerging from this data is that those respondents who would prefer to live in Tabwakea are predominantly from Government houses. This may be a reflection of the quality of government housing or may be a desire to reside on their own lease and construct their own home, as is possible in Tabwakea. It is important to realise that the majority of respondents (75%) are happy to continue residing in their present village.

Figure A.6 Village Preference

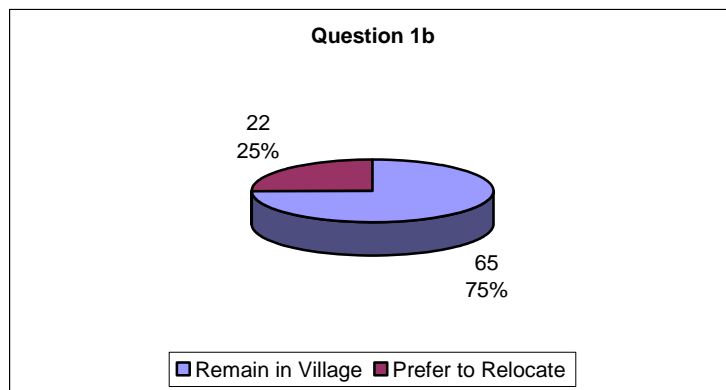


Figure A.7 Preferred Village for Relocation in Kiritimati Island

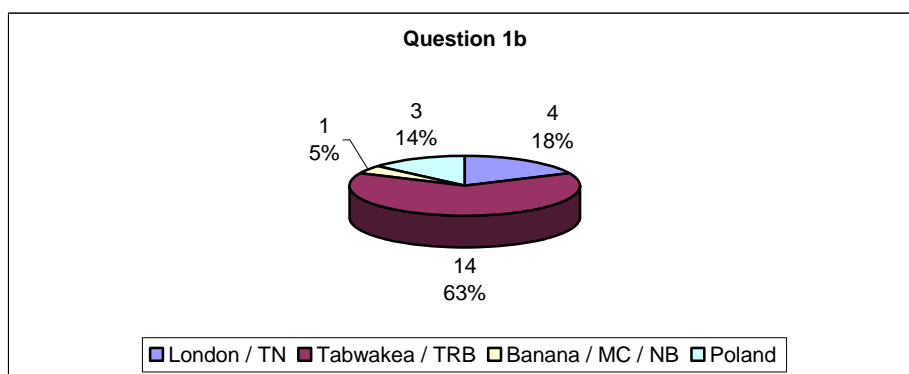
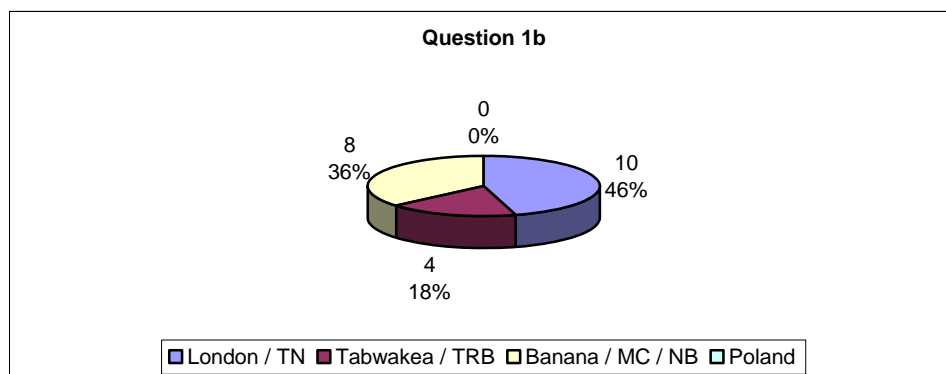


Figure A.8 Home Villages of those Respondents who would prefer to relocate



A.2.1 Household Water Supply

Water Usage and Water Sources

The average per capita water usage is similar across the island at 51.8 litres per person per day (Figure A.9). Poland recorded the highest usage with 55.3 l/p/d and Banana the least usage with 48.8 l/p/d. These water usage figures are higher than the actual usage rates for 2007, as taken from the MPLID records. The differences are highlighted in Table A.1.

Table A.1 Water Consumption Data from MPLID Records² (2007) and Household Survey (2007)

Village	MPLID Records (l/p/d)	Household Survey (l/p/d)
London / TN	42.1	53.2
Tabwakea / TRB	28.9	52.3
Banana / MC / NB	27.1	48.8
Poland	25.6	55.3

The figures for MPLID provided water in Table A.1 do not take into account non-revenue or unallocated water. These raise the daily usage figures by more than 50%, which in the case in Poland has unaccounted for water (UFW) of 58%. The London and Tabwakea supply system from Decca and Four Wells lenses has a UFW of 47%³. Recently, a water tanker has been supplying the hospital and some private homes with water directly sourced from the Decca lens, as there is not sufficient supply to some areas of London. This tanker service would account for approximately an additional 3 l/p/d⁴ for London.

There are only 4 households in Banana with consumption meters and there are no functional production meters on the Banana gallery. As such, there is no current method to determine how much water is being produced or consumed in the Banana system. Banana receives piped water for 1-2 hours each day. Therefore the data supplied for Banana as part of the household survey is a more reliable figure upon which to design the future water supply.

When asked about how many litres each person requires each day, the vast majority of respondents replied with a figure that was lower than their estimates of current usage; 51.8 l/p/d on average for current usage compared with 33 l/p/d on average for estimated daily needs (Figure A.10).

² Courtesy of Water and Sanitation Division of MPLID.

³ Based on production and consumption data from MPLID Water and Sanitation Division for 2007.

⁴ 1 tanker load per day (5,000L) for population of 1,800 persons in London.

Key Implication for Project Design No. 2: Daily water supply to London and Poland should be planned for approximately 70-80 l/p/d as these villages have limited or no access to usable groundwater. Tabwakea and Banana should be planned for approximately 50-60 l/p/d as these villages have access to reasonable quality groundwater for non-potable uses.

Dissimilarities between villages are most evident when analysing the source of water. For example, London and Poland are dominated by piped water usage whereas Tabwakea and Banana use a mixture of piped water and well water (Figure A.11). In the case of London and Poland the high use of piped water is primarily because there is contamination of groundwater from petrochemicals and septic systems (London) and brackish groundwater (Poland). In Tabwakea, there is relatively easy access to good quality groundwater which is used predominantly for bathing, washing, flushing toilets and other household uses (gardening and pigs) (Figure A.13). As Figure A.18 indicates, residents in Tabwakea are keen to have wells improved to support their water supply regime. In Banana, the high usage of well water is likely as a result of extremely limited piped water supply (sometimes only 1 hour per day) and also because some houses do not have access to the piped supply. Like Tabwakea, Banana has access to good quality groundwater as it is situated on the southern edge of the Banana freshwater lens.

Key Implication for Project Design No. 3: The design needs to incorporate multiple water sources (potable and non-potable) for multiple household uses where possible. For Tabwakea and Banana, where residents have access to groundwater, new well construction and improvements for existing wells should be supported for non-potable use.

The use of rainwater as a potable water source is limited across all villages on Kiritimati Island. Anecdotal evidence from a number of respondents suggests that the island is currently in a dry period which may account for some of the low usage of rainwater tanks. Figure A.18 indicates that all respondents in Poland and approximately 1 in 6 households in London, Tabwakea and Banana would like to see an improvement in their rainwater supply. It is proposed as part of the *Existing Infrastructure Survey*⁵ that all rainwater storages be examined to assess the quantity, capacity, material, status (many seem in disrepair) and estimate of current water level. The low use of rainwater storages may also be as a result of poor maintenance which contributes to leaks.

Key Implication for Project Design No. 4: Subject to confirmation from the results of the *Existing Infrastructure Survey*, the design needs to incorporate rainwater tanks into the available options for potable water supply. Ability of private leaseholders to afford rainwater tanks also needs to be factored into the design.

⁵ Survey undertaken as part of ADB TA 4456-KIR (Phase 2) covering every property on Kiritimati Island.

Figure A.9 Average Total Water Usage

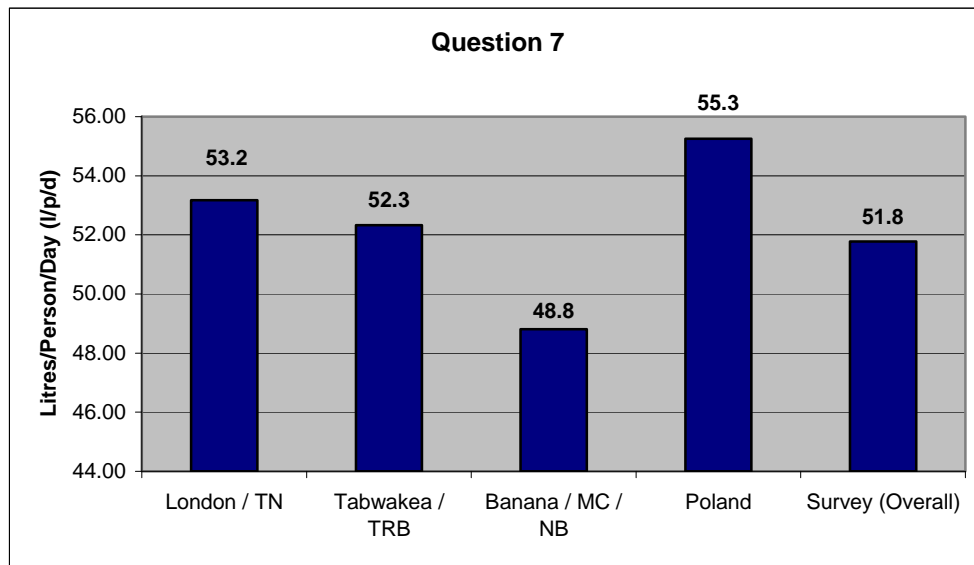


Figure A.10 Question 8 – How Many Litres Does a Person Require Each Day?

