ADAPTATION FUND

AFB/PPRC.35/Inf.1
17 March 2025

Adaptation Fund Board
Project and Programme Review Committee
Thirty-fifth Meeting
Bonn, Germany, 8-9 April 2025

PROPOSAL FOR KIRIBATI

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY:

Country/Region: Republic of Kiribati
Project Title: Enhancing the resilience of the outer islands of Kiribati
Thematic Focal Area: Coastal Management
Implementing Entity: Secretariat of the Pacific Regional Environment Programme (SPREP)
Executing Entities: Ministry of Infrastructure and Sustainable Energy (MISE)
AF Project ID: AF00000158
IE Project ID: **Requested Financing from Adaptation Fund (US Dollars):** US10,000,000
Reviewer and contact person: Ahmad Ghosn **Co-reviewer(s): -**
IE Contact Person:

Technical Summary	The project "Enhancing the resilience of the outer islands of Kiribati" aims to ensure that three selected communities have equitable and sustainable access to safe drinking water and clean water for other uses under expected climate change impacts. This will be done through the five components below: Component 1: Rapid response for existing damaged and unused water supply systems in the targeted villages (USD 989,000) Component 2: Strengthening Government of Kiribati's capacity and capability in sustainable water resource management (USD 972,800). Component 3: Strengthening coordination mechanisms and community participation in water resource management (USD 416,400) Component 4: Construction and repair of infrastructure to adapt to future climate impacts (USD 5,796,000). Component 5: Education, awareness raising, and knowledge management (USD 247,000). Requested financing overview: Project/Programme Execution Cost: USD 800,000 Total Project/Programme Cost: USD 9,221,200 Implementing Fee: USD 778,800 Financing Requested: USD 10,000,000 The first/ initial technical review raises several issues, such as aligning document contents with AF template and

	adding/ revising some information; adding more details on project components activities and USPs; considering possible restructuring of component 4 and revising its title to reflect its scope; clarifying climate change aspects of outcome 1.2 on water borne diseases; revising project benefits discussion and providing quantification where possible; revising project cost effectiveness discussion as per AF requirements; clarifying consistency with related national plans and adding more national standards; providing more details on related completed/ ongoing projects; providing substantive details on project consultations; clarifying full cost adaptation reasoning; specifying project overall risk category and clarifying USPs E&S risks management as per AF requirements; revising the implementation arrangements discussion and chart; adding M&E plan and revised budget; providing numbers for some "Target" percentages in the result frame work and inclusion of dedicated tables for AF core indicators; specifying allocated amounts in the alignment with AF results framework table at outcome/ output levels; among other Clarification Requests (CRs) and Corrective Action Request (CARs) raised in the review. *Please be advised that the findings of the AFB Secretariat's review of the funding proposal(s) do not reflect, indicate, or prejudge the outcome of the reaccreditation process currently underway. The Implementing Entity (IE) shall acknowledge that the funding proposal will not be approved by the Board if the IE's accreditation has expired, and reaccreditation has not been achieved at the time of the Board's decision. Notwithstanding this potential risk, the IE has elected to proceed with the development of the funding proposal.*
Date:	**05 February 2025**

Review Criteria	**Questions**	**First Technical Review Comments 05 February 2025**
Country Eligibility	1. Is the country party to the Kyoto Protocol and/or the Paris Agreement?	**Yes**.
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	**Yes.** Kiribati is a small island developing state (SIDS) highly vulnerable to climate change risks, particularly sea-level rise which could adversely impact coastal areas and marine ecosystems.
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	**Yes.** As per the Letter of Endorsement dated 21 January 2025.
	2. Does the length of the proposal amount to no more than One hundred (100) pages for the fully-developed project document, and one hundred (100) pages for its annexes?	**No.** However, Part I, first page, does not include all required information. Also, Part IV as per the AF proposal document is missing. Moreover, several annexes should be part of the proposal main body, among other revisions/ clarifications.

		CAR1: Add Part IV and revised first page of Part I of the AF template proposal document template and include required information on the first page of Part I and required documents in Part IV (endorsement letter, certification by the implementing entity). Also, include Annexes 1, 2, 3 and 4 at relevant sections in the main body of proposal, See the below link for the AF single country full proposal template: https://www.adaptation-fund.org/document/template-for-fullly-developed-single-country-proposal/ **CR1:** Please address the following: 1. To meet alignment with AF template basic contents, consider revising the information provided in Part I (pp. 8-34) to a maximum of "say 10-12" pages (few other sections could also be reduced without compromising key issues) to enable addressing CAR1 and other review comments and maintain document page limit of 100. 2. Merge proposal and annexes in one document file. 3. Double check table of contents to ensure it include all document sections including annexes. 4. Spell out abbreviations when first used 5. Make sure that all figures and tables include headings and numbers. 6. Replace the term "AF ESS Policy" by "AF ESP" or "AF E&S Policy", across the document. 7. Another round of editing/ proof reading after addressing the review document is recommended. revision. **CR2:** Consider revising the project objective to read "to ensure that three selected communities have equitable and sustainable access to safe drinking water and clean water for other uses under expected climate change impacts". **CR3:** After "Project / Programme Objectives", p. 34, add a brief paragraph to indicate what AF objectives/ outcomes

		the project activities will support. **CR4:** In Table 11, 36-37, add components subtotals and total of components costs. Also, in table 12, p. 38, change project calendar expected dates (some dates refer to 2024 and we are now in 2025).
	3. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?	**Yes.** Concrete activities include those under Component 1 "Rapid repair & replace response to existing water supply systems in the targeted villages" and Component 4 "Completion of new water infrastructure and water treatment systems designed to fill in the current supply gaps". Other components include capacity building soft activities for sustainable water management. However, more details are needed to further define the concrete activities under components 1&4. Also, the activities under these components include USPs that need to be addressed as per AF requirements, among other issues indicated below. **CAR2:** Provide More details on the project components, particularly components 1 and 4. This is necessary to clarify the concrete actions and to substantiate related budget allocations. Also, specify the USPs, and clarify their nature, selection criteria, and management of their associated E&S aspects. Refer to the below link for AF guidance on USPs: Updated guidance for IEs on the use of USPs. **CR5:** Clarify the climate change aspects of "Outcome 1.2 Incidence of water borne diseases on the three islands continues to decline", as it reads "business as usual" environmental protection activity. **CR6:** In Table 11, pp. 36-37, Component 4 title refers to

		infrastructure "repair" which is addressed in component 1 (outcome 1.1). Revise component 4 title and reflect and remove "repair" from the title as it involves new installations. **CR7:** The 3rd paragraph under Output 1.2.1, p. 41, states: "The chosen technologies from the above-mentioned list will then be installed in villages and households as part of the rapid response efforts. This will provide a short-term solution for improving the safety of current water sources". Why not long-term? Please clarify.
	4. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**Yes.** However additional information if required. The discussion provided in Part IIB, pp. 54-62, is mostly general and not project specific, among other issues indicated in the below comments. **CAR3:** Revise the discussion in Part IIB to include/ reflect the benefits related to this project related interventions, with particular reference to gender aspects and equitable distribution/ access to vulnerable communities and provide supporting quantification where possible. **CR8:** Refer to the gender assessment and action plan (Annex 6) along with a brief paragraph to demonstrate the inclusion of aspects in project design and implementation. **CR9:** The discussion under "Project Compliance with the Environment and Social Policy of the Adaptation Fund", pp. 59-62, is out of context in Part IIB. Delete or move to other relevant sections if/ as needed (e.g.: Part IIK, Part IIIC, etc.).
	5. Is the project / programme cost effective?	**Unclear.** See Part IIC, pp. 62-63. The discussion provided is not focussed and does not demonstrate the project specific cost

		effectiveness as per AF requirements. **CAR4:** Revise Part IIC to reflect a logical explanation of the project selected scope and approach. Cost effectiveness should be demonstrated from a sustainability point of view and should include a clear description and comparison with other alternative options to the proposed measures, with quantitative estimates where feasible and useful.
	6. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	**Not adequately addressed.** See Part IID, pp. 64-66. The provided discussion only focusses overarching national relevant policies, It should however focus on project relevant sub-national sustainable development strategies/plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments (e.g.: NAP, NDC, NSDS/ SDGs Strategies/ plans, etc.). **CAR5:** Revise Part IID discussion to provide a bulleted list of relevant national/sub-national sustainable development strategies/plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments (e.g.: NAP, NDC, NSDS/ SDGs Strategies/ plans, etc.) and their alignment with the proposal.
	7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	**Not fully addressed.** See Part IIE, pp. 67-69. Other standards may need to be added along with measures to ensure compliance. **CAR6:** Include more applicable national technical standards in the discussion and Table 9.(e.g.: water facilities/ infrastructure related building codes, water quality regulations, any other sector-specific regulations) and reflect on the measure to ensure compliance of project related activities with the listed standards.

		CR10: Under the subsection "Compliance with the Environmental and Social Policy of the Adaptation Fund", p. 69, correct reference to table number "19" to "9" and revise Table 9 for added information requested in CAR8.
	8. Is there duplication of project / programme with other funding sources?	**No.** See Part IIF, pp. 69-71. However, the information provided only focus on ongoing projects. **CAR7:** Include similar/ related completed projects, if any, in Table 20, pp. 69-71, and indicate the implementing entities, status (completed, ongoing) and dates of the listed projects.
	9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	**Yes.** See Part IIG, pp. 71-72. Component 5 is dedicated for the purpose.
	10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**Not cleared.** A consultative proposal has taken place. However additional clarification is required. See Part II H, pp. 72-73. The section does not clearly reveal any recent project design specific consultations. The first paragraph of Part IIH, p. 72, that "An extensive consultation process was conducted from June until August 2022 in the targeted outer islands, supported by extensive outer island consultations in 2019 and stakeholder consultations during the development of the concept note in 2017. This was checked again through cross-referencing with project teams that targeted the islands into 2024". **CAR8:** Clarify whether recent project design consultations were conducted. Also provide a summary table (supported by a related specific annex) for consultations with the key stakeholders and target local communities. The table should

		include consultations dates, consulted entities/ local communities, participants number disaggregated by gender, topics discussed and outcomes, and how these outcomes are considered in project design. Moreover, clarify how the conducted consultations, which date back to 2017, 2019, and 2022, would still be valid in 2025. **CR11:** On page 72, Reference is made to Gender & Social Inclusion Strategy as Annex 4. It should be Annex 6.
	11. Is the requested financing justified on the basis of full cost of adaptation reasoning?	**Unclear.** See Part II"I", pp. 73-80. The provided materials are lengthy and not focused on what is required . Justification on the basis of full cost of adaptation reasoning should demonstrate how the project planned activities/ design would help achieve its adaptation objectives/ outcomes, solely based on the requested AF funding and without additional funding from other donors/ sources. If the project has co-financing, the Adaptation Fund project should be able to deliver its outcomes and outputs regardless of the success of other co-financed project(s). **CAR9:** Revise Part II"I" to explain/ demonstrate how the project planned activities/ design would achieve its adaptation objectives and realize its outcomes and outputs, solely based AF requested financing, and without additional funding/ cofinancing from other donors.
	12. Is the project / program aligned with AF's results framework?	**Yes.** (See related information and comments under item 9 of "Implementation Arrangements" in the review template).
	13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	**Yes.** However additional information is required.

		See Part IIJ, pp. 80-81. The discussion provided does not reflect AF requirements for demonstrating the sustainability aspects. **CAR10:** The discussion in Part IIJ should elaborate on how the project outcomes achieved could be sustained, replicated/ scaled up after its completion. All key areas of sustainability should be addressed under dedicated subheadings, including but not limited to economic, social, environmental, institutional, and financial. Arrangements through which sustainability would be achieved should be highlighted and should take into account the operation and maintenance of any infrastructure/ installations to be developed.
	14. Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**Yes.** However additional information is required. See Part IIK, pp. 81 & Annex 1. Annex 1 Should be moved to Part IIK among other issues indicated below. **CAR11:** Move Annex 1 to Part IIK (include table number consistent with the tables sequence in the document). Part IIK discussion should include AF Principles Checklist, risks should be included in list (along with measures to ensure compliance with AF ESP) and could be further elaborated as needed under it. More importantly, include a brief paragraph to indicate the project overall risk category (A,B,C) as per AF classification. **CR12:** Clarify how to ensure that the USPs will be compliant with the AF ESP requirements.
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	**Yes.**
	2. Is the Implementing Entity Management Fee	**No.** Implementing Entity fee is 8.4%.

	at 8.5 per cent of the total project/programme budget before the fee?	**CAR12:** Please revise to 8.5%. Please consider using the Fees Calculator [https://www.adaptation-fund.org/wp-content/uploads/2024/06/IE-and-EE-fees-Calculations-1.xlsx]
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	**Yes.** Execution costs constitute 8.7%.
Eligibility of IE	1. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	The "Secretariat of the Pacific Regional Environment Programme" is an AF accredited implementing entity. *Accreditation status: In Re-accreditation Process Accreditation Expiration Date: 14 March 2024* *Please be advised that the findings of the AFB Secretariat's review of the funding proposal(s) do not reflect, indicate, or prejudge the outcome of the reaccreditation process currently underway. The Implementing Entity (IE) shall acknowledge that the funding proposal will not be approved by the Board if the IE's accreditation has expired, and reaccreditation has not been achieved at the time of the Board's decision. Notwithstanding this potential risk, the IE has elected to proceed with the development of the funding proposal.*
Implementation Arrangements	1. Is there adequate arrangement for project / programme management, in compliance with the Gender Policy of the Fund?	**To a large extent.** See Part IIIA, pp. 82-84. However, the roles of the implementing and executing entities, among others, if any, need to be discussed and included, and the implementation chart needs to be revised accordingly. **CAR13**: Revise implementation arrangements discussion to provide details on the roles/ responsibilities of all key entities involved in project implementation, <u>including implementing and executing entities, among others, if any.</u> **CR13:** Revise the project implementation chart in accordance with the above CAR13 and clearly indicate the

		reporting lines among involved entities. Also provide figure heading and number to this chart.
	2. Are there measures for financial and project/programme risk management?	**To a large extent.** See Part IIIB, pp. 84-87. Categorization of the risks and adding others, if any, is recommended. **CR14:** Revise Table 22, pp. 85-87, to reflect risks under specified categories, financial, institutional, social, environmental, etc., as applicable. Add other risks based on the above revision, if any.
	3. Are there measures in place for the management of environmental and social risks, in line with the Environmental and Social Policy and Gender Policy of the Fund?	**Yes.** See Part IIIC, pp. 87-89 and Annex 5 (ESMP). However, few issues indicated below need to be addressed. **CAR14:** In Part IIIC include a dedicated discussion on how the USPs related E&S risks will be managed in compliance with related AF requirements. **CR15:** Ensure that the E&S risks listed are consistent with those in ESMP of Part IIK AF E&S check list, or vice-versa. **CR16:** For the project level Grieve Mechanism, please provide specific address coordinates where complaints can be submitted (no need to include the GM process in Part IIIC). Provide the same in the ESMP (Annex 5), along with the details on the GM process. **CR17:**Indicate the budget allocations for ESMP/ AF ESP implementation, monitoring, compliance and supervision.
	4. Is a budget on the Implementing Entity Management Fee use included?	**Yes.** See Annex 4 (to be moved to Part IIIG). However, further breakdown is recommended. **CAR15:** Provide breakdown of the IE fee items, especially project implementation and supervision (USD 400,000). Fee may cover corporate activities related to engagement with donor (policy support, portfolio management, reporting, outreach/ knowledge sharing) and project cycle

		management/ oversight (financial, quality insurance, reports, project completion and evaluation).
	5. Is an explanation and a breakdown of the execution costs included?	**Yes.** As per Annex 4 (Budget) to be moved to Part IIIG.
	6. Is a detailed budget including budget notes included?	**Yes.** As per Annex 4 (Budget) to be moved to Part IIIG. **CAR16:** Move Annex 4 to Part IIIG.
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators, in compliance with the Gender Policy of the Fund?	**No.** Only M&E approach is provided, along some related general information. Part IIID, pp. 89-92, states in its first paragraph that *"A comprehensive Monitoring and Evaluation (M&E) Plan based on the Results Framework will be developed during the inception phase upon approval of the project"*. Such plan should be provided at full project stage. **CAR17:** Please clearly define the M&E arrangements/ plan and revise the M&E budget accordingly. **CR18:** Please briefly discuss the M&E Plan arrangements for addressing the environmental and social risks identified and indicate/ clarify the budget provisions for AF ESP compliance and ESMP implementation and supervision. Also, add title number to the M&E Budget table. **CR19:** Table 24, pp. 90-91, refers to "delivery partners. Clarify/ specify these delivery partners.
	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	**No.** See Part IIID, pp. 89-92. **CAR18:** Please revise the M&E budget to include further breakdown of IE fees for the supervision of M&E function.
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results	**Yes.** See Annex 2 for project results framework, and Annex 3 for alignment with AF RF and AF Core indicators. However, these Annexes need to be moved the body of the

	framework?	proposal, among other related issues indicated below. **CAR19:** Move Annex 2 to Part IIIE and give table heading and table number. Also provide numbers for the "Target" percentages as well as gender distribution, as applicable. **CAR20:** Move Annex 3 to Part IIIF and provide appropriate Table number that aligns with the numbering sequence in the main document. For outcome 3.1 distribute the amount of USD 416,400 at AF outcomes 2 and 3. Same applies for AF output level alignment (project output 3.1.1). **CAR21:** Include AF Core indicators (from Annex 3) under Part IIIE. Present each applicable indicator in a dedicated table and align these tables with the AF guidance provided by the below link. Methodologies for reporting Adaptation Fund core impact indicators (78 kB, DOC) Methodologies for reporting Adaptation Fund core impact indicators (152 kB, PDF)
	10. Is a disbursement schedule with time-bound milestones included?	**Yes.** However, the disbursement schedule needs to be aligned with AF format **CR20:** Align disbursement schedule (p. 96) with AF format as provided by the following link Disbursement Schedule Template (**For fully-developed proposals**) (18 kB, XLS)

REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board
Secretariat 1818 H Street NW
MSN N7-700
Washington, D.C.,
20433 U.S.A
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

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Annexes

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Acronyms

ADB	Asian Development Bank
AF	Adaptation Fund
BOM	Australian Bureau of Meteorology
CFD	Climate Finance Division, Ministry of Finance
CLTS	community-led total sanitation
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DRP	drought response plan
ENSO	El Niño–Southern Oscillation
ESMP	environmental and social management plan
ESS	environmental and social safeguards
FWSWI	freshwater-saltwater interface
GCF	Green Climate Fund
GDP	gross domestic product
GEDSI	Gender Strategy and Action Plan
GHG	greenhouse gas
GIS	geographic information system
GRM	grievance redress mechanism
ILO	International Labour Organisation
IPCC	Intergovernmental Panel on Climate Change
KDP	Kiribati Development Plan
KILGA	Kiribati Local Government Association
KIRIWATSAN	Kiribati Water and Sanitation Project
KM	knowledge management
KMS	Kiribati Meteorological Service
KV20	Kiribati Vision 2020
LDC	least developed country
LiDAR	light detection and ranging
M&E	monitoring and evaluation
MDG	Millennium Development Goal
MFAT	New Zealand Ministry of Foreign Affairs and Trade
MIA	Ministry of Internal Affairs
MISE	Ministry of Infrastructure and Sustainable Energy
MELAD	Ministry of Environment, Lands and Agricultural Development
MoH	Ministry of Health
MWYSA	Ministry of Women, Youth and Social Affairs
NGO	nongovernmental organisation
OB	Office of the President
OD	open defecation
ODF	open defecation free
OIWFP	Outer Islands Food and Water Project
PACCSAP	Pacific-Australia Climate Change Science Adaptation Planning project
PIC	Pacific Island country
PMU	Project Management Unit
PPR	project performance report
PSC	Project Steering Committee
RERF	Kiribati Revenue Equalization Reserve Fund
SDG	sustainable development goal
SLR	sea level rise
SPCZ	South Pacific Convergence Zone
SPREP	Secretariat of the Pacific Regional Environment Programme
SST	sea surface temperature
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UV	ultraviolet

WASH	Water, sanitation, and hygiene
WHO	World Health Organisation

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular Project
Country:	Republic of Kiribati
Title of Project/Programme:	Enhancing the resilience of the outer islands of Kiribati
Type of Implementing Entity:	Regional Implementing Entity
Implementing Entity:	Secretariat of the Pacific Regional Environment Programme (SPREP)
Executing Entity:	Ministry of Infrastructure and Sustainable Energy (MISE)
Amount of Financing Requested:	US$ 10,000,000

Project / Programme Background and Context:

Provide brief information on the problem the proposed project / programme is aiming to solve. Outline the economic social development and environmental context in which the project would operate.

Located in the Central Pacific, the Republic of Kiribati is one of the smallest, most remote, geographically dispersed and climate vulnerable Least Developed Countries (LDCs). Comprised of 33 atolls in three groups (Gilbert Islands, Line Islands, and the Phoenix Islands), these far-flung atolls are mostly less than two metres above sea level, lack surface water and soil, have fragile groundwater systems, and limited terrestrial biodiversity, and are increasingly vulnerable to the impacts of climate change.