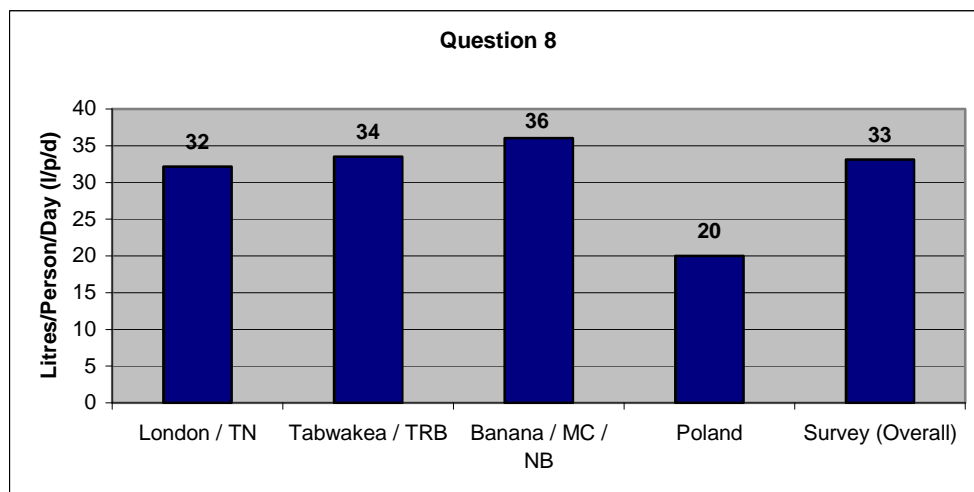


Figure A.11 Daily Water Usage Percentages By Source

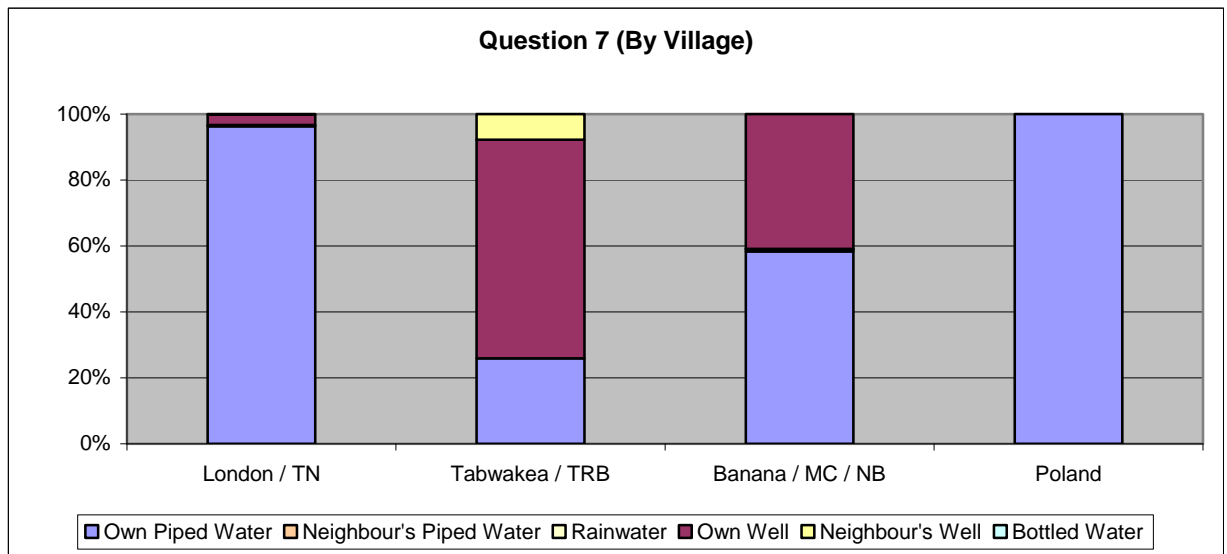


Figure A.12 Average Daily Usage for Piped Water (Own)

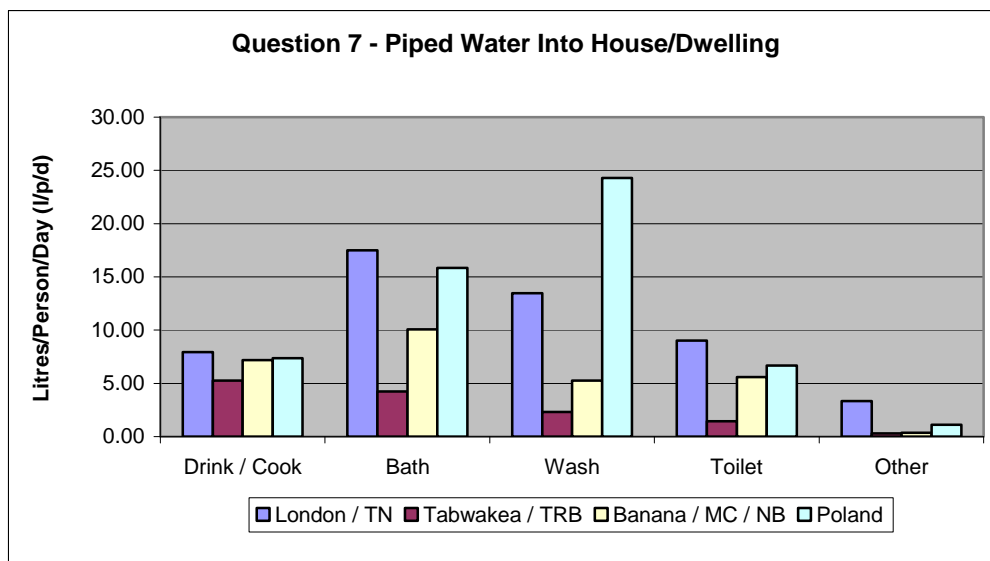
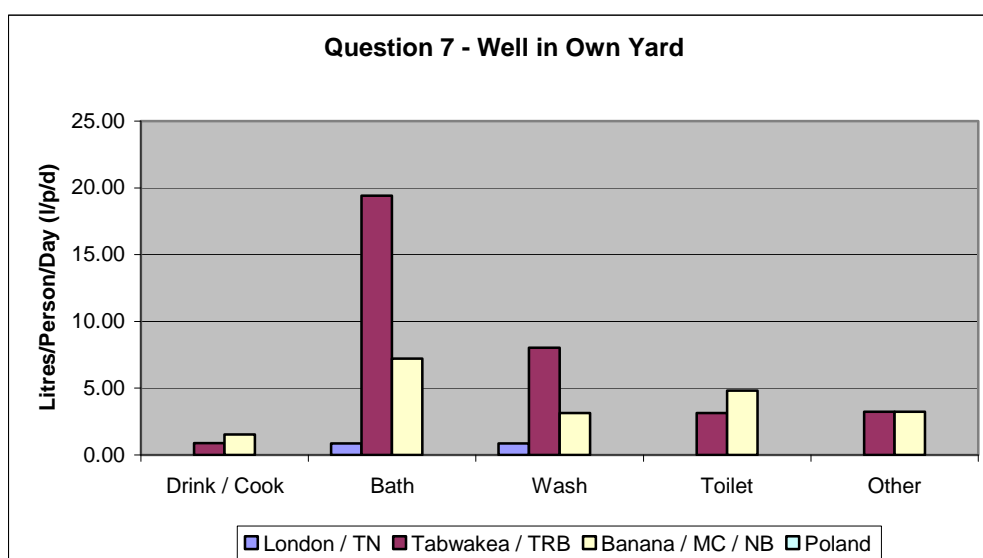


Figure A.13 Average Daily Usage for Well Water (Own)

Supply, Taste, Colour and Any Other Water Issues

A lack of regular water potable supply is a major issue for a number of households on Kiritimati Island. Some 44 of 76 respondents (58%) identified that they experienced a lack of supply at some portion of the day (Figures A.14 to A.17). In London 55% of respondents experience lack of supply, most for 1-2 hours each day, often in the mornings. Some households state they go without water for 12 hours and others up to 3 days. Lack of supply also occurs when “it is calm – no wind”⁶; obviously making the linkage between the wind pumps at Decca and Four Wells and the piped supply. In Tabwakea, 14 of 22 (64%) respondents with piped water experience problems with supply. As with London, there was a variety of responses; from 1-2 hours per day, to 12 hours per day, to 10pm to 9am, to up to 3 days. Many households are requesting additional low-flow 500L tanks. This is primarily due to constrained supply, large household size, and the large number of freehold and leasehold plots where two or three households reside together (each with their own houses) and share one piped supply. Many households in Tabwakea are also not connected to the system (i.e. do not have a low-flow tank) and many other households have been disconnected for non-payment of water bills.

Figure A.18 also draws attention to the need to improve the piped water supply. Some 19 of 24 respondents (79%) in Banana would like to see an improvement in the piped water supply. As noted, Banana at present is only receiving piped water supply for 1-2 hours each day, usually in the morning. A common response from those surveyed in Banana was that they would like to receive piped water supply 24 hours a day. Like Tabwakea, some houses are not connected to the system and as such have no low-flow tank. The Banana supply system is outdated and was not enhanced during the KWASP project as it was assumed that Banana was to be relocated away from the Banana freshwater lens to New Banana during the KWASP implementation period. It has been confirmed that Banana village will remain in its current

⁶ Personal Communication, 22 October 2007, London.

location with no expansion in surface area and therefore the village should be a priority for water supply system improvements.

All respondents from Poland indicated that they do not have issues with supply, taste or colour of their piped water. Field observations by the Project Team (Hydrology and Engineering) have confirmed that the current supply rate is easily sufficient for the current population and that the water is of a high quality when it reaches households (i.e. it is being chlorinated effectively by the Poland Water and Sanitation Technician).

Key Implication for Project Design No. 5: A key objective of the Project needs to be to improve the supply of potable water to a standard that all households have supply for 24 hours a day, 7 days per week (particularly for Banana village).

Key Implication for Project Design No. 6: Provision should be made for additional connections and household low-flow tanks for lease plots which have more than one household residing there.

Figure A.14 Response to Lack of Supply in Piped Water Supply – Total

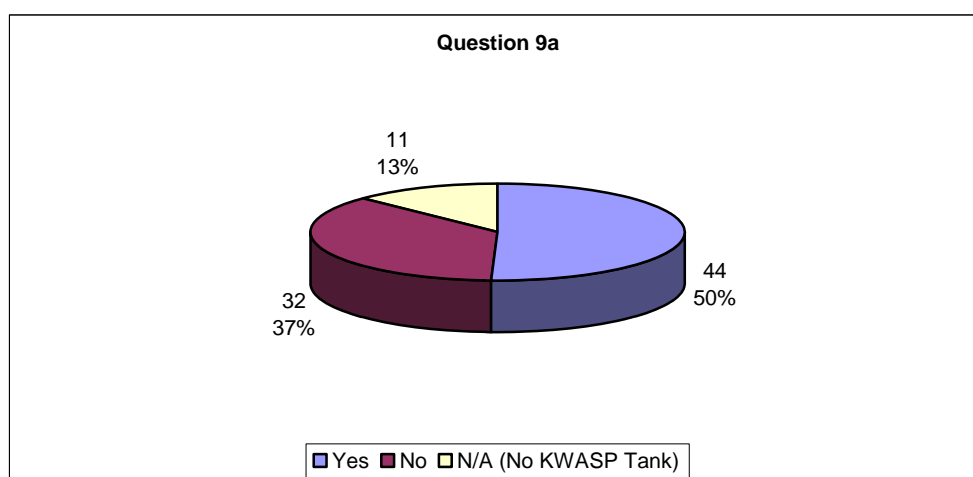


Figure A.15 Lack of Supply in Piped Water – London / TN

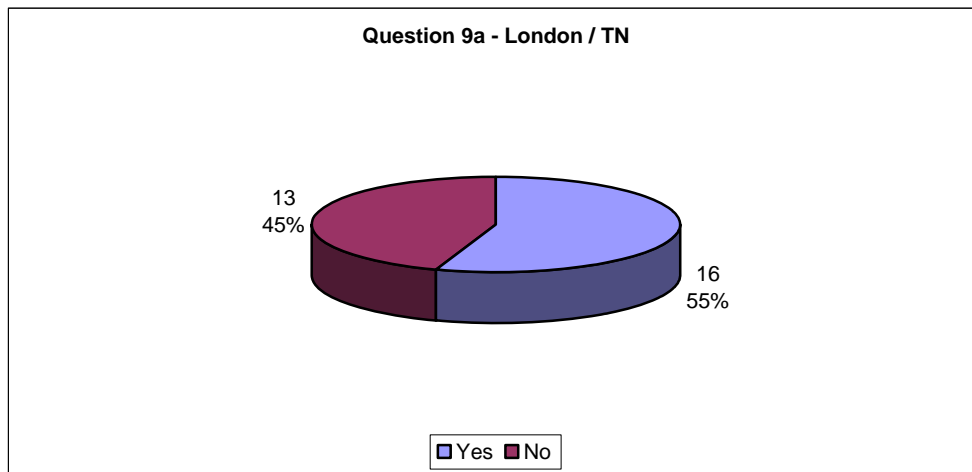


Figure A.16 Lack of Supply in Piped Water – Tabwakea / TRB

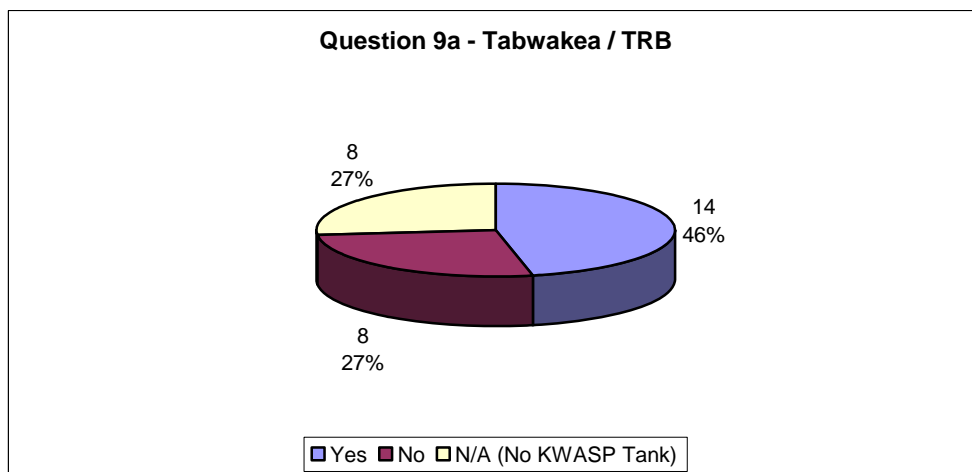


Figure A.17 Lack of Supply in Piped Water – Banana / MC / NB

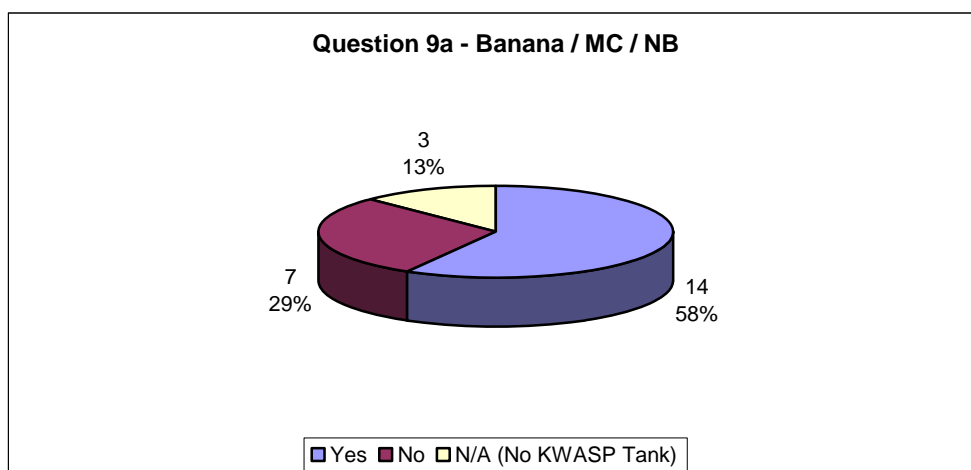
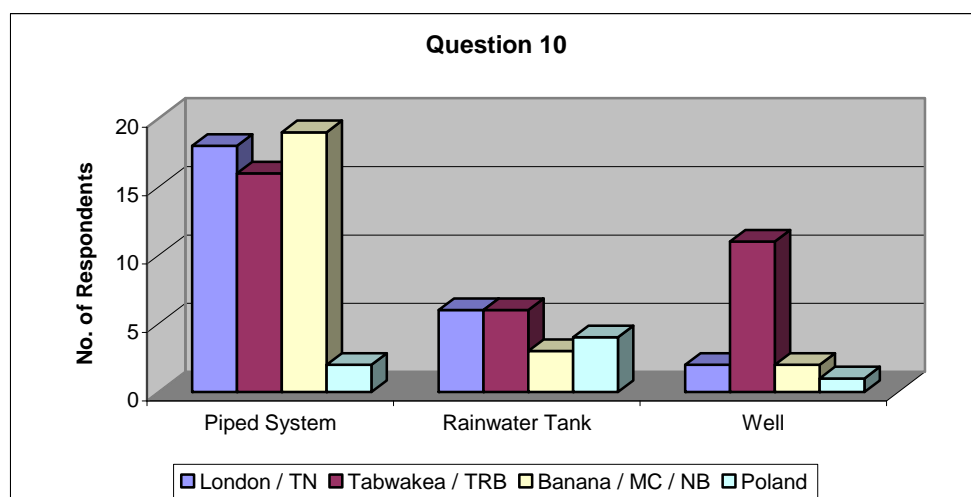


Figure A.18 Respondents Seeking Improved Water Supply Infrastructure



The vast majority of respondents indicated that there were little to no taste or colour issues with their piped water supply. Figures A.19 and A.20 highlight that only 4 of 76 (5.3%) and 2 of 76 (2.6%) of respondents have an issue with taste and colour respectively. The most common issue with taste and colour was the presence of small insects in the water – described as *Minmino* in I-Kiribati. Two respondents commented that there needs to be more chlorination of the water. This has been further supported by the Project Team (Hydrology and Engineering) who have found *e-coli* and *coliforms* in virtual all parts of the London, Tabwakea and Banana systems, both at source and at demand points.

Key Implication for Project Design No. 7: The design needs to ensure that adequate treatment occurs for piped water along the entire system.

There were a number of other issues raised by the respondents regarding their piped water supply, namely:

- Leaking pipework;
- Illegal connections into the trunk mains;
- Faulty household meters;
- Cost of water and billing; and
- No connections / low-flow tanks.

The issue of cost of water was the most common amongst the above list. A number of respondents believe the price should be the same as South Tarawa – i.e. a flat rate of A\$10/month regardless of usage. Linked to water pricing is the issue of leakages, faulty meters, and poor quality service generally, which contribute to customers lack of willingness to pay bills which they believe are incorrect.

Figure A.19 Response to Issues of Poor Taste in Piped Water Supply

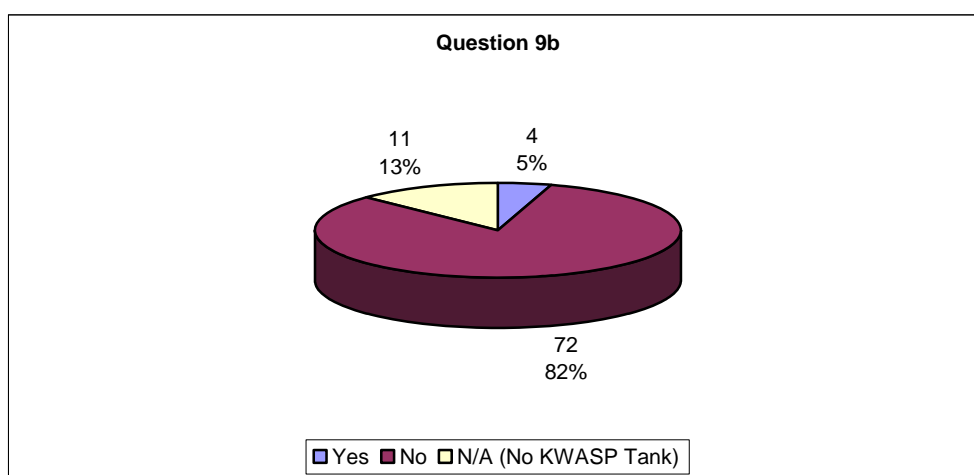
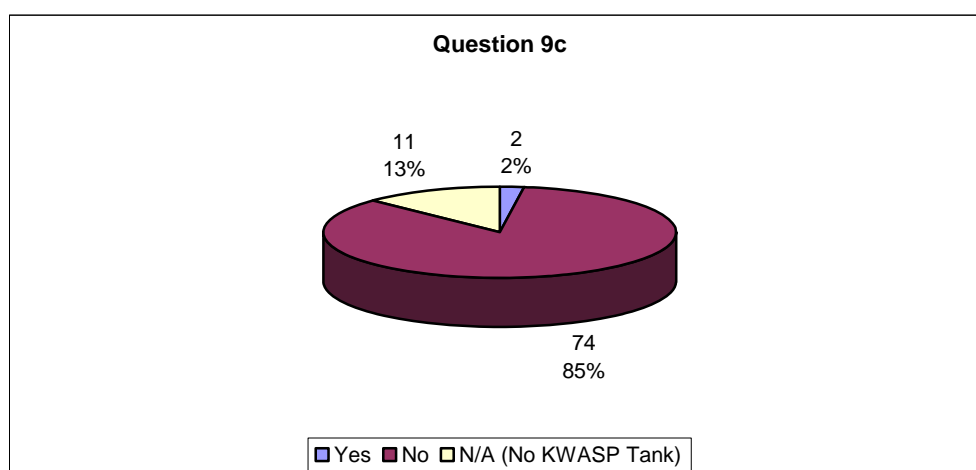


Figure A.20 Response to Issues of Poor Colour in Piped Water Supply

Health

The vast majority of respondents (89%) stated that they had not had any water-related illnesses in the past year in their household. Health data from Kiritimati Island health clinics for the 2002-2006 period indicate that 6.2% of the population was diagnosed with some form of gastrointestinal illness (diarrhoea or dysentery). The majority of these cases were diarrhoea. Significantly, these statistics only reflect the number of people who attended the village clinics/ hospital and as such the actual number of people with diarrhoea is likely to be much higher⁷.

Nearly all use of rainwater and bottled water was mentioned by households in the survey for consumption by infants and children. It would appear many households understand the linkages between poor quality water, gastrointestinal illness and childhood mortality.

When asked which method of water treatment the household uses, most (85%) respondents stated some form of treatment (i.e. boil, filter or boil and filter). The vast majority of respondents boil their water prior to use (82%). This is an effective treatment technique for most waterborne bacteria, but will not eliminate *Giardia* or *Chryptosporidium*. Some respondents also stated that they would boil their water some or most of the time and not use any other treatment for the remaining time.

Key Implication for Project Design No. 8: The Project should incorporate an education and awareness program to continue promoting household water treatment techniques and the linkages to public health and personal hygiene.

⁷ Personal Communication, Head Doctor, Kiritimati Island Hospital, 19 November 2007.