As an LDC, Kiribati has widespread inequality, hardship, and incidences of extreme poverty. With high population growth and increasing urbanisation additional pressures on water, sanitation and housing are being felt. Kiribati has the lowest access to clean water and sanitation in the Pacific region. Kiribati's small economy is highly exposed to external shocks and debt stress, with a strong reliance on development assistance, fishing licence revenues and overseas remittances. Kiribati is particularly vulnerable to the impacts of climate change and rising sea levels[1].

Water supply issues in Kiribati are amongst the most complex in the world, and feature among the key priorities in the Government's Kiribati Vision 2020 (KV20)[2]. Water resources in Kiribati are very vulnerable, limited, scattered, and must be protected and utilised carefully. Households in the outer islands rely on groundwater and rainwater harvesting to provide for their daily water needs including drinking, cooking, and washing. However, groundwater resources and rainwater water supply are critically dependent on weather conditions, climate variability and even seawater inundation during extreme sea level events arising from a combination of high tides, storm waves and elevated regional sea levels, which affects water quality and has an increasingly negative impact on health.

Kiribati is among the Pacific Island countries (PICs) that did not attain the MDG sanitation target to "halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation". In 2020, UNICEF found that only 14.69 percent of the population in Kiribati were using "safely managed drinking water services", albeit an improvement over the 9.99 percent in 2000. The proportion of the population using "at least basic water services" rises to 77.97 percent in 2020, compared to 59.87 percent in 2000. The under-5 mortality rate of 49.6 per 1,000 live births in 2020 is still high, however, and may be partially related to contaminated water supplies.

The World Health Organisation's (WHO) most recent analysis of the status of sanitation, drinking water, and hygiene in the PICs concludes that a few basic principles should orient the water and sanitation sector in the years to come. First, water and sanitation solutions need to be sustainable, safe, and not adversely impact the fragile water resources. Second, more needs to be done to empower small, isolated, and informal communities taking into account the need to build the capacity, empower women, youth, and other vulnerable groups to safely and sustainably manage their own drinking water, sanitation, and hygiene. Third, a significant increase in support is required to strengthen the capacity of Pacific Island governments, utilities, and communities to manage sustainable water and sanitation services in the face of

[1] UNSDG, https://unsdg.un.org/un-in-action/kiribati, Accessed 10 November 2022
[2] https://www.mfed.gov.ki/sites/default/files/KV20%20VISION.pdf

human and financial resource constraints. Finally, safe and sustainable water and sanitation solutions are vital to strengthen and maintain the resilience of Pacific Island communities to the increasing threats of climate variability, climate change, and natural hazards[3].

Although contributing little to global climate change, Kiribati is highly vulnerable and dependent on future actions taken by the major greenhouse gas (GHG) emitters. Under a low emissions pathway, Kiribati may experience 0.9^{o}C increase in temperature, while a high emissions scenario may result in a 1.5^{o}C increase by 2050. The consequences for rainfall are less certain under current modelling constraints, but under the high emissions scenario sea level could rise by 0.55-1.0 metres by 2090, posing significant impacts for the concentrated project area population living close to the sea and marginally above sea level. Long term sustainability planning of water resources must consider these likely climate change outcomes.

This proposed Adaptation Fund (AF) project incorporates these concerns and principles into the project design to strengthen the resilience of the target outer island communities in Makin, Aranuka and Tabiteuea South, to the threats of climate change and natural hazards. The proposal focuses on (i) repairing and replacing existing damaged/unused water systems; (ii) strengthening government capacity and capability in water resource management and use; (iii) strengthening coordination mechanisms and community participation in water resource management; (iv) construction and repair of new and existing water infrastructure to adapt to future climate impacts; and (v) undertaking outreach, capacity building and knowledge management.

Background Context

Geographical Context

The Republic of Kiribati is comprised of 33 atolls and reef islands in three groups – the Gilbert Islands, Line Islands, and the Phoenix Islands (Figure 1), totalling 811 square kilometres (km^2) of land distributed over 3.5 million km^2 of ocean.

Of the 33 islands, 21 are inhabited, with more than half of the population residing in the Gilbert Islands. In 2020, the population of Kiribati was 119,438 people in 20,354 households, with 4.8 people the average size of households. Males comprised 58,904 and females 60,534 of the population. The 2020 census recorded 59 percent or 70,090 people living in the main atoll of Tarawa (i.e., North Tarawa, South Tarawa, and Betio) in the Gilbert Group[4].

The island atolls of Kiribati are mostly less than two metres above sea level, vulnerable to the impacts of climate change, lack surface water, have fragile groundwater systems, and have no soil and limited terrestrial biodiversity. Due to the geography of the narrow and low-lying atolls, populations and most of the infrastructure are concentrated along the coast, making them directly exposed to climatic threats such as global-warming induced sea level rise. Kiribati faces significant challenges due to its remoteness, lack of scale, and vulnerability to external shocks and environmental stress.

[3] Source: WHO, UNICEF, SPC and UN Habitat. 2015. Sanitation, drinking water and health in Pacific Island countries: 2015 update and future outlook.
https://iris.wpro.who.int/bitstream/handle/10665.1/13130/9789290617471_eng.pdf
[4] SPC, 2022, Kiribati Census Atlas, https://sdd.spc.int/digital_library/kiribati-census-atlas-0

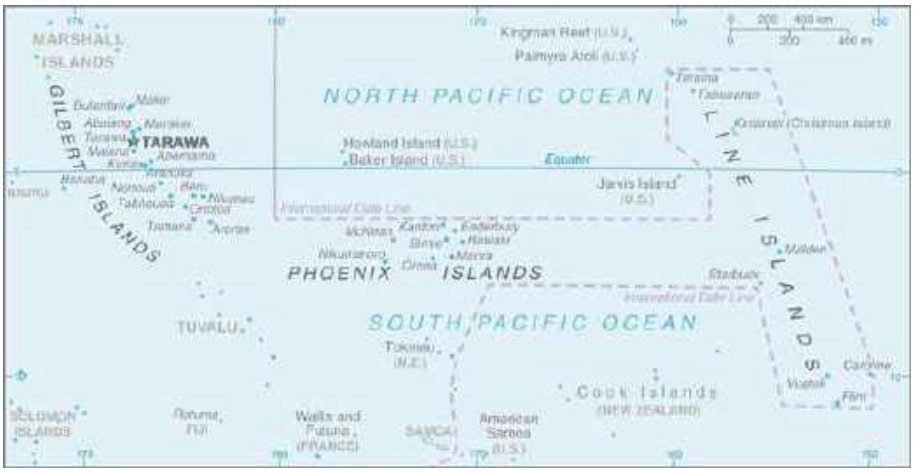

Figure 1. Map of Republic of Kiribati

Since it was first settled, the people of Kiribati have relied on their natural resources for survival. An estimated 80 percent of the population mainly lives a subsistence lifestyle, depending on the marine environment for food, transport, traditional practices, and economic opportunity. On atolls, the terrestrial environment is more limited, but it is essential for water, food, and shelter[5].

This project focuses on three outer islands – **Makin, Aranuka** and **Tabiteuea South** (Tab South) (refer Figure 2) as endorsed by the Government of Kiribati Cabinet in November 2021. The project will focus on specific villages in each of the islands which have been prioritised for water security measures (refer Table 1).

[5] Ibid

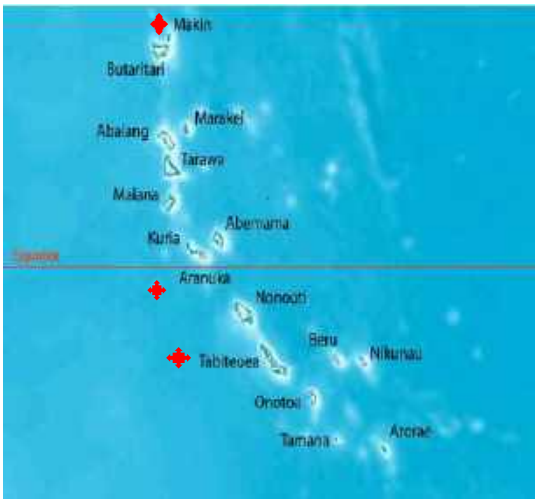

Figure 2. Map of the target islands of Makin, Aranuka and Tabiteuea South

Table 1. Selected villages in the three target outer islands

Outer Island	Target Villages
Makin	Makin Islet
Aranuka	Takaeang, Buariki, Baurua
Tabiteuea South	Tewai, Taungaeaka, Buariki, Nikutoru, Katabanga, Takuu

Makin

Makin is the second smallest inhabited island in the Gilbert Group, situated 190 kilometres north of Tarawa, and three kilometres northeast of Butaritari (Latitude 3° 20' N / Longitude 172° 59' E). Makin's land area is 7.89 km^2 with a width varying from 50 m to 2 km, consisting of five main islets – the largest two of which, namely Makin and Kiebu, are inhabited. The islet of Makin has the largest land area of 6.7 km^2. Like other coral islands and atolls Makin has sandy and porous soils and is on average two meters above sea-level.

The five islets are arranged in a linear formation from north to south, typical of small coral islands which do not have lagoons. Makin used to have a small lagoon, but the lagoon has now become shallow, most probably due to construction of a causeway and in the late 1990s, a bridge that was constructed across the mouth of the narrow passage linking the lagoon with the open sea.

Makin has an equatorial climate where temperatures are high all year round and there is a distinct wet and dry season. The temperature ranges between 28˚ Celsius at dawn to 31˚

Celsius in the early afternoon. Cool ocean breezes play an important role in keeping the temperatures down during hot days. Due to its geographic position Makin is generally wetter than most islands in Kiribati.

Population: The 2020 census recorded the population was 1,914 people or 1.6 percent of the total Kiribati population. Comparisons with the 2005 census data show a decrease in the population from 2,385 people. However, the decrease is related to the return of Makin people to the island in 2005 to celebrate various occasions. Apart from the 2005 anomaly, the population of Makin has been stable at around 1,800 people since 1985 (refer Figure 5). The number of households in Makin is 371 with the average household size at 5 people (Table 2).

Makin has a very large youth population, with 43 percent of the population aged under 15. There are relatively few young people aged 15-19[6], which is consistent with the fact that there is no secondary school on Makin and children who wish to complete their schooling must travel to another island.