Figure A.21 Households with Water Related Sickness in the Past Year

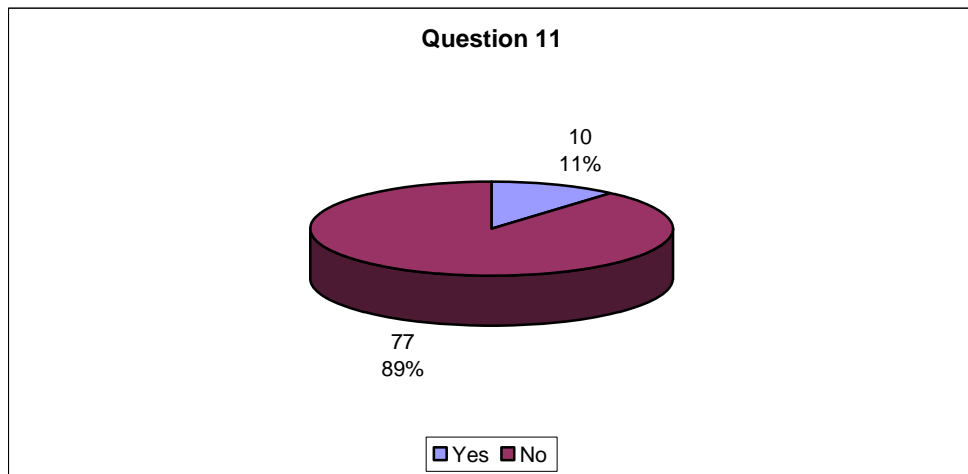
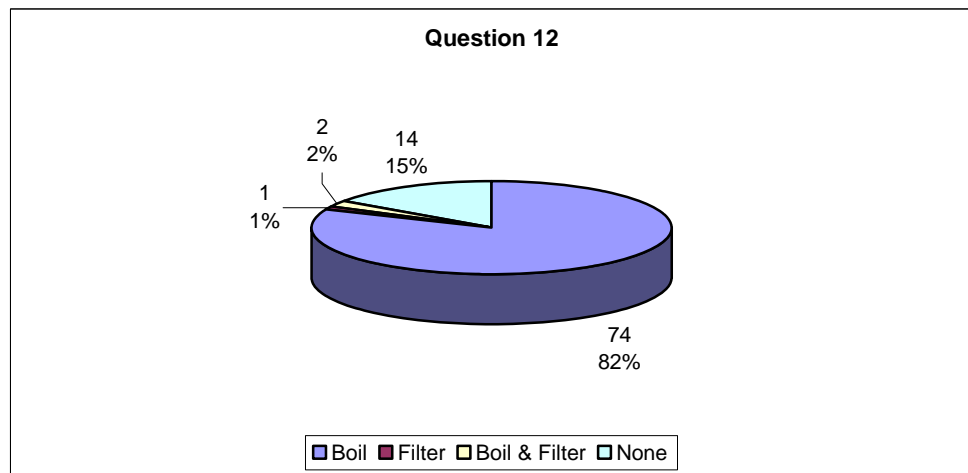


Figure A.22 Water Treatment Techniques Used by Respondents



Water Pricing and Willingness to Pay

When asked whether the Kiribati Government should charge for supplying water, 77% of respondents believed that they should (Figure A.23). However when it comes to willingness to pay for this service more than half of respondents believe the service should be free or A\$2.00 per month – 22% free and 32% A\$2.00/month (Figure A.24). The average monthly fee for water from all of the respondents equated to A\$4.03.

Contrary to MLPID records⁸, the majority of surveyed households (82%) responded that they pay their water bills. Most households probably responded truthfully – in that they pay some of their water bill each month. In most cases though the records show that very few households pay their water bill in full each month.

Many respondents commented that the price of water should be reduced to match the monthly charge of South Tarawa – i.e. A\$10.00/month. Interestingly, the model in South Tarawa operates at a flat rate, regardless of water usage⁹. Although this may be preferred by the residents from a financial standpoint, this practice doesn't encourage any appreciation of the value of water and the price of water relative to usage.

Of the 18% of households that do not pay their water bill, the reasons given were: (i) they did not receive a bill or (ii) they do not have a piped water connection. A number of the respondents also commented that meters were either not working effectively or were not present at all.

Key Implication for Project Design No. 9: The Project should maintain the practice of charging households for provision of water and ensure that billing is regular and accurate, based on reliable metering systems.

Figure A.23 Should the Government be charging for the provision of water?

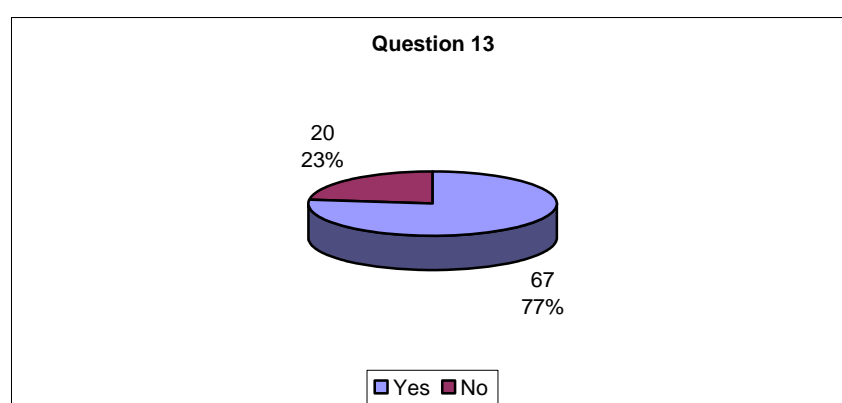


Figure A.24 How much would you be willing to pay per month?

⁸ Based on finance records from the Water and Sanitation Division of MLPID.

⁹ Water supply is rationed, with supply only provided every second day in South Tarawa.

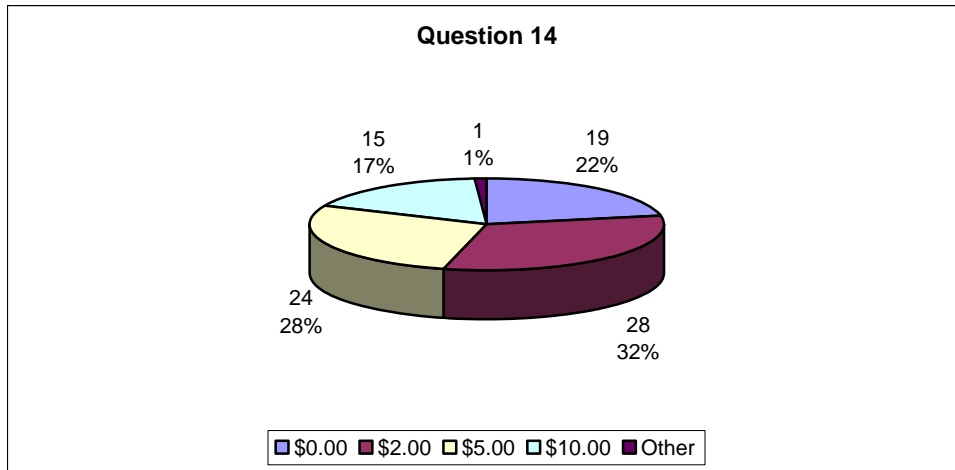
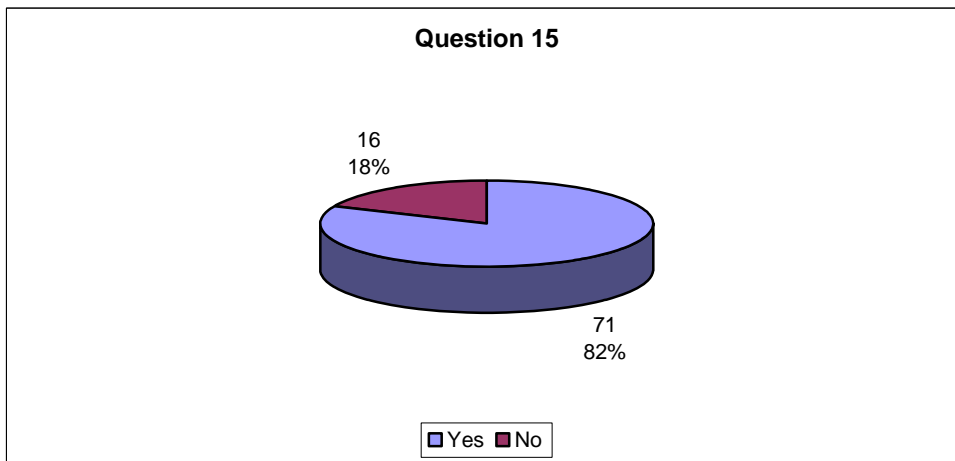


Figure A.25 Do you pay your water bill?



A.3.1 Household Sanitation

Sanitation Systems – Current Usage and Preferences

There are a variety of sanitation systems in use on Kiritimati Island. The most common systems are pedestal with cistern flush (45), bush (45), ocean beach (37) and pedestal with bucket flush (25) (Figure A.26). There are small numbers of households who use compost toilets, pit latrines, the lagoon beach, neighbours toilet and squat toilets with bucket flush.

Table A.2 Comparison of Percentage of Households with Various Sanitation Systems from 2005 Census and Household Survey

Sanitation System	2005 Census		Household Survey				
	Kiribati	Kiritimati	Kiritimati	London / TN	Tabwakea / TRB	Banana / MC/ NB	Poland
Pedestal toilet w/ cistern flush	23.2%	35.5%	51.7%	82.8%	30.0%	41.7%	50.0%
Pedestal toilet w/ bucket flush	29.8%	37.9%	28.7%	17.2%	33.3%	41.7%	0.0%
Ocean beach	30.0%	8.4%	42.5%	37.9%	66.7%	12.5%	75.0%
Bush	27.0%	12.8%	51.7%	20.7%	63.3%	70.8%	75.0%

The types of sanitation systems used in each village are distinctly different. London is characterised by a high number of pedestal toilets with cistern or bucket flush. This is a reflection of the large number of government houses, the majority of which have cistern flush toilets as a standard feature. In London, where there are flush toilets in nearly every house, 38% of people practice beach defecation and approximately 1 in 5 practice bush defecation (Figure A.27). This is also common in other parts of Kiribati, particularly South Tarawa, where beach defecation is often preferred over flush toilets due to cultural norms and traditions.

Beach and bush defecation (67% and 63% respectively) is even more prevalent in Tabwakea village (Figure A.28). The large household size in Tabwakea and Banana is also putting strain on sanitation systems, with respondents noting that they “sometimes need to go elsewhere due to crowding”. Access to flush toilet (cistern or bucket flush) is lower than London at 30% and 33% respectively. This is an indication of the relative cost of installing and maintaining a toilet/septic system over other forms of sanitation as the majority of houses in Tabwakea are on private freehold and leasehold plots.

In Banana another mix of systems is utilised (Figure A.29). Some 42% of households have a cistern flush pedestal toilet and another 42% have a bucket flush pedestal toilet. A large proportion of the population in Banana (71%) use the bush as an alternative sanitation system. Beach defecation is much lower in Banana (13%) due to the village being some distance from the coast (1-1.5km) as compared to London and Tabwakea.

Residents in Poland, like the other villages on Kiritimati Island, use a variety of sanitation systems (Figure A.30). Of the small sample of respondents (4), 75% practiced beach and bush defecation, with 2 out of 4 households having a cistern flush pedestal toilet.

Of the total respondents, a small number noted that they do not have any form of formal sanitation system and must therefore practice beach and bush defecation or use their neighbour's toilet. The strong desire for assistance is evident in these household's responses – “we feel uncomfortable about not using a real toilet”, “no toilet so using the sea” or simply “we need a toilet”.

Respondents were clearly not in favour of compost toilets with comments such as “no compost toilet because of the cockroaches”. Some respondents who have compost toilets have stopped using them. However, there are still a small number of people who still use and prefer compost toilets. The project should not look to alter this practice but at the same time acknowledge that compost toilets are not preferred by the majority of the population.

Of the 52 respondents who included the pedestal toilet with cistern flush in their 1,2,3 ranking of preference (Question 16), only one respondent did not place the sanitation option as most preferred (i.e. Ranked 1). Of the 45 respondents with pedestal toilet with cistern flush, all ranked this option as their preferred system.

Five options received more than 10 votes from the respondents, namely: pedestal toilet with cistern flush (52); bush (45); ocean beach (35); pedestal toilet with bucket flush (18); and compost toilet (13). Of these five options pedestal toilet with cistern flush and pedestal toilet with bucket flush were the most preferred with scores of 1.0 and 1.1 respectively (Figure A.31).

When asked whether they were currently satisfied with their sanitation system, 69% of respondents answered yes (Figure A.32). However of the 60 who responded that they were satisfied, 54 (90%) have a pedestal toilet with either a cistern or bucket flush system. Therefore the majority of unsatisfied households are those without cistern or bucket flush sanitation systems and are located in Tabwakea and Banana villages (Figure A.33).

Key Implication for Project Design No. 10: The design should be aimed at supplying all households with an improved sanitation system. The preferred option should be pedestal toilets with bucket flush facilities as this requires less maintenance and less water than cistern flush systems. The ability of private leaseholders (both now and in the future) to afford this system needs to be a high priority.

Key Implication for Project Design No. 11: The Project should not install compost toilets because of very low community and government acceptance of the technology as trialed extensively under the KWASP project.