Figure 3. Map of Makin island

Table 2. Population of targeted outer islands

Island	Total HH	HH size	Population			Population by Age Group			Median Age
			Male	Female	Total	0-14 years	15-64 years	65+ years	
Makin	371	5	968	946	1,914	827	997	90	15.4
Aranuka	259	4	624	597	1,221	475	692	54	19
South Tabiteuea	279	5	674	682	1,356	523	763	70	18.9
TOTAL	**909**	**5**	**2266**	**2225**	**4,491**	**1825**	**2452**	**214**	**18.9**

Data Source: SPC, Kiribati Census Atlas 2022

Aranuka

Aranuka is a lagoonal atoll located just north of the equator (Latitude 0° 09° N; Longitude 173° 35° E) in the Central Gilbert Islands, with a land area of 11.6 km^2. Aranuka consists of four villages on the mainland – Buariki Meang, Buariki Maiaki, Kauake and Baurua – and one village on the islet of Takaeang.

Aranuka's climate is divided into two seasons – the dry season from March – August, and the wet season from September – February. However, anecdotal evidence suggests the climatic pattern has drastically altered in recent years.

[6] Data Source: 2022 Census

Population: Aranuka is one of the less populous islands in Kiribati with a population of 1,221 people[7] or one percent of Kiribati's total population (Table 2). Over the longer-term since 1985, the population has been relatively stable (refer Figure 5). Household numbers in Aranuka total 250 with an average of 4 people per household. Over half of the population reside in Buariki with the remaining residents distributed across the islet of Takaeang and Baurua.

The population on the island is heavily oriented towards children with approximately 39 percent of the population under the age of 15.

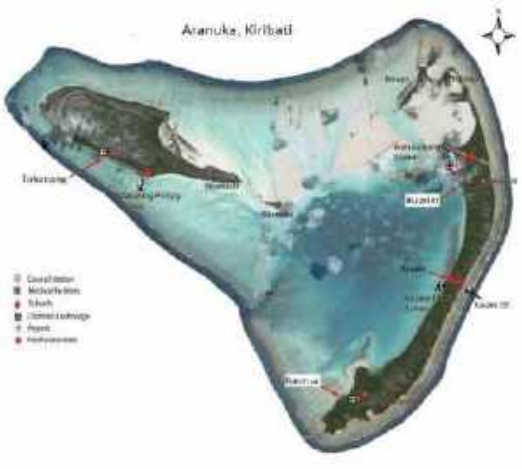

Figure 4. Map of Aranuka island

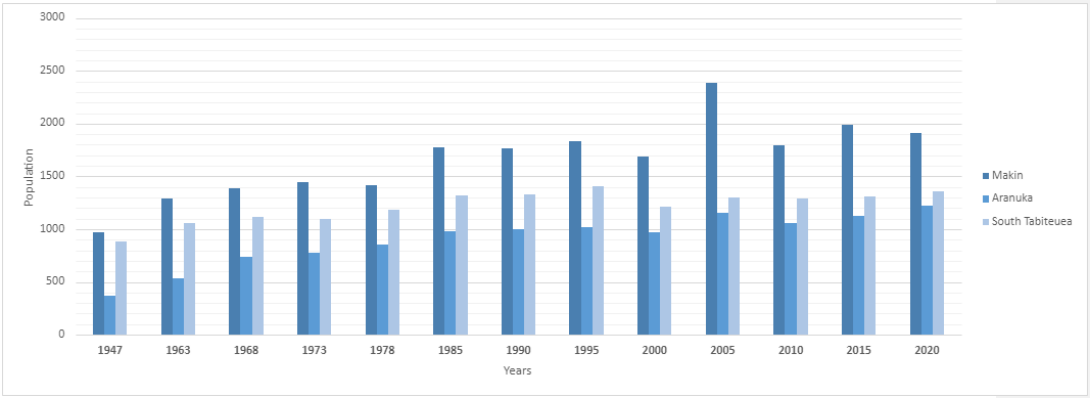

Figure 5. Population Data Makin, Aranuka and South Tabiteuea (1947-2020)

Tabiteuea South

Tabiteuea is separated into two islands with North Tabiteuea starting from the village of Tekabwibwi and extending to the islet of Aiwa in the center of the island. Tabiteuea South starts from this point and includes Tewai, Taungaeaka, Buariki, Nikutoru, Katabanga and the islet of Takuu as the southernmost village. The islets which are not inhabited are used as copra sites for families owning lands there. There are seven causeways linking the islets that comprise Tabiteuea South from the village of Tewai to Takuu (Figure 6).

[7] 2022 Census data

Located in the southern Gilbert Islands chain, Tabiteuea is among the driest islands in Kiribati and suffers from re-occurring droughts. Like the rest of the islands in the southern Gilbert Island chain, the freshwater is located inland away from the coast. As with all coral islands and atolls, Tabiteuea averages around two meters above sea-level and has sandy, porous soils.

The non-availability of rainfall measuring equipment on the outer islands has resulted in the lack of rainfall data for all the outer islands of Kiribati including Tabiteuea South. Tabiteuea South, like the other islands scattered astride the equator, has a tropical climate and like the southern islands, experiences minimal rainfall throughout the year. It is hot and humid all year round with east trade winds moderating the temperatures throughout the year.

Generally, the winds and rain come towards the end of the year in October until February or March while the rest of the months remain dry. The strong influence of El Niño and La Niña events on the climate is prevalent throughout Tabiteuea South. Where the northern islands are favourably affected during El Niño events, Tabiteuea South experiences dry weather and vice versa during La Niña events.

Figure 6. Map of Tabiteuea South Island

Population: The total population on Tabiteuea South is 1,356 of which 674 are males and 682 are female (Table 2). There are 279 households on the island with an average household size of 5. Children under 15 years of age form one of the largest population groups (43 percent).

Economic Context

Kiribati faces significant economic and service delivery challenges. In addition to being one of the most vulnerable countries in the world, and one of the most affected by climate change, other challenges stem from a highly dispersed population, remoteness to major markets, lack of arable land, a narrow economic base, and the dual problems of sparse outer island communities and heavy overcrowding in the capital[8].

[8] Webb, J., 2019, *Kiribati: 2019 economic survey*

Kiribati relies heavily on fishing revenue and remittances from citizens employed abroad, mainly seafarers[9]. In terms of the overall economy, reliance on fishing dominates, accounting for 26.1 percent of the Kiribati economy, with government consumption accounting for 25.7 percent and construction at 20.7 percent – the latter two funded through increases in fisheries revenue and donor programmes[10]. The role of the public sector in Kiribati is an important driver, accounting for more than half of the estimated gross domestic product (GDP).

A UNDP study of poverty in Kiribati showed the highest incidence of basic needs poverty occurred in South Tarawa, affecting 18.3 percent of households and 24.2 percent of the population. This is the highest poverty rate in the Pacific. Moreover, as much as 66 percent of the population is at risk of falling into extreme poverty, and this risk is amplified by the effects of climate change on freshwater supply, health and sanitation, and coastal infrastructure. With a Gini coefficient of 0.39, inequality in Kiribati is relatively low in international comparison. Expenditures of the richest quintile of households are 4.7 times expenditures of the poorest quintile. Nationally just under one in five households is headed by a female and women make up 49 percent of those falling below the poverty line[11]. This is contributing to increased hardship in the community and inability to meet higher health service costs, which are borne by women.

Subsistence activity remains one of the most important economic activities in the three outer islands. In Makin, the equivalent cash value of subsistence food, materials and rent accounts for 46 percent of total household income[12], whilst only 39 percent of households on Tabiteuea South receive any money from wages or salaries.

Subsistence activities on all three islands include fishing, toddy cutting, cultivation and harvesting of food crops i.e., coconut, pandanus, breadfruit and giant swamp taro (bwabwai), mat weaving, thatching, gathering firewood, and construction of buildings. Surplus supplies are provided to relatives or sold. Due to the increasing dependence on imported goods, the importance of cash as a medium of exchange is acknowledged but, the lack of infrastructure prevents most people from engaging in selling surplus produce to make money.

As Kiribati society is generally patriarchal, women perform the vast majority of unpaid reproductive and domestic work, and are primarily responsible for the care of children, the ill and the elderly, thus any engagement in paid work or income generation, is an added responsibility[13].

Commercial activities are limited, with only Aranuka receiving economic injection from the production of copra and the establishment of seaweed farming. In 1992, the island produced 450 metric tons of copra compared to 2010 when just 89 tons of copra from Aranuka were gathered. The main reason was the 2010 drought, which had a devastating effect on fruit trees like coconuts and other fruit trees.

[9] The sale of fishing licenses with revenue from access fees increased from US$29.1 million in 2011 or 17 percent of GDP to US$197.8 million in 2015 or 88 percent of GDP (Webb, J., 2019, *Kiribati: 2019 economic survey*)
[10] Webb, J., 2019, Kiribati: 2019 economic survey
[11] GCF,2019. FP091: South Tarawa Water Supply Project, GCF.
[12] Household Expenditure and Income Survey, 2006.
[13] Secretariat of the Pacific Community, 2022. Island Diagnostic Analysis Report for Kiribati. GEF International Waters Ridge to Reef Program. Secretariat of the Pacific Community.

Formal employment on the islands is limited to the Island Councils, which remain the largest single employer, employing 115 and 30 on Makin and Aranuka, respectively[14]. The 2020 census as shown in Figure 7, found that there are more people in the urban areas (15.1%) compared to the rural areas (6.3%) seeking a limited number of jobs.

LABOUR FORCE INDICATORS*	DIVISION							
	URBAN	RURAL	SOUTH TARAWA	NORTHERN	CENTRAL	SOUTHERN	LINE IS. & PHOENIX	TOTAL
Population aged 15+	44,256	27,748	39,908	11,457	4,709	9,505	6,425	72,004
Labour force status								
Employed	16,600	13,510	14,668	4,789	2,486	4,991	3,176	30,110
Unemployed	2,954	901	2,659	476	118	274	328	3,855
Unemployment rate	*15.1*	*6.3*	*15.3*	*9.0*	*4.5*	*5.2*	*9.4*	*11.3*
Outside labour force	24,702	13,337	22,581	6,192	2,105	4,240	2,921	38,039
Youth (15–24 years) not in education, employment or training	5,813	3,094	5,300	1,575	425	946	661	8,907

** ILO derived calculations based on persons aged 15+ living in private HHs.*

Figure 7. Labour Force Participation (extracted from SPC Kiribati Census Atlas 2022)

A whole-of-island approach is being pursued by the Government to address the impacts of climate change and related sea-level rise and environmental issues in Kiribati. The effects of climate change are major challenges impeding developmental efforts which will require capacity building at all levels to manage and improve environmental, social, and economic sustainability. To build island resilience to the adverse impacts and extreme events of climate change and in parallel with achieving the common development goals of Kiribati, the country relies mostly on external aid (donors) to finance its adaptation measures towards climate change as the country is unable to meet the full costs of adaptation on its own. An economic evaluation of the costs of climate change related risks has been estimated to be 35 percent of Kiribati's GDP. This estimate considers only the potential impacts of climate change on the coastal zone (US$7-13 million a year) and water resources (US$1-3 million a year)[15].