Figure A.26 Sanitation Systems Used – Total Survey

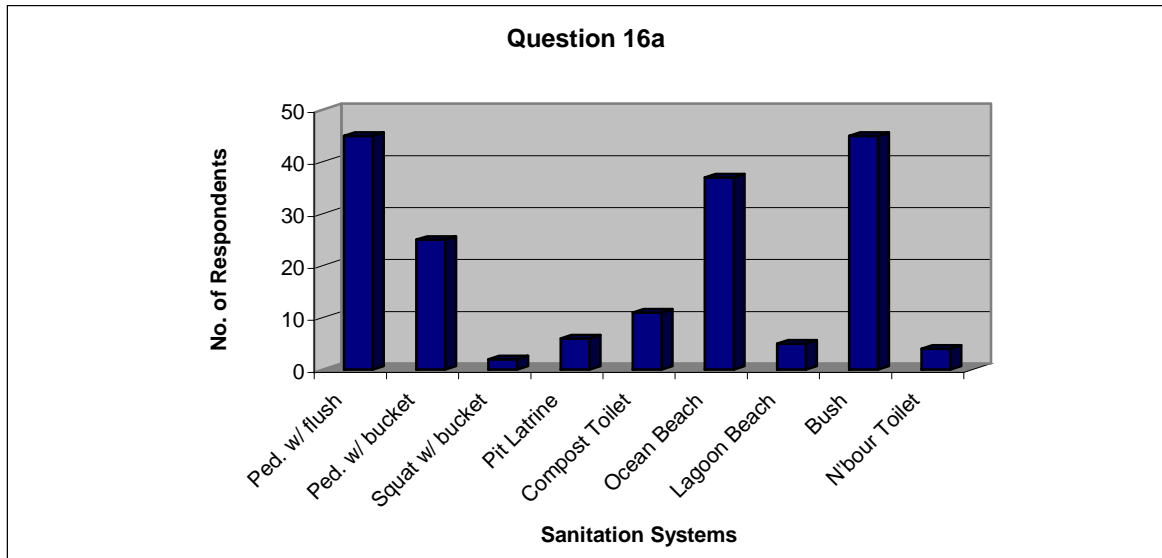


Figure A.27 Sanitation Systems Used – London / TN

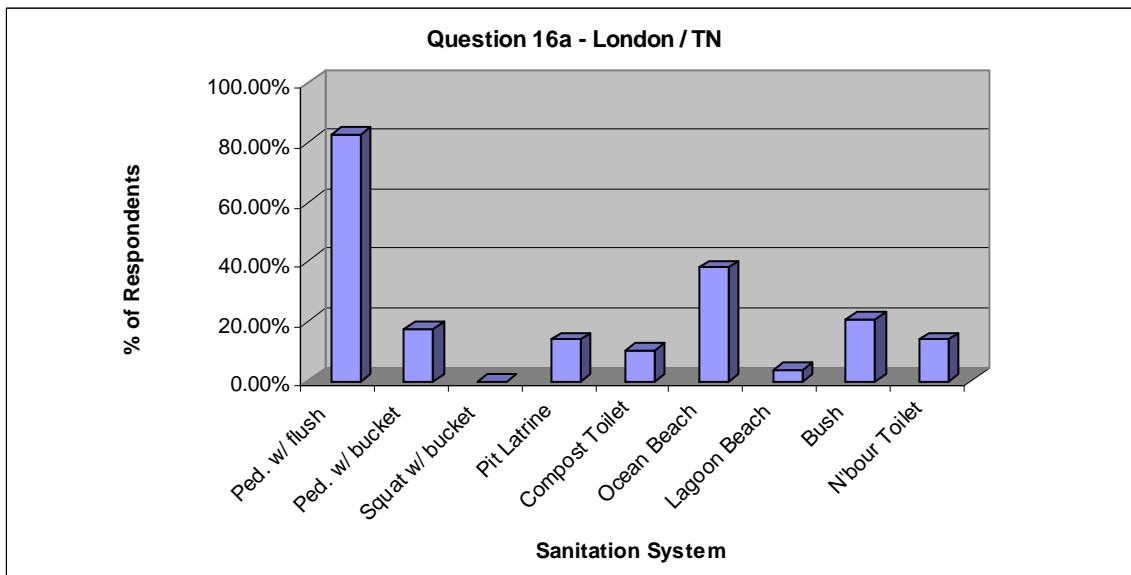


Figure A.28 Sanitation Systems Used – Tabwakea / TRB

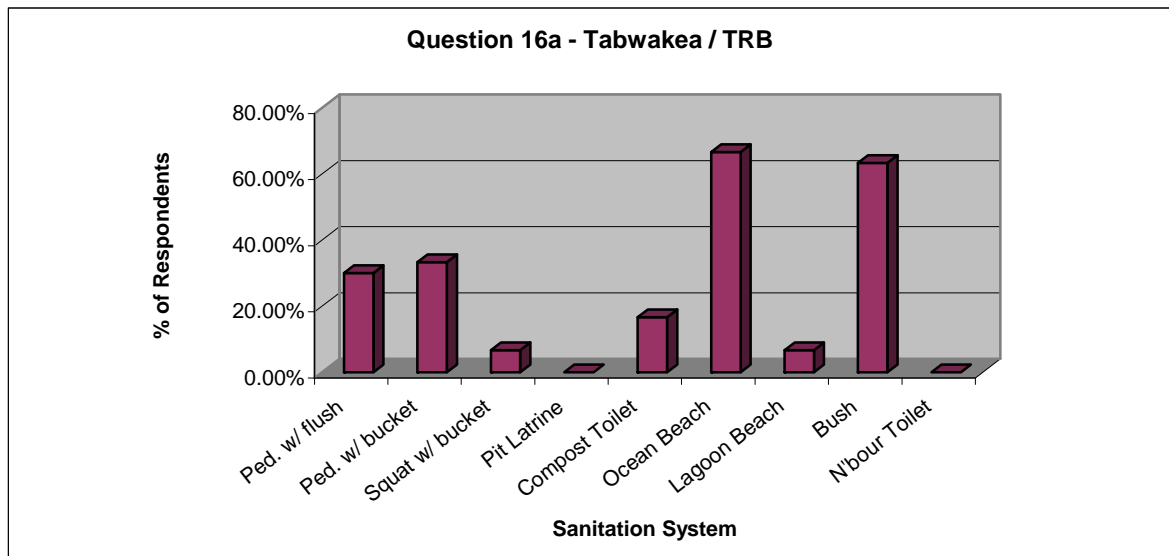


Figure A.29 Sanitation Systems Used – Banana / MC / NB

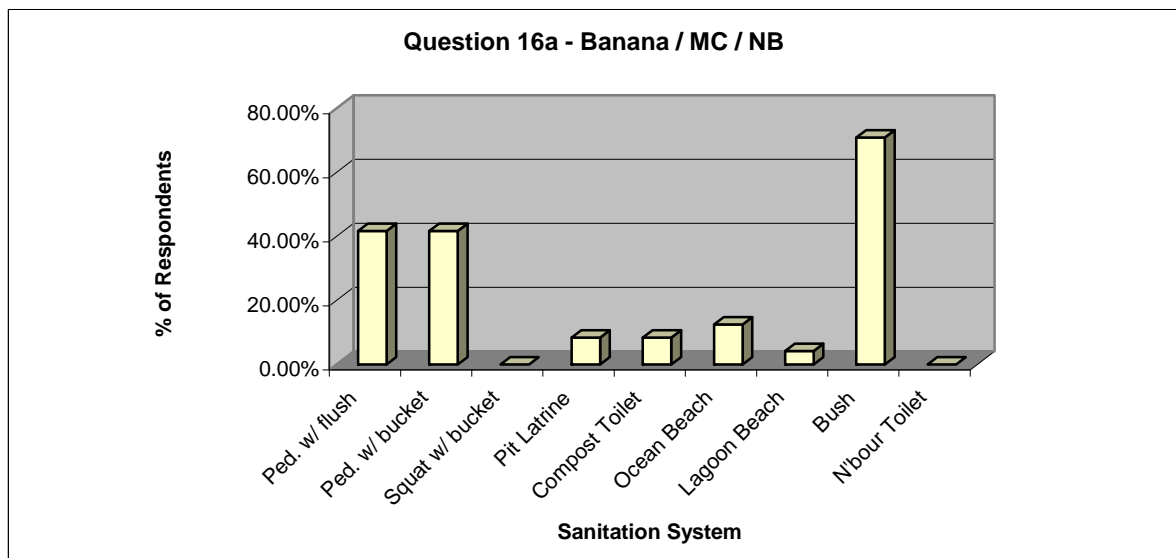


Figure A.30 Sanitation Systems Used – Poland

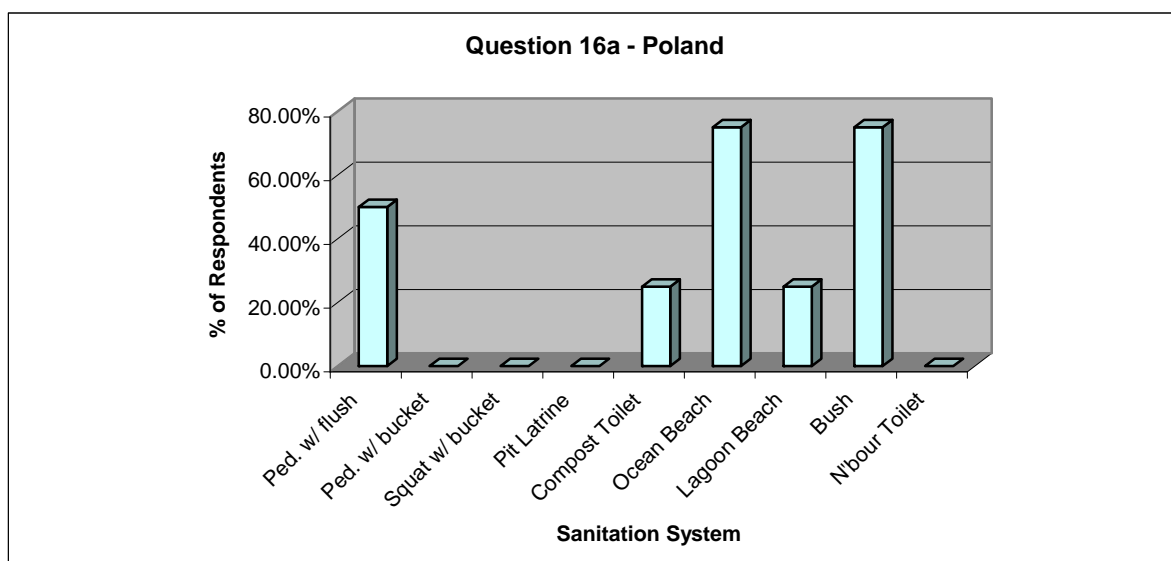
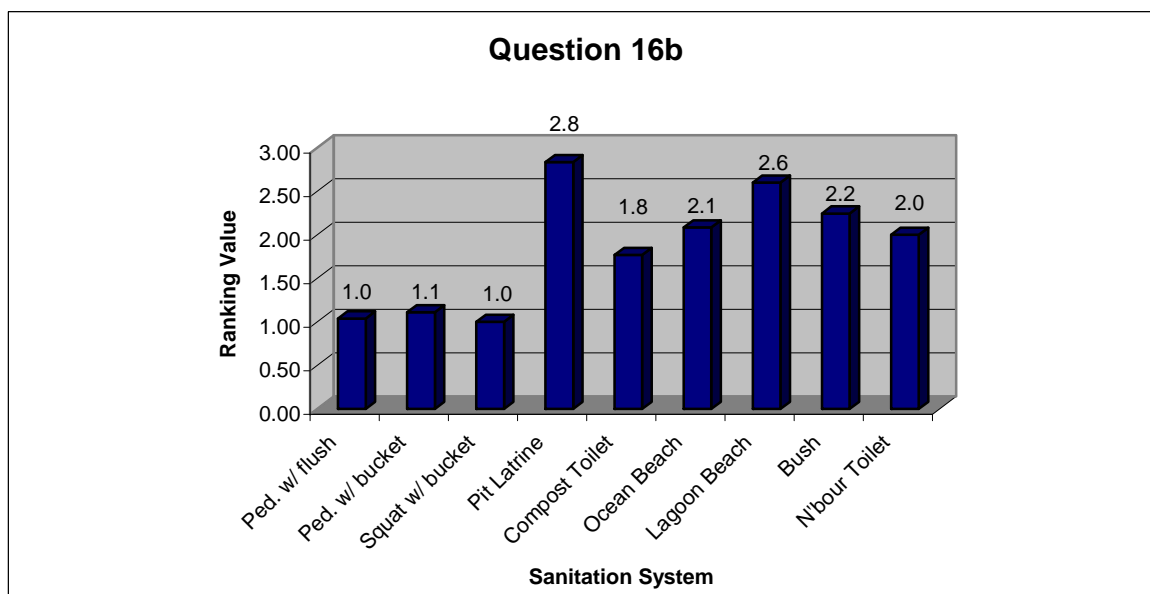


Figure A.31 Ranking of Sanitation Systems



NB: 1 – Most Preferred and 3 – Least Preferred

Figure A.32 Are you satisfied with your current sanitation system?

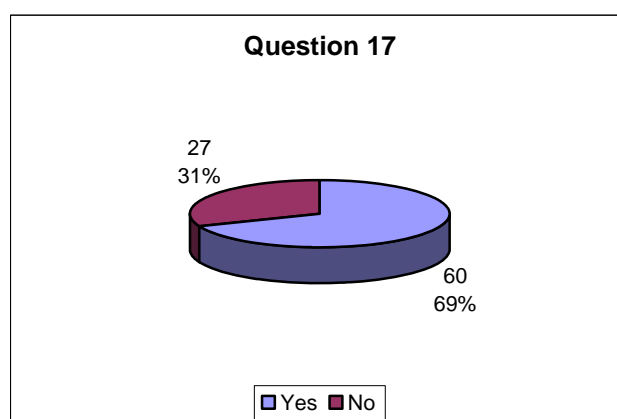
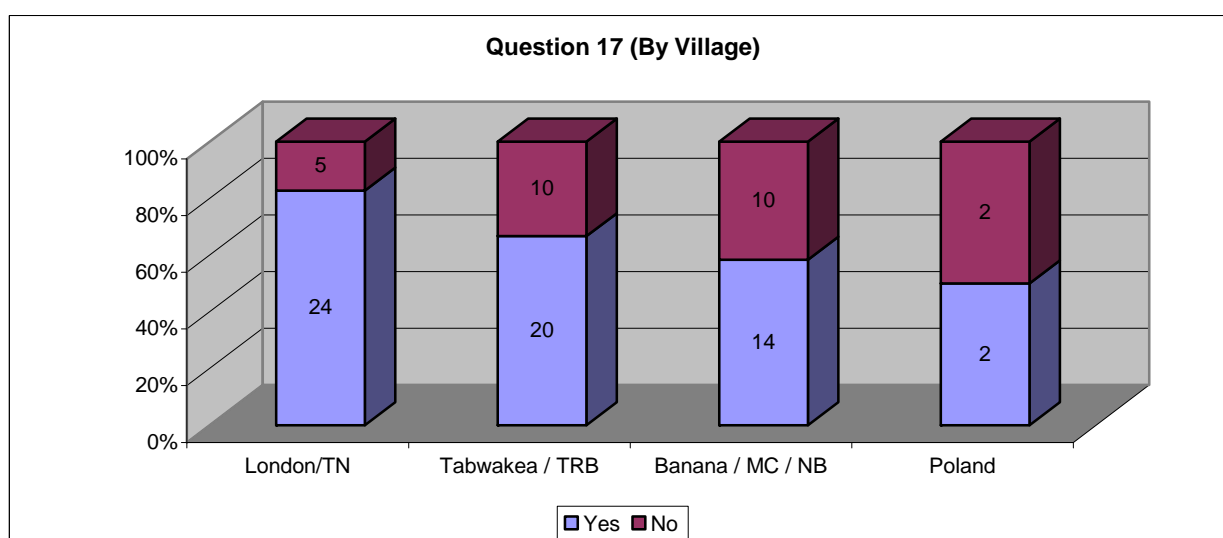


Figure A.33 Satisfaction with current sanitation system by village



Septic Systems

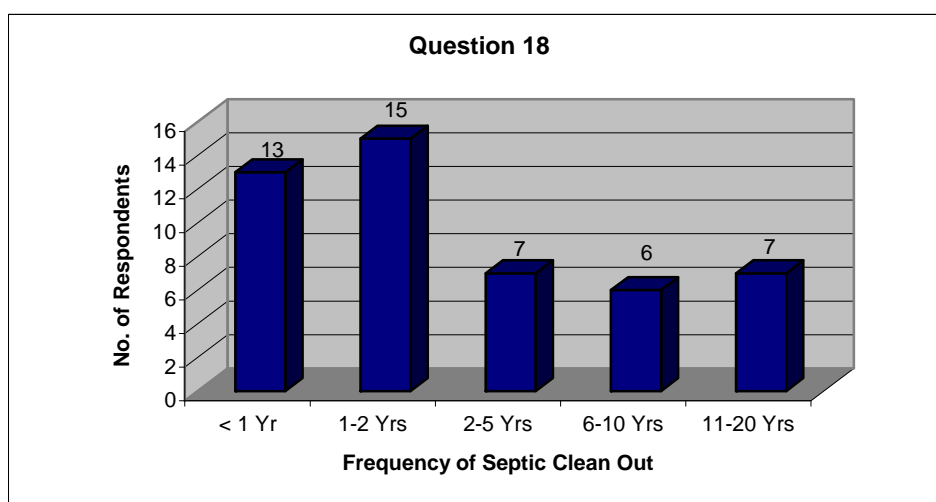
Question 18 of the household survey asked about the regularity of cleaning out septic tanks (for households that have septic systems). Some 48 respondents provided an estimate of the frequency of cleaning out their systems (Figure A.34). The average period across the respondents was approximately 4 years and 2 months. Despite this average the majority of respondents (28 of 48) recorded cleaning their septic tanks out every 2 years or less, some households every 2-3 months. This indicates that a large proportion of septic tanks are not working effectively. Septic tanks should only require cleaning out or pumping approximately every 5 years in equatorial regions like Kiritimati Island. The high rate of filling could be caused by poor design and construction (typically concrete block), high household numbers, no separation of liquid and solid matter or a combination of all these factors.

A number of households commented that they required a new septic system to replace broken units. Other households noted that septic tanks required fixing as they were experiencing odour issues. One household with a

pedestal toilet with cistern flush commented that they did not even have a septic tank. It is unsure what type of solids retention system they were using, if any.

Key Implication for Project Design No. 12: The Project needs to ensure that all septic systems are cleaned out under a regular and systematic pumping regime. The project also needs to ensure that any education and awareness program includes instruction in use and maintenance of septic systems.

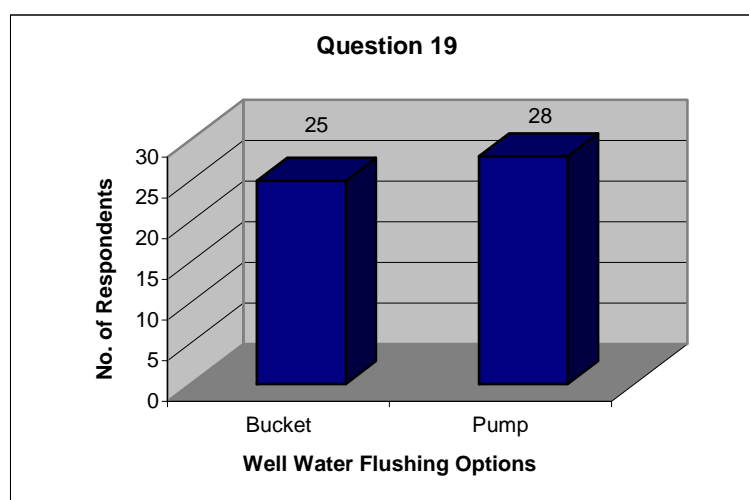
Figure A.34 Frequency of Cleaning Out Septic Tanks



Well Water for Flushing Toilets

When asked about willingness to use well water for flushing toilets (either by bucket or pump), more than half (58%) of the surveyed households responded positively (Figure A.35). This indication, combined with the strong desire from Tabwakea for well improvement (Figure A.18) suggests that there is strong support for toilets that can be flushed with well water. For households close to the ocean it has even been suggested that sea water could be carried to the house and used for flushing toilets¹⁰. The importance of wells and their implication for design has already been discussed in the 'multiple source-multiple use' section, in which wells in Tabwakea and Banana (and potentially Poland) should be constructed or existing wells improved to support non-potable uses (such as toilet flushing).

¹⁰ Personal Communication, Women's Association Focus Group, 31 October 2007, London.

Figure A.35 Preference to Flush a Toilet Using Well Water by Bucket or Pump

A.4.1 The Environment

Detailed analysis of the responses to the two environmental questions have been undertaken by the Environmental Specialist and are contained in the Initial Environmental Examination.

A.5.1 Willingness to Pay and Income / Expenditure

Detailed analysis of the responses to the three household income and expenditure questions have been undertaken by the Financial Analyst. This analysis also includes comparisons with the recently completed Income and Expenditure Survey, conducted by the Government of Kiribati in 2006. A brief description of income and expenditure is listed in Section 4.2 above, in the context of poverty and hardship assessment. For full details, see the Financial Analysis and Economic Analysis Working Papers.

Annex B Household Survey

(English and I-Kiribati Translation)

Introduction

The following survey is being conducted as part of the ‘**Outer Islands Growth Centres Project**’, funded by the Asian Development Bank (ADB) and the Government of Kiribati. The information you provide will assist the project team in assessing options for improved water supply and sanitation for Kiritimati Island. All personal information will remain confidential, including the respondents identity.

Thank you for your time to complete this important survey.

Personal Information

1. a) Village: London Tabwakea Banana Poland

- b) Would you prefer to live in another village? If yes, circle. Yes No

2. Sex: Male Female

3. Age:

4. Number of People Living in the House/Dwelling: _____

5. What type of House/Dwelling do you have? Government Private

6. Interview Date:

Component 1 – Water Supply

7. Which of the following water supply systems do you have at you home and for what purpose do you use each?

Please also estimate the water usage, in litres per person/per day for the different systems.

Type	Drinking / Cooking	Bathing	Washing	Flushing Toilet	Other Uses
Piped water into house/dwelling					
Piped water from neighbour					
Rainwater tank					
Well in own yard					
Well in neighbours yard					
Bottled water					

8. How many buckets (20L) do you think each person requires each day?

9. Do you have problems with your piped water supply? For instance:

- Do you run out of water? How often: _____
- Does it have taste poor? How often: _____
- Does it have poor colour? How often: _____
- Any other issues? Comment: _____

10. Do you think you need better:

- Piped system Rainwater tank Well

11. a) Do you think anyone in you family got sick from water during the last year?

b) If yes, did the sick person received treatment, and how much were the medical costs?

12. How do you treat your drinking water?

- Boil Filter Boil & Filter None

13. Do you think the Government should be charging for the provision of water?

- Yes No

14. How much would you be willing to pay per month for a 24 hour, 7 days a week and good quality piped water supply?

- Nothing \$2 \$5 \$10 Other: _____

15. Do you pay you water bill?

- Yes No

If no, then why? _____

Component 2 – Sanitation

16. Where do you go to the toilet? Please rank three options that you prefer (1 – Highest and 3 – Lowest).

Ranking

- | | |
|---|--------------------------|
| <input type="checkbox"/> Pedestal toilet with flush cistern | <input type="checkbox"/> |
| <input type="checkbox"/> Pedestal toilet with bucket flush | <input type="checkbox"/> |
| <input type="checkbox"/> Squat toilet with bucket flush | <input type="checkbox"/> |
| <input type="checkbox"/> Pit Latrine | <input type="checkbox"/> |
| <input type="checkbox"/> Compost toilet | <input type="checkbox"/> |
| <input type="checkbox"/> Ocean beach | <input type="checkbox"/> |
| <input type="checkbox"/> Lagoon beach | <input type="checkbox"/> |
| <input type="checkbox"/> Bush | <input type="checkbox"/> |

17. a) Are you currently satisfied with your household sanitation system? Yes
 No

b) If no, would you prefer a different system? Please comment:

18. If you have a Septic Tank, how often do you have it cleaned out?

19. Would you be willing to use well water to flush you toilet with a:

- Bucket Pump

Component 3 – Environment

20. With regards to Government efforts to manage fish and bird problems, what do you see as the major environmental issues on Kiritimati Island? And, what do you think Kiritimati Island will look like when your children grow up?

21. Who is responsible for management of these problems?

Component 4 – Household Income and Expenses

22. Monthly expenses on (A\$):

Income	
Formal Employment	
Informal / In-Kind Income	
Expenses	
Food	
Clothing	
Housing (rent, repair)	
Transport	
Water	
Power	
Telephone	
Education	
Health	
Others	

23. How many persons in the household contribute to income? _____

24. How much does your household save per month, if any? _____

We thank you for your participation in this important survey.

Introduction

Te kakae aio e karaoaki bwa iteran te karikirake ibukin abamakoron nako Kiribati. Are e a manenaki iroun te Asian Bank Development (ADB) ao te tautaeka ni Kiribat, Ami rongorongo ake kam anga a na rangi ni ibuobuoki nakoia kain te tiim ni karikirake aio ibukin kakae an gan karikirakean tamaroan te ran ma te kai-n –nakotari iaon Kiritimati. Ami kaeka ake kam anga ana bon bane n tabuaki kaotinakoia,

Ko rab'a n am tai ae ko anga ibukin kabaninan te kakaea aio.

Personal Information

1. a) Am kawa: London Tabwakea Banana Poland
- b) Ko tangiria ni kani manga maeka n te kawa teuana? Ngkana ngaia, kamronna.
Eng Aki
2. Sex: M'ane Aine
3. Am ririki:
4. Maitia aomata aika maeka n am auti: _____
5. Rinanin am auti? Auti te tautaeka Bon am kateitei
6. Tain te maroro:

Makoro 1 – Water Supply

7. Rinea kaekin rokon te ran n am auti ae ko kakabongana ao bukin tera?

Taiaoka naba ni katautaua maitin te ran are e kabonganaki ibukin temanna ke tao inanon tebongina.

Rinanin rokon te ran	Mooi / Kuuka	Tebotebo	Uati	Kaitiakan te Kain-nako taari.	Tabeuariki
Katikan bwaibu n ran nakon ami auti.					
Katikan bwaibu n ran mai irouia kain rarikim					
Tangke ni karau					
Am m'anib'a					
Aia m'anib'a kain rarikim					
Man te titoa					

8. N am iango iraua te b'aketi n ran (20L) ae e tau ibukin temanna n te bongina?

9. Iai am kanganga ma b'aibu n ran ake a tiki nakon am auti? Ao ibukin anne:

- E babane am ran? Manra: _____
- E buakaka nimakina? Manra: _____
- E buakaka tarina ? Manra: _____
- Bwai riki tabeua? Anga am iango _____

10. N am iango ko tangira tamaroan riki :

- Are katikaki n te b'aibu n ran Tangke ni karau Manib'al

11. a) N te ririki ae nako ao iai n am utu ae e a tia n aoraki man te ran? _____

c) Ngkana iai; ao te aoraki anne e anganaki ana b'ain-aoraki, ao iraua boon ana b'ain-aoraki.

12. Tera arom nakon nimam te ran?

- Kaburoa Raumeaia Kaburoa ao Raumea Akea

13. N am iango ao e riai te tautaeka ni kaboa kamanenakin te ran?

- Eng Aki

14. Kanga iraua ae ko tangiria ni kab'aka ibukin teuana nam'akaina ae e maiu inanon 24 te aoa ao e rangi n nakoraoi n akea te kanganga man te ran anne.?

- Akea \$2 \$5 \$10 Tabeua riki:
- _____

15. Ko kakab'aka boon am ran?

- Eng Aki

Ngkana koaki, ao bukin
tera? _____

Component 2 – Kain-nakotari ao te ran are e buakaka are nako man te roki

16. Ko na nakotari ia? Taiaoka karinani teniua aika ko kabonganai (1 – eta and 3 – nano). Rinania

- | | |
|---|--------------------------|
| <input type="checkbox"/> Te bo are iai ana tangke n ran | <input type="checkbox"/> |
| <input type="checkbox"/> Te bo are akea ana tangke | <input type="checkbox"/> |
| <input type="checkbox"/> Te bo are e nim ma aontano ae | <input type="checkbox"/> |
| <input type="checkbox"/> M'aruarua | <input type="checkbox"/> |
| <input type="checkbox"/> Te kamkamka | <input type="checkbox"/> |
| <input type="checkbox"/> Taari | <input type="checkbox"/> |
| <input type="checkbox"/> Te nama | <input type="checkbox"/> |
| <input type="checkbox"/> Buakonikai | <input type="checkbox"/> |

17. a) Ko kukurei n am kai-n-nakotari ae ko kakabongana ngkai? Eng Aki

d) Ngkana ko aki, ao ko tangiria b'a e na bitaki? Taiaoka anga am iango:

18. Ngkana ko kabongana te Septic Tank, Ningai am tai ni kakaitiakia?

19. Tera ae ko ko tangiria ni kabongana ibukin anakin ranin te manib'a ni kaitiaka am kain-nakotari?

B'aketi B'am

Component 3 –Otab'anin

20. Ni kaineti ma ana anga te tautaeka ibukin kawakinan te ika ma mannikiba, kanga n am taratara tera te oi ni kanganga nakon te otabanin iaon Kiritimati? Ao tera am iango n tarakin Kiritimati nakon taai aika ana roko.

21. Antai tabena kanganga akanne?

Component 4 – Household Income and Expenses

22. Te kabanemane n teuana namakaina (A\$):

Karakem'ane	
B'akab'ai	
Itinanikun te B'akab'ai	
Kabanemane	
Amarake	
Kunnikai	
Auti (boona, onob'ai)	
M'am'ananga	
Ran	
Iti	
Taraboon	
Reirei	
B'ain-aoraki	
Tabeaua riki	

23. Iraman n am auti aika a karekem'ane? _____

24. Iraua am kaiko mane n teuana nam'akaina? _____

We thank you for your participation in this important survey.

Annex C Summary Poverty Reduction and Social Strategy (SPRSS)

Country/Project Title: Republic of Kiribati / TA No. 4456-KIR Preparing the Outer Islands Growth Centers Project – Phase 2

Lending/Financing Modality:

Project Preparatory Technical Assistance (PPTA)

Department/ Division:

SPSO / PARD

I. POVERTY ANALYSIS AND STRATEGY

A. Linkages to the National Poverty Reduction Strategy and Country Partnership Strategy

1. Policy Setting

The improvement of basic services and infrastructure in the outer islands, particularly for water supply and sanitation, is a key sector as part of the *ADB Country Strategy 2006-2007* for the Republic of Kiribati. In addition, the country poverty partnership agreement states that a key hardship (poverty reduction) strategy must: (i) improve the level of basic services; (ii) improve the opportunities for employment in the outer islands (including Kiritimati Island); and (iii) slow the migration of outer islanders to South Tarawa. The Government of Kiribati has also made a commitment to the Millennium Development Goals (MDGs), including Goal 7, environmental sustainability, which is of greatest relevance to this Project. In particular, within Goal 7 are two key targets: (i) halving the proportion of people without sustainable access to safe drinking water by 2015 (Target 10); and (ii) increased access to improved sanitation by 2015 (Target 11).

2. Project Background

The Project influenced area (PIA) covers all four villages on Kiritimati Island, namely *London* (inc. Tennessee and North London), *Tabwakea* (inc. Terawanbakoa), *Banana* (inc. New Banana and Main Camp) and *Poland*. The Project will enhance the village settlements in Kiritimati Island through improved household water supply and sanitation systems, including greywater. The improved water supply and sanitation systems will provide opportunities for hardship reduction through: (i) improved health status and well-being of residents by reducing the incidence of waterborne diseases; (ii) creation of new job opportunities during construction; (iii) improved water resource protection and management, including household wells; and (iv) and assist in creating an enabling environment for private sector development in Kiritimati Island, including tourism.