Climate Change Context

Current climate[16]

Temperature

Kiribati has a hot, humid tropical climate, with air temperatures very closely related to the temperature of the oceans surrounding the small islands and atolls. Across Kiribati, the average temperature is relatively constant year-round. Changes in the temperature from season to season are no more than about 1°C.

[14] 2010 Census data
[15] Webb, J., 2019, Kiribati: 2019 economic survey
[16] PACCSAP 2015

Rainfall

The driest and wettest periods in the year vary from location to location. At Tarawa, in the west, the driest six-month period begins in June, with the lowest mean rainfall in October. The wet season usually lasts from around November to April. At Kiritimati, 2,000 km to the east, the wet season is from January to June, and it is much drier than Tarawa.

Rainfall in Kiribati is affected by the movement of the South Pacific Convergence Zone and the Intertropical Convergence Zone. They extend across the South Pacific Ocean from the Solomon Islands to the east of the Cook Islands, and across the Pacific just north of the equator, respectively (Figure 8). These bands of heavy rainfall are caused by air rising over warm water where winds converge, resulting in thunderstorm activity.

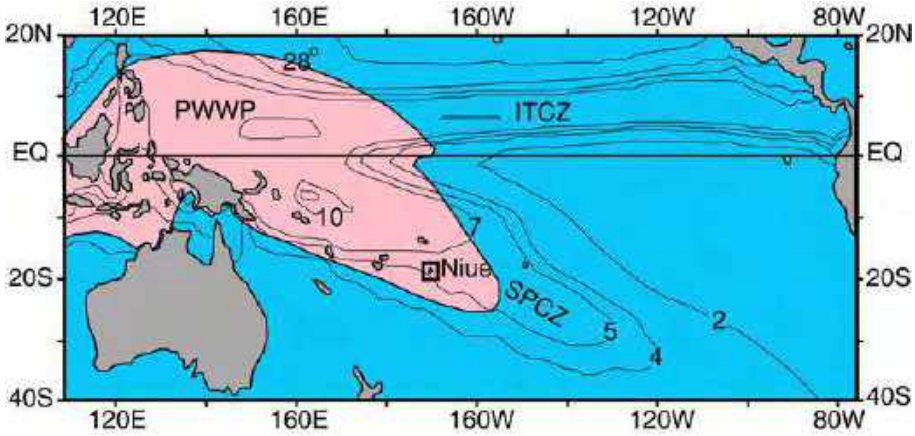

Figure 8. South Pacific Convergence Zone and the Intertropical Convergence Zone

Year-to-year variability

Kiribati's climate varies considerably from year to year due to the El Niño-Southern Oscillation (ENSO). This is a natural climate pattern that occurs across the tropical Pacific Ocean and affects weather around the world. There are two extreme phases of the ENSO: El Niño and La Niña. There is also a neutral phase. Across Kiribati, El Niño events tend to bring wetter, warmer conditions than normal. In the wettest years, Tarawa has received more than 4,000 mm, while in the driest years as little as 150 mm of rain has fallen.

Droughts

Droughts can be very severe and are usually associated with La Niña events. Average annual rainfall in Tarawa is approximately 2,100 mm with just over 900 mm received between May and October. From July 1988 to December 1989 only 205 mm of rain fell, while from August 1998 to February 1999 total rainfall was 95 mm. The drought from April 2007 to early 2009 severely affected water supplies in the southern Gilbert Islands and Banaba.

Past La Niña events have shown that the impacts of droughts can be very severe in Kiribati. For example, in 1971, 1985, 1998 and 1999, annual rainfall was less than 750 mm. During

2007-2009, copra production significantly declined, depressing the outer island economies which rely on copra as the main income source. The groundwater also turned brackish, and the leaves of most plants turned yellow. During the 1970–1971 drought, a complete loss of coconut palms was reported at Kenna village on Abemama in central Kiribati.

In June 2022, the Kiribati Government declared a State of Disaster due to prolonged drought brought on by La Niña conditions that had been observed in the equatorial Pacific since November 2021. Since then, Kiribati and other atoll islands experienced extreme water stress because of low rainfall and dry conditions. By the declaration of the State of Disaster, the drought continued to worsen with increasing challenges such as water contamination, brackish water, water accessibility and water availability which affected the entire country[17].

Changing climate[18]

Annual and seasonal maximum and minimum temperatures have increased steadily in Tarawa since the 1950s, with maximum temperatures having increased at a rate of 0.13°C per decade. These temperature increases are consistent with the global pattern of warming.

Rainfall data in the current climate shows a high degree of variability across Kiribati, with a clear increasing trend in wet season rainfall in Kiritimati, but no clear trend at Tarawa. Indeed, there has been substantial variation in rainfall from year to year at both sites since the 1940s. The risk of major disruption to Pacific rainfall due to ENSO variability has already increased, and this risk will increase further this century, even if global warming is restricted to 2^0C (Cai et al., 2015; Power et al. 2017; Wang et al. 2017). According to Liu et al. (2017), climate change is driving increased variability in the Central Pacific ENSO, including hydrological impacts, and it is plausible that the extreme ENSO events of the first two decades of the 21st century will continue and intensify. Climate change will thus bring a more extreme and unpredictable climate to the communities in Kiribati.

Another impact of climate change is the increasing sea-level rise. As ocean water warms it expands causing the sea level to rise. The melting of glaciers and ice sheets also contributes to sea-level rise. Satellite data indicate the sea level has risen across Kiribati by 1–4 mm per year since 1993, compared to the global average of 2.8–3.6 mm per year. It is also noted that sea-level rise naturally fluctuates from year to year and decade to decade, as a result of phenomena such as ENSO.

Ocean acidification has also been increasing in the Pacific, including around Kiribati. About one-quarter of the carbon dioxide emitted from human activities each year is absorbed by the oceans. As the extra carbon dioxide reacts with sea water it causes the ocean to become slightly more acidic (i.e., less alkaline). This impacts the growth of corals and organisms that construct their skeletons from carbonate and silica minerals. These species are critical to the ecology of tropical coral reef ecosystems, which provide critical protection from coastal erosion and inundation due to storm events and wind-driven waves. Data show that since the 18th century the level of ocean acidification has been slowly increasing in Kiribati's waters.

[17] Pacific: Drought - May 2022 | ReliefWeb
[18] PACCSAP, 2015

Future climate[19]

Projections for all GHG emissions scenarios indicate that the annual average air temperature and sea-surface temperature will increase in the future in Kiribati. By 2030, under a very high emissions scenario (so-called 'business as usual'), this increase in temperature is projected to be in the range of 0.6–1.2°C (median 0.8ºC), relative to the 1986-2005 average. Later in the century the range of projected temperature increase under the different scenarios broadens. By 2050, median level increases are 0.9ºC to 1.5ºC and 0.9ºC to 2.3ºC by 2070. Increases in average temperatures will also result in a rise in the number of temperature extremes, hot days and warm nights, and a decline in cooler weather (see Table 3 for the Gilbert Islands).

Table 3. Projected changes in the annual average surface air temperature for Gilbert Islands

Scenarios	2020 (ºC)	2050 (ºC)	2070 (ºC)	2090 (ºC)
Very low emissions scenario	0.4 – 1.0	0.6 – 1.5	0.5 – 1.4	0.6 – 1.5
Low emissions scenario	0.4 – 1.2	0.6 – 1.7	0.8 – 2.1	1.1 – 2.5
Medium emissions scenario	0.4 – 1.0	0.7 – 1.6	0.9 – 2.3	1.1 – 2.9
Very high emissions scenario	0.6 – 1.2	1.0 – 2.2	1.5 – 3.5	2.1 – 4.5

Note: Values represent 5-95% of the range of the models and are relative to the period 1986-2005

Almost all global climate models project an increase in average annual and seasonal rainfall over the course of the 21st century. This increase is projected to be greater in the Gilbert Islands and lower in the Line Islands. However, there is some uncertainty in the rainfall projections and not all models show consistent results. The outcome will depend on the strength of the enhanced equatorial response of warming along the equator. Droughts are projected to become less frequent throughout this century and projections show extreme rainfall days are likely to occur more often and be more intense.

Sea level is expected to continue to rise in Kiribati. By 2050, under a very high emissions scenario, this rise in sea level is projected to be in the range of 16–33 cm (see Table 4 for the Gilbert Islands). The sea-level rise combined with natural year-to-year changes will accentuate the impact of storm surges and coastal flooding. As there is still much to learn, particularly how large, melting ice sheets such as Antarctica and Greenland contribute to sea-level rise, scientists warn larger rises than currently predicted could be possible. As the Antarctic ice sheet is now projected to contribute more sea level rise than previously thought, updated projections by 2090 under high emissions are 55-100 cm, with not much lower levels for low emission pathways.

Table 4. Sea-level rise projections for Gilbert Islands

Scenarios	2020 (cm)	2050 (cm)	2070 (cm)	2090 (cm)
Very low emissions scenario	7 - 17	13 - 29	18 - 44	23 - 59
Low emissions scenario	7 - 16	13 - 30	20 - 47	27 - 66

[19] PACCSAP, 2015 and CSIRO, 2021 – "NextGen" Projections for the Western Tropical Pacific: Current and Future Climate for Kiribati

Medium emissions scenario	7 - 16	13 - 29	19 - 46	28 - 67
Very high emissions scenario	7 - 17	16 - 33	26 - 56	38 - 87

Note: Values represent 5-95% of the range of the model results and changes are relative to the average of the period 1986-2005.

Under all four emissions scenarios, the acidity level of sea water in the Kiribati region will also continue to increase over the 21st century, with the greatest change under the very high emissions scenario. The impact of increased acidification on the health of reef ecosystems is likely to be compounded by other stressors including coral bleaching, storm damage and fishing pressure.

To summarise, Figure 9 illustrates future climate conditions in Kiribati depending not only on global GHG emissions, but also on the possibility of stronger equatorial warming. The warm dry and hot wet scenarios, or anywhere in between, are possible. Planning responses should accept that both scenarios are plausible, pending further research.