B. Poverty Analysis Intervention

Targeting Classification: Targetted

The Project has been assigned a targeting classification of targeted intervention, with a focus on the Millennium Development Goals (TI-MDG). Whilst the project is concerned with providing an enabling environment for economic growth in Kiritimati Island, the primary outcome of the intervention is its contribution to Goal 7 of the MDGs. The project is also unique in that it targets 100% of the Kiritimati Island population by providing outcomes for both 'poor' and 'non-poor' beneficiaries, which is in line with I-Kiribati social equality norms.

1. Key Issues

Defining Poverty. The terms poverty / poor, or *te kainnano ni kainnano*, is particularly offensive in Kiribati and causes insult when used to describe a person or group of people. Hardship, or *te maiu ni kanganga*, is the term commonly used in Kiribati and describes one who is: (i) having difficulty in providing for the family's needs; (ii) is living on credit; or (iii) is *bubuti* – regularly asking for favors (including begging) from relatives and friends. Despite this distinction, it is still possible to estimate the percentage of the population who are in economic hardship. At present, some 16% of Kiritimati Island residents are below the Food Poverty Line for outer islands in Kiribati, which equates to A\$202 pc p.a. and 24% below the Poverty Line for outer islands, which is A\$243 pc p.a.

Project Beneficiaries. The total Project beneficiaries will be the existing population of 5,965 persons (2007) and a target population of 11,300 persons in 2015, which is equivalent to 100% of the Kiritimati

Island population. Based on the Household Survey and Existing WSS Infrastructure Survey (November 2007), some 58% of households identified that they experienced a lack of piped water supply. In the case of Banana village (where 65% of households receive piped water), supply is only available for between 1-2 hours each day. At present, well water is used for all household water needs (both potable and non-potable) by 49% of households in Tabwakea village and 35% of households in Banana village. In Kiritimati Island, 69% of households use a septic system, with 46% having cistern flush, 30% pour flush and 10% having a pit toilet.

Overcrowding and Landlessness. The extremely slow pace by which state lands have been released in Kiritimati Island, combined with steady in-migration from Tarawa, is continuing to cause overcrowding issues in London, Banana and in particular Tabwakea village. The vast majority of landless families are able to reside with extended family members. However sometimes there is insufficient space and they must then be housed in, or adjacent to, church *maneabas*, or become squatters either within the villages or in the bush (estimated to be 8 families, November 2007).

Income/Expenditure Inequality. Traditional I-Kiribati culture is structured around equality and even distribution of resources including the practice of *bubuti*. As this egalitarian framework begins to breakdown, from increasing monetization, there is a growing inequality between different sections of the community. This is a growing trend in Kiritimati Island, as displayed in the differences between the villages of London and Tabwakea, where on average residents in London earn more than twice that of residents in Tabwakea. Differences between villages are also seen in land ownership. The majority of land in London, Banana and Poland villages is state land, with government housing provided. In contrast, Tabwakea village and parts of Banana village are a mix of freehold and private 25-year leasehold plots, with differing levels of housing quality and levels of services. As such, there is a clearly 2 levels of urban population in Kiritimati Island, each with specific needs, attitudes and aspirations.

2. Design Features

Water Supply. A core principle underpinning the water supply component of the Project design is "multiple sources for multiples uses". Practically, this entails the construction of new wells and the improvement of existing wells in the villages of Tabwakea, Main Camp/ New Banana, Banana and Poland. This provides the residents of these villages with multiples sources of water, particularly for non-potable uses (such as flushing toilets, watering gardens and feeding livestock). By using wells for approximately one third of water requirements (30 l/p/d), average households in Tabwakea can potentially save A\$51 in water bills per month and households in Banana potentially A\$45 per month. In addition, the reduced dependence on the key groundwater reserves by Tabwakea and Banana villages for non-potable uses is beneficial for more sustainable management of the lenses. To support low-income earners, particularly from Tabwakea village, the Project will provide the option of spreading the initial cost of connecting to the water supply system (approx. A\$120) over a period of 6-12 months.

Sanitation, including greywater. The design preference for septic systems is aligned with the aspirations of the vast majority of residents in Kiritimati Island. Historically, a standard has been set by government housing, all of which have septic systems, with cistern flush toilets. The Project design proposes the installation of pedestal toilets with a bucket flush, where possible, with flush water sourced from local wells (except in London village where well water is highly contaminated by petrochemicals). Greywater systems (evaporation basins) will apply equally for all villages, government and private.

Conceptual framework. Given the depth of socio cultural norms and values influencing the use of traditional defecation methods, as well as attitudes towards the environmental and waste management, the Project design emphasizes as far as possible that the Project is equally about the provision of infrastructure as it is about community development/mobilization and institutional change.

II. SOCIAL ANALYSIS AND STRATEGY

A. Findings of Social Analysis

1. Key Issues

Socio-Cultural Norms and Values to Water Supply and Sanitation. Kiribati culture has for generations enabled the I-Kiribati to live sustainably within their environment, primarily in low density outer island settings. Traditionally, I-Kiribati have obtained freshwater from shallow wells and practiced beach and bush defecation which is the preferred form of toilet on outer islands. This is supported by

lessons learnt from other water and sanitation projects in Kiribati which note that although “safer” sanitation systems had been installed, beach defecation has only decreased slightly, indicating a reluctance to depart from traditional practices. Recent surveys in South Tarawa and Kiritimati Island indicate that even when people have access to a cistern-flush toilet, many prefer to practice beach and to lesser degree, bush defecation, or a combination of both methods. There is also a strong aversion to change within I-Kiribati society. As such, any community or institutional changes should be framed around long-term goals as short-term programs will inevitably fail.

Public Health. Kiribati has the fourth lowest human development index of all the Pacific developing member countries. In Kiritimati Island, the most common reported illnesses are (i) cold/flu – 75%; (ii) respiratory illnesses – 22%; (iii) fever – 15%; and (iv) diarrhoea – 5%. The total percentage of the population suffering from water-borne illness is 6.27%, based on available health data. Significantly, these statistics only reflect the number of people who attended the village clinics/ hospital and as such the actual number of people with water-borne illness (diarrhoea, dysentery and some hepatitis) will be much higher, perhaps as much as 5 times higher (i.e. 30%). Health benefits are assumed to accrue starting from 2011 and include income loss avoidance and medical cost avoidance as a result of reduced illness. Through an improved environmental situation, the population exposed to water-borne will be reduced with associated reduction in medical costs and in the number of workdays and school days lost due to sickness. It is estimated that the potential annual health benefits will range between A\$33,100 and A\$52,700 from 2011 to 2040. The net present value (NPV, using a 10% discount rate) of health benefits that is attributable to the Project during the period 2011 to 2040 is estimated at A\$451,000. In addition to public health benefits and in line with the Government’s MDG targets, the provision of enhanced water and sanitation services is a human right for the poor in the Outer Islands.

B. Consultation and Participation

Participation was ensured during the implementation of the TA through a variety of consultative methods with key stakeholders; at the level of central government departments, government owned enterprises and the urban council, and at the level of Project communities, churches and other community groups, such as women’s associations and youth associations. A survey of 87 households (13% of households in Kiritimati Island) was also undertaken, following radio announcements regarding the project, including its goals and objectives. The Household Survey confirmed the need to upgrade both water supply and sanitation services in all Project villages. An Existing WSS Infrastructure Survey, covering 100% of properties was also undertaken.

A number of focus groups were held with churches, government and community groups, namely: (i) Kiritimati Urban Council; (ii) Island Church Council; (iii) youth group leaders; (iv) women’s association; (v) hotel, pet fish, diving and fisherman associations; (vi) the private sector and (vii) central government decision makers. In addition to group meetings, individual meetings were held with a range of households and individuals as part of both field observations and design validation.

A Stakeholder Analysis and Community Participation Plan was developed and provided the framework for effective interaction with Project stakeholders (see Appendix 17).

The level of consultation and participation (C&P) envisaged during the Project implementation and monitoring is:

Information sharing Consultation Collaborative decision making Empowerment

C. Gender and Development

1. Key Issues

The Project adopted a participatory approach to incorporating gender considerations, acknowledging that women play a vital role in the water and sanitation sectors, including personal hygiene practices. Women are the primary managers of domestic water and promoters of home and community-based sanitation activities, waste disposal and environmental management. However, whilst women play an active role in decision making at the household level, within I-Kiribati society it is customary that community level decision making is largely the domain of men. Key challenges lie in successfully involving women in community action; in which working with the Women’s Association will be a key objective.

2. Key Actions

Gender plan Other actions/measures No action/measure

A primary aim of the Information, Dissemination, Education and Awareness (IDEA) Program will be to work closely with women, most likely through the Women's Association, as they are the key audience for education and awareness activities. It is proposed that women play a key role in both the Community Steering Committee and the Water User Groups, which will be established as part of the Community Mobilization component of the Project.

It is accepted that women have a greater chance of disease given the increased contact with water from household responsibilities (especially cooking and washing) and as such will benefit disproportionately from the improvement in sanitation, water quality and village environment as a result of the Project. The Project is also aiming to ease the burden of collecting well water or water from neighboring areas by supplying piped water to all households (for drinking, cooking, bathing, washing and cleaning). For both existing and new wells, the Project will be supplying a *Tamana* pump (hand pressure pump), which will also ease the burden of collecting well water for non-potable uses by rope and bucket.

III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS

Issue	Significant/ Limited/ No Impact	Strategy to Address Issue	Plan or Other Measures Included in Design
Involuntary Resettlement	No Impact	No resettlement is required as part of the Project, as such, no Resettlement Plan is required.	<input type="checkbox"/> Full Plan <input type="checkbox"/> Short Plan <input type="checkbox"/> Resettlement Framework <input checked="" type="checkbox"/> No Action
Indigenous Peoples	No Impact	There are no Indigenous Peoples in Kiritimati Island as all residents are internal migrants from the Gilbert Islands Group of Kiribati or elsewhere. Kiritimati Island is state lands, with no customary lands.	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input type="checkbox"/> Indigenous Peoples Framework <input checked="" type="checkbox"/> No Action
Labor <input checked="" type="checkbox"/> Employment opportunities <input type="checkbox"/> Labor retrenchment <input type="checkbox"/> Core labor standards	Limited	Up to 70 medium-term jobs will be created during the construction phase of the Project. This will directly benefit up to 280 people in Kiritimati Island, given the current dependency ratio. Skilled low income earners should be the first to benefit from employment opportunities. In addition, it is proposed that some components of the sanitation infrastructure can be undertaken via community contracting (i.e. CBOs).	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action
Affordability	Limited	(i) All physical infrastructure improvements will be 90-100% subsidized by the GoK (ii) Program to spread initial connection cost for water supply over a 6-12 month period. (iii) Revolving Fund in place to assist residents with no credit rating to access funds through commercial or development	<input checked="" type="checkbox"/> Action <input type="checkbox"/> No Action

		banks for housing improvements.	
Other Risks and/or Vulnerabilities <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Human trafficking <input checked="" type="checkbox"/> Others(Public Health and Awareness)	Limited	IDEA Program to provide training and development to public health staff, village leaders, school teachers, women's association members	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action <input type="checkbox"/> No Action

IV. MONITORING AND EVALUATION

The types of social indicators included in the Design and Monitoring Framework are: (i) socioeconomic surveys; (ii) health benefit reports; (iii) Community Steering Committee reports; (iv) IDEA Program reports, including details on involvement of women, youth and schools; (v) GoK socioeconomic statistics; and (vi) Community User Groups reports.