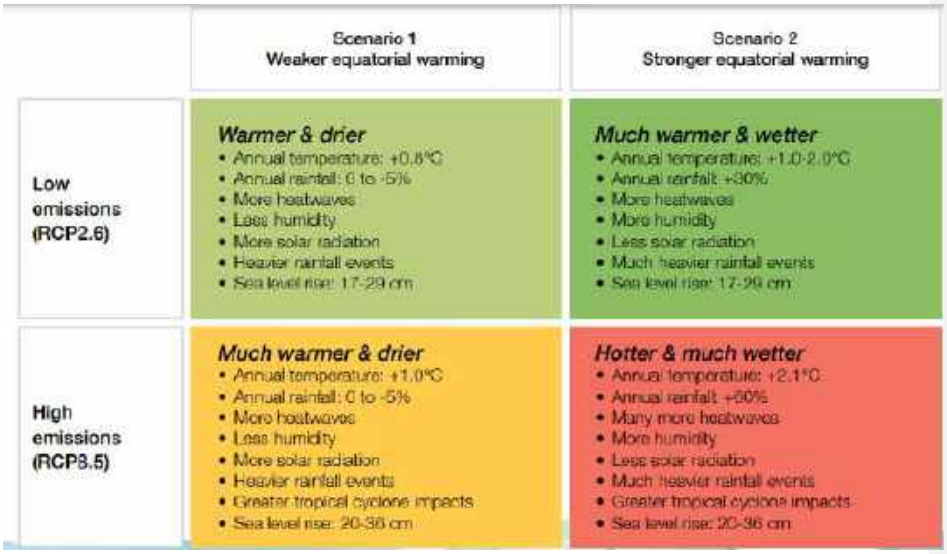

Figure 9. Climate projections for Kiribati according to plausible scenarios

Climate change impacts and habitability of low-lying atolls[20]

The key climate features and variables that will impact on the habitability of Kiribati are as follows:

- Changes to large-scale drivers of climate variability for the islands of Kiribati, particularly more extreme swings of ENSO and an intensification of the rainfall associated with ENSO, and possible shift in the position of the South Pacific Convergence Zone (SPCZ), which

[20] PACCSAP, 2015

can alter the patterns of rainfall and drought, and bring extreme weather and more frequent, intense, and damaging rainfall events (CSIRO et al. 2015);
- Increased sea surface temperatures (SSTs) and ocean acidification levels which combined will stress the coral reefs, marine ecosystems, and the ecosystem services they provide, which are critical to the habitability of the islands (Lenton et al. 2018; Evenhuis et al. 2015);
- Nonlinear interactions between sea-level rise and wave dynamics, including from distant-source waves, will lead to island over-wash and severe inundation in low-lying communities of Kiribati and other low-lying Pacific atolls (Storlazzi et al. 2018); and
- More extreme temperature events (BOM and CSIRO 2014), which will, directly and indirectly, impact on food and water security and human health (WHO 2015).

The IPCC finds that "extreme events superimposed on a rising sea level baseline are the main drivers that threaten the habitability of low-lying islands as sea levels continue to rise" (Nurse et al. 2014). Up-to-date research points to damaging annual wave-driven over-wash events by 2050, particularly under higher sea level rise scenarios (Storlazzi et al. 2018). This has urgency for low lying Pacific atolls such as Kiribati as their population is entirely coastal, and inland retreat to higher areas is not an option.

Damage from over-wash and inundation will affect infrastructure, crops, gardens, and fresh groundwater, and be too frequent for groundwater lens recovery. Where human activities have significantly stressed the coral reef ecosystems or the resources that underpin food and water security, environmental thresholds for habitability may be passed earlier due to the effects of climate change.

Climate change will further challenge the water security goals of Kiribati as increases in temperature lead to increased demand, more frequent extreme rainfall events damage supply infrastructure, and rising sea levels and wave events lead to salt-water impacting on groundwater sources (White and Falkland 2010; Kinrade 2014). Storm-surge or wave-driven over-wash is now recognised as a growing risk to groundwater lenses with rising sea levels, and research shows that lens recovery may take many months or years (Terry and Falkland 2010). A detailed Pacific-Australia Climate Change Science Adaptation Planning (PACCSAP) study of the vulnerability of the Bonriki freshwater lens in Kiribati found that inundation from extreme events will impact the lens and require 2-5 years for recovery depending on rainfall, but that threats from over-extraction and low rainfall recharge are even more critical to the condition of the lens (Mack 2015).

The combined impacts of natural climate variability and climate change on extreme temperatures and rainfall variability will likely further stress natural resources and livelihoods of local communities, particularly in terms of water security and sanitation issues, in the outer islands.

Notwithstanding these impacts and associated modifications, the physical integrity of atoll islands more generally in the Pacific are expected to be maintained through this century, and for some possibly increase in size as weakened and eroded coral reefs provide sediment for island-building. Dynamic changes to shorelines will occur in this timeframe, often including both accretion and erosion in one island, particularly on small, unconsolidated elongated islands and where communities have 'hardened' the coastline or removed rubble for construction purposes.

Knowledge of island landform resilience, together with likely physical climate change impacts, and thresholds of habitability informs development and adaptation in these islands. On-ground adaptation action to build climate resilience in the atoll islands has been very limited to date, and there is urgency now to enhance adaptive capacity and governance, as well as for integrated (rather than piecemeal) and long-term measures. Delayed action will only result in even more complex challenges being faced by mid-century, with increased impacts and higher costs of interventions.

Water Resources

Water supply issues in the Republic of Kiribati are amongst the most complex in the world. The vulnerable, limited, and scattered water resources supply more than 160 villages and two densely populated and growing urban areas[21]. In most islands, freshwater is limited, demand is increasing, and the quality is deteriorating under the pressure of human activities, and the uncontrolled presence of animals. Droughts are common and freshwater is often scarce, so water resources must be protected and used carefully[22].

The absence of lakes and rivers makes Kiribati dependent on rainfall to maintain supplies of freshwater for the health and well-being of its citizens. Freshwater supplies to outer island households are already a growing cause for concern that the Government is eager to address[23]. Households rely on groundwater and rainwater harvesting to provide for their daily water needs including drinking, cooking, and washing[24].

Thin lenses of fresh groundwater floating over seawater comprise the major source of fresh water in Kiribati. Groundwater is extremely vulnerable to frequent ENSO related droughts, and salinization due to storm surges and sea-level rise[25]. The quality of the groundwater lens with respect to salinity mainly depends on precipitation and the width of the land. Climate change will affect precipitation and the width of the land through erosion and accretion and these, in turn, will determine the availability of the lens. The northern atolls have higher rainfall than those in the south, but the more southerly islands tend to be wider. Additional characteristics of atolls that affect the quality of the groundwater lens include geophysical and biological aspects of land formation which vary from site to site.

Some villages are located on sites that do not have groundwater lenses, either because the land is too narrow, or the water lens is very polluted as is the case on South Tarawa. On outer islands various water systems have been tried in the past. The most common water supply technology is currently solar pumps and overhead tanks near the villages. The costs of installing and maintaining such systems may limit their application to certain villages and atolls. Furthermore, many i-Kiribati in the outer islands live predominantly in traditional houses with thatched roofs, so that they are not used to collecting rainwater for their domestic water supply,

[21] National Water Resources Policy 2008, Government of Kiribati
[22] Ibid
[23] Kiribati has one of the highest rates of under-five mortality and diarrhoea in the region, mostly affecting children. Water-borne diseases are increasingly common, especially among the elderly, the young and other susceptible population groups. Diarrhoeal diseases are endemic, and outbreaks of typhoid occur annually (National Sanitation Policy 2010).
[24] Of 11 outer islands in the Gilbert Island chain, 3,466 households rely on wells or groundwater and 950 households rely on rainwater for their main source of drinking water (2015 Census).
[25] UNICEF 2014, 'Harvesting Rainwater to Improve Access to Safe Drinking Water and Adapt to Climate Change: Spotlight on Kiribati'.

and rainwater harvesting, and storage remains an underutilized option to provide access to safe drinking water[26].

Universal access to safe drinking water is a fundamental need and human right. The World Health Organization (WHO) states between 50 and 100 litres of water per person per day are needed to ensure that most basic needs are met, and few health concerns arise. Whilst data are not available to ascertain overall water access based on litres per day per person, UNICEF data highlights the continued gaps in accessing clean, safe drinking water. For Kiribati, the proportion of the population using basic drinking water services was 62 percent in 2019, with only 14 percent using improved drinking water sources free from faecal and priority chemical contamination, equating to 14 percent of the proportion of the population using safely managed drinking water services (Table 5).

Table 5. Proportion of population with access to water services (extracted from SPC Kiribati Census Atlas 2022)

SOURCE OF DRINKING WATER	SOUTH TARAWA	ALL OTHER IS.	URBAN*	RURAL	NUMBER OF HHS
Piped into dwelling	65%	35%	84%	16%	788
Piped into compound, yard or plot	71%	29%	80%	20%	5,652
Public tap/standpipe	63%	37%	65%	35%	2,500
Piped to neighbour	58%	42%	63%	37%	1,257
Protected well	24%	76%	31%	69%	4,039
Unprotected well	24%	76%	27%	73%	7,000
Rain water with tank with tap inside	86%	14%	90%	10%	556
Rain water with tank with tap outside	82%	18%	84%	16%	2,731
Communal tank	21%	79%	26%	74%	2,478
Tanker truck	73%	27%	96%	4%	158
Bottled water	94%	6%	94%	6%	412
Desalinated water	56%	44%	56%	44%	34
Public Utilities Board water	89%	11%	96%	4%	449
Rainwater from neighbour	57%	43%	74%	26%	99
Other sources of drinking water	44%	56%	53%	47%	107
Total HHs in private dwellings					20,354

[26] UNICEF 2014, 'Harvesting Rainwater to Improve Access to Safe Drinking Water and Adapt to Climate Change: Spotlight on Kiribati'.

Indicator	Percentage of Population by Year			
	2016	2017	2018	2019
Proportion of health care facilities with basic water services	65.48	65.48	65.48	65.48
Proportion of health care facilities with limited water services	0.65	0.65	0.65	0.65
Proportion of health care facilities with no water service	33.87	33.87	33.87	33.87
Proportion of population using at least basic drinking water services	74.70	75.54	76.36	77.17
Proportion of population using improved drinking water sources available when needed	48.64	49.20	49.76	50.32
Proportion of population using basic drinking water services	61.10	61.67	62.22	62.76
Proportion of population using improved drinking water sources	77.36	78.53	79.70	80.88
Proportion of population using limited drinking water services	2.66	2.99	3.34	3.70
Proportion of population using non-piped improved drinking water sources	41.36	41.85	42.31	42.77
Proportion of population using piped drinking water sources	35.99	36.68	37.39	38.10
Proportion of population using improved drinking water sources located on premises	57.67	57.27	56.84	56.37
Proportion of population using of improved drinking water sources free from faecal and priority chemical contamination	13.60	13.87	14.14	14.42
Proportion of population using safely managed drinking water services	13.60	13.87	14.14	14.42
Proportion of population using surface water	0.00	0.00	0.00	0.00
Proportion of population using unimproved drinking water sources	22.64	21.47	20.30	19.12
Proportion of schools with basic drinking water services	74.14	74.14	74.14	74.14
Proportion of schools with limited drinking water services	0.00	0.00	0.00	0.00
Proportion of schools with no drinking water service	25.86	25.86	25.86	25.86

Data Source: UNCEF, https://data.unicef.org/resources/data_explorer/unicef

Water resources in the target Outer Islands

During the island consultations in **Makin**, water related issues (well water contamination, brackish water, and drought) were highlighted as the priority concerns. Drought is viewed as one of the key issues with the lack of rainfall affecting vegetation, fruit trees, and groundwater.

In Makin, the main water source for both drinking and washing is the freshwater lens. Even though rainfall is high, only nine percent of households use rainwater as their main source of drinking water due to unsuitability of houses as rainwater catchment areas (i.e., houses are made from traditional materials with roofing made of local thatch). Well water on Makin is often polluted due to the proximity of open wells to pit latrines.

According to records from the Ministry of Infrastructure and Sustainable Energy (MISE), Makin has benefited from various water development projects in the form of polyethylene tanks, rainwater catchments, hand pumps, and solar pumps. The hand pumps were installed in the households, with solar pumps and water tanks installed in the schools, the churches, and the community. The purpose of these projects is to improve water accessibility and provide clean drinking water to the population. On Kiebu, a rainwater system was installed to collect rainwater from a church building and distribute it to the entire village. The project was funded by the Canada Fund. With a high annual rainfall, drinking water is not a problem on Makin, except during severe droughts.

According to the MISE records, a total of 244 water infrastructure units are in place in Makin, providing an estimated total capacity of 841,000 litres (excluding well water) (Table 5). Of this, 30 water infrastructure units (or 214,000 litres) are not in use with 214 infrastructure units equating to 627,000 litres in use by the communities on the island.

Table 6. Water infrastructure on Makin Island

Water infrastructure type	Number of Units	Not in use	In use	Ownership				
				Private	Village	Church	School	Others*
Polyethylene Tanks	104	15	89	11	30	18	16	29
Concrete Tanks	30	11	19	2	15	5	2	6
Wells	109	3	106	93	8	4	0	4
Desalination	1	1	0	0	1	0	0	0
Total	**244**	**30**	**214**	**106**	**54**	**27**	**18**	**39**

The WHO guidelines recommend 50 to 100 litres per day per person to meet basic needs, while the useable water supply at maximum capacity in Makin would amount of 327 litres per person. At the WHO recommended rate of 50 litres per day, this would equate to only 6 days of water supply per person.

Water contamination

The island consultations highlighted diarrhoea as one of the main health problems reported to the island health clinics (refer to Makin Report, Annex 1). Data from health clinics on Makin, Aranuka and Tabiteuea South show that a total of 496 people were treated for diarrhoea and 260 were treated for dysentery in 2020 (Table 7).

Table 7. Water-borne disease data from islands and clinics (2020)

Island & Clinic with Water-borne disease	Aranuka			Makin			Tabiteuea South		
	Aranuka	Baurua	Takaeang	Anrawa	Kiebu	Makin	Buariki	Taku	Tewai
Diarrhoea	70	32	48	62	53	103	79	9	40
Dysentery	21	0	20	12	14	58	78	7	50
Scabies	9	55	1	22	1	27	16	3	13
Tinea Corporis	20	8	7	44	6	141	22	3	7
Tinea Veriscolor	8	9	2	22	9	21	14	4	2
Worm Infestation	98	13	26	42	56	234	18	2	34

Aranuka is also dependent upon the freshwater lens as the primary supply of water for drinking and cleaning. Despite the frequent rainfall, only nine percent of households use rainwater as their primary supply of drinking water as most homes have thatched roofs that are unsuitable for collecting rainwater.

The majority of households (around 80 percent) in Baurua live near the coastline, with their wells also located nearby. The wells are becoming prone to overtopping and villagers are seeing the well water becoming more brackish. Open wells on Aranuka are close to pit latrines and remain uncovered and unprotected, leading to well water becoming frequently contaminated, particularly in times of heavy rainfall. Available infrastructure such as pumps remains low, limiting the ability of people to be able to pump water from suitable drinking water wells.

Aranuka suffers from drought periods and the supply and quality of water from the wells is dependent upon the amount of rainfall received and how the wells are protected from runoff and contaminants. Additionally, there is no backup system for the water supply during times of disaster. During drought periods, villagers travel up to a kilometre away from their houses to collect potable water from the three wells servicing the community.

Table 8 provides a summary of the number of water infrastructure units in Aranuka according to the MISE inventory. Polyethylene tanks (17) and wells (29) comprise the 46 water facilities on the island. However, the island is facing water challenges as all facilities are no longer in use, thus compounding the challenge for households to access water for their daily needs.

The total maximum capacity of current water storage, if all infrastructures are in use, is 120,000 litres, equating to 98 litres per person.

Table 8. Water infrastructure on Aranuka island

Water infrastructure type	Number of Units	Not in use	In use	Ownership				
				Private	Village	Church	School	Others*
Polyethylene Tanks	17	17	0	1	4	0	3	9
Wells	29	29	0	14	1	0	3	11
Total	**46**	**46**	**0**	**15**	**5**	**0**	**6**	**20**

*Includes Government of Kiribati, Council and KUC

The main source of drinking water in **Tabiteuea South** is the underground water which is tapped by wells dug 3-5 metres into the ground. The quality of groundwater is easily affected by both droughts and heavy rains that render it either unfit or fit for drinking. Not only is the livelihood of the population dependent on the quality of groundwater but so is the terrestrial fauna and flora. Coconuts dominate atoll vegetation along with other common shrubs found along the coast such as saltbush and *messerschmidia.*

Being a dry island, water becomes an issue during drought times when the freshwater lens sitting atop the seawater in wells is depleted without rains restoring the lens. The village of Takuu, for example, suffers from brackish water but the nearest freshwater site is approximately 8 km away on the separate islet of Katabanga. The only shortcut to fetching water from Katabanga by those on Takuu is to use canoes or boats to cross 3 km of lagoon to get to the freshwater site at Katabanga.

Water facilities on Tabiteuea South total 98 comprising polyethylene tanks, concrete tanks and gallery and overhead systems, wells and desalination systems (Table 9). Of these only 58 are in use. The maximum capacity of all the water infrastructure equates to 569,200 litres (In use = 177,200; Not in use = 392,000). If the maximum capacity is achieved, this would equate to approximately 420 litres per person, however, under current capacity only 130 litres per person is available.

Table 9. Water infrastructure on Tabiteuea South Island

Water infrastructure type	Number of Units	Not in use	In use	Ownership				
				Private	Village	Church	School	Others*
Polyethylene Tanks	53	34	19	0	1	0	2	50

Water infrastructure type	Number of Units	Not in use	In use	Ownership				
				Private	Village	Church	School	Others*
Concrete tank, Gallery & Overhead	7	4	3	0	3	1	0	3
Wells	37	2	35	22	2	0	0	13
Desalination	1	0	1	0	0	0	0	1
Total	**98**	**40**	**58**	**22**	**6**	**1**	**2**	**67**

*Includes Government of Kiribati, Council and KUC

The growing impacts of human settlements and those of climate variability and change on freshwater resources and the linkage between development, poverty alleviation and water availability require a commitment by the community and continued determination and leadership by the national government to protect and use wisely the nation's scarce water resources[27]. An integrated and coordinated whole-of-government approach is required that engages communities, clearly specifies responsibilities and accountabilities, and encourages and directs actions from the village through the island to the national level[28].

Sanitation and Hygiene

The lack of proper sanitation and toilet facilities contributes to the contamination of groundwater as toilets, have in many cases, been built poorly and too close to water sources. Unsafe hygiene and sanitation practices are causing contamination of tank water, groundwater and lagoon water. The consumption of contaminated water has led to serious health problems for those living in the outer atolls.

Ending open defecation has been identified as a top priority for reducing global inequalities in water, sanitation, and hygiene (WASH) and is explicitly referenced in sustainable development goal (SDG) target 6.2. Between 2000 and 2017, open defecation rates declined in all SDG regions except Oceania[29]. In 2015, 40 percent of the population of Kiribati had access to improved sanitation with 36 percent defecating in the open[30]. Figures for 2018 continue to highlight Kiribati as having the highest open defecation rate in the Pacific with 28 percent[31] of the population practicing open defecation. In rural areas and the outer islands, the rates are even higher – open defecation is practiced by nearly half of the rural population (49 percent) and by more than 70 percent in some outer islands[32].

Kiribati has unique challenging physical and social environments which significantly affect achievement and sustainability of water and sanitation interventions. For example, open defecation in the ocean or on the beach is a deeply entrenched social norm on all outer islands. In the village lifestyle, open defecation is not only socially acceptable, but it is a social activity. There are also the issues of distance and remoteness. The country is made up of 33 small islands and coral atolls spread out across a distance greater than the width of India. Getting the right technical expertise to the outer islands is a challenge due to their remoteness,

[27] National Water Resources Policy 2008, Government of Kiribati
[28] Ibid
[29] WHO 2017, *Progress on drinking water, sanitation, and hygiene: Updates and SDG baselines*, WHO and UNICEF
[30] UNICEF/WHO Joint Monitoring Programme data (2015)
[31] World Bank 2018, https://data.worldbank.org/indicator/SH.STA.ODFC.ZS
[32] ADB 2014, *Economic Costs of Inadequate Water and Sanitation Report,* Asian Development Bank

infrequent boat and flight schedules, and the cost and time required to visit these islands. Continuous monitoring, follow-up and verification are critical to sustaining behaviour change, however this is not easy to do in Kiribati.

The most serious challenge is posed by the relationship between sanitation and drinking water. The usual logic in community-led total sanitation (CLTS) is that stopping open defecation helps protect drinking water sources, but in Kiribati stopping open defecation by building and using toilets can harm drinking water sources. Many people living in coral atolls rely on shallow groundwater reserves to provide drinking water. These lenses are very fragile and with porous coral soils, pollutants from human waste and other sources easily enter the groundwater lens, threatening public health.

Raising awareness of the risks of pit latrines and pour-flush toilets has had an unintended consequence. The people who built toilets in the early stages of CLTS in Kiribati have since learnt that they are contributing to groundwater pollution. Many stopped using their toilets and reverted to open defecation. Although the extent is not yet measured, the wrong sanitation solution has caused slippage in open defecation free (ODF) achievements. In Kiribati there are few right choices for sanitation. UNICEF have trialled dry latrines in some outer islands (e.g., Kuria) and promote this as the only viable option[33].

Finding a technology that is affordable, and acceptable to communities' demands and preferences is problematic. Despite interest in composting toilets as a solution, experience from the Water and Sanitation in the Outer Islands of the Republic of Kiribati (KIRIWATSAN) project shows that community acceptance and usage of composting toilets remain a challenge.

Another difficulty is that common, basic water quality testing methods such as detection of faecal indicator bacteria (e.g., *E. coli*) and nutrients such as nitrates cannot distinguish between human and animal contamination sources (as well as any other potential non-animal contamination such as refuse dumps). Relying on these basic water quality parameters can make it difficult to identify high-risk contamination sources such as human faecal contamination, as well as complicating any remediation activities to reduce or remove contamination of water. There is a need to gain a better understanding of the sources of contamination of the freshwater on the islands of Kiribati. Improved data will not only enable the authorities to develop better processes to control water quality on the different islands, but also help inform the local island communities so they understand where contamination is coming from and they can be, therefore, active participants in developing mechanisms to remove or relocate these contamination sources away from at-risk freshwater sources.

Addressing water and sanitation issues has therefore been identified in the Kiribati Vision 20, as being essential in improving the living standards and health of i-Kiribati, as well as being necessary for development and poverty alleviation throughout the nation. As highlighted in Table 10, 756 people on the islands of Makin, Aranuka and Tabiteuea South were treated at health clinics for diarrhoea or dysentery in 2020. UNICEF data for the rural areas of Kiribati (i.e., outer islands) shows little change in the period 2016 to 2019 of the percentage of population who have access to basic sanitation services or are using safely managed sanitation services. In addition, just over 50 percent of the population have access to handwashing facilities with soap and water available at home (Table 10).

[33] https://www.communityledtotalsanitation.org/country/kiribati

Table 10. Hygiene and sanitation statistics for rural Kiribati

Indicator	Percentage of Population by Year			
	2016	2017	2018	2019
Proportion of health care facilities with basic health care waste management services	17.33	17.33	17.33	17.33
Proportion of health care facilities with limited health care waste management services	74.63	74.63	74.63	74.63
Proportion of health care facilities with no health care waste management service	8.04	8.04	8.04	8.04
Proportion of population with a handwashing facility with soap and water available at home	55.34	55.4	55.46	55.52
Proportion of population with a limited handwashing facility	30.67	30.65	30.63	30.62
Proportion of population with no handwashing facility at home	13.99	13.95	13.9	13.87
Proportion of population using at least basic sanitation services	43.93	44.38	44.81	45.21
Proportion of population using basic sanitation services	18.61	18.7	18.78	18.85
Proportion of population using on-site sanitation facilities with human waste disposed in situ	21.32	21.74	22.14	22.52
Proportion of population using of on-site sanitation facilities with human waste treated off-site	0	0	0	0
Proportion of population using improved sanitation facilities	57.3	58.52	59.7	60.92
Proportion of population using limited sanitation services	13.38	14.13	14.91	15.71
Proportion of population using improved latrines and other improved facilities	15.67	16.27	16.87	17.46
Proportion of population using sanitation facilities connected to septic tanks	30.62	31.19	31.75	32.3
Proportion of population using sanitation facilities connected to sewer networks	11.01	11.06	11.11	11.16
Proportion of population using safely managed sanitation services	25.31	25.68	26.03	26.36
Proportion of population using sanitation facilities connected to sewer networks and with sewage treated to at least secondary levels	3.99b	3.94	3.89	3.84
Proportion of schools with basic sanitation services	66.16	66.16	66.16	66.16

Data Source: UNICEF, https://data.unicef.org

Hygiene. Implementing water and sanitation solutions in Kiribati cannot be undertaken without sufficient support to implement hygiene behavioural change. The UNICEF and WHO report

'State of the World's Hand Hygiene: a global call to action to make hand hygiene a priority in policy and practice' argues that accelerating progress towards "adequate and equitable hygiene for all" as called for in SDG target 6.2 is a no-regrets investment that leaves the world better prepared to manage future disease outbreaks and pandemics[34].

UNICEF notes that of the range of hygiene behaviours considered important for health, hand washing with soap is a top priority in all settings. The simple act of cleaning hands can save lives and reduce illness by helping prevent the spread of infectious diseases. These diseases can be caused by pathogens (germs) transmitted through the air or via surfaces, food, or human faeces. Because people frequently touch their face, food and surfaces, hands play a significant role in spreading disease. It is estimated that half a million people die each year from diarrhoea or acute respiratory infections that could have been prevented with good hand hygiene. As well as preventing a multitude of diseases, hand hygiene can help avoid significant financial costs resulting from sickness and death[35].

UNICEF through its WASH programmes highlight that monitoring handwashing behaviour is difficult but the presence of soap and water at a designated place has been shown to be a robust proxy indicator. Household surveys increasingly include a handwashing module that involves direct observation of handwashing facilities[36]. Data on drinking water and sanitation services have been routinely collected for many years but collecting data on handwashing has only recently become standardized, and data are only available from 2015 through 2020 (Table 10).

Project Beneficiaries

The project will target direct and indirect beneficiaries through the implementation of the concrete adaptation measures and supporting mechanisms. **Direct beneficiaries** include the communities residing within the target villages on Makin, Aranuka, and Tabiteuea South including men, women, youth, and children. Men, women, and youth will be engaged with the activities to improve the water supply, use and sustainability of the water resource. Island protocols will be adhered to with coordination of the project activities to be operated through the Island Councils and *unimwane / unaine* (men and women elders). In addition, groups such as churches, schools and health clinics will be active participants in both water infrastructure and educational and awareness programs.

Women and women's groups: The project will have considerable activities engaging with women and women's groups on the three islands. Women will participate in the decision-making processes relating to the prioritisation of existing water supply systems to be repaired and replaced under the rapid assessment (Component 1), and in decisions relating to the technology options for new infrastructure to be constructed under Component 4. Women and women's groups (community groups and women church groups) will also be involved/participate in the education and awareness activities designed to improve water safety and usage, and improve hygiene and health (Component 3, and 5). Women will also be involved in basic maintenance and repairs training, to build a wider skills base in

[34] UNICEF, 2021. https://data.unicef.org
[35] Ibid
[36] Ibid

understanding the importance of maintenance and sustainability of water supply, water safety and water storage.

Men: Adult men (>24 years) will be engaged through the island decision-making processes relating to the prioritisation of the water supply systems to be repaired or replaced under the rapid assessment (Component 1) and in the technological options for new infrastructure to support adaptation to future climate impacts (Component 4). Men will also be engaged for the provision of labour to work with contractors in repairing and replacing the existing water supply systems. In addition, men in the villages will be participants in the educational and information trainings on water safety and usage, and to improve hygiene and health.

Youth: Youth (18–24 years) on the islands have become disengaged from the issues surrounding water supply and usage and are generally less educated on issues of managing water security[37]. During the consultations, young women did not have many opinions on water-related issues and both young women and men were deferential to village leadership. It will therefore be important to connect and engage with the youth through the village leadership structure, with youth engagement requiring buy-in and explicit efforts from council / village leaders and development partners. Communication strategies will need to be digestible to youth with clear takeaways on how water-related issues affect them directly.

Various platforms and mechanisms including participation in the implementation of activities through involvement in community water action groups, activities, and training to support the island water technician, citizen science water activities, monitoring and reporting of project data and information, and participation in the educational and awareness activities for water safety and usage, and hygiene and health – will be explored as possible avenues for youth engagement.

Island Councils: Coordination and protocols will be critical for the Project to operate under (refer Figure 10). In all cases, the formal decision-making mechanism on the three islands will be the Island Councils, established under the Local Government Act 1984. The Island Councils are elected every four years by registered electors for any ward of an electoral district constituted by the provisions of the Elections Ordinance 1977 which lies within the area of authority of the Council. Each ward is represented by a Councillor elected by that ward. The Mayor is elected from among the Councillors by the Whole Islander electoral district. The Island Councils also include representatives of the *unimwane* (old men) and have established a rotating seat for either a woman or youth representative.

The Island Councils are overseen by the Ministry of Internal Affairs and engagement with the outer islands must be arranged through the Local Government Division which will also facilitate the logistics for outer island meetings (i.e., meeting with Island Councils).

[37] Outer Island stakeholder consultations reports, 2022

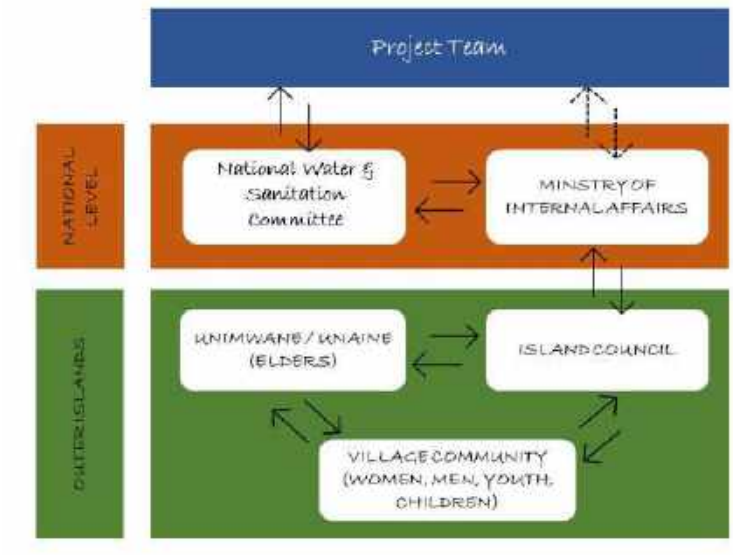

Figure 10. Project coordination mechanisms at the national and outer island level

Churches: Churches on the outer islands play an important role in water resource management as many of the churches are used as rainwater harvesting areas and therefore the custodians of island water supply. Church leaders will therefore be engaged in the decision-making processes to determine (a) the prioritisation of the rapid response assessment to undertake repairs or replacement of existing water infrastructure and (b) for new technology options (Component 1 and 4); participation in discussions involving access to water and water safety particularly for those facilities which are located on church grounds, and; are important conduits in the education and training in water safety and water usage (Component 3 and 5).

Schools: The project will work with teachers (and indirectly students) through Component 3 and 5, in participating in educational trainings associated with the promotion of water safety and hygiene. This will be undertaken through the UNICEF water, sanitation, and hygiene (WASH) programs, and will also include activities such as sports activities, roadshows, competitions, and awards to help promote the messages. Water safety and hygiene learnt and practised in schools by students can be transferred by them to home water safety and hygiene and can strengthen trainings and safety or precaution measures taught in communities.

Health Clinics: Health clinics on the three islands play an important role in monitoring and recording health data linked to water borne diseases, and in promoting health and hygiene messages. The project will engage with the health clinics for the provision of health data to support Outcome 1.2 on the monitoring of water borne diseases (Component 1), and Outcome 5.1 in activities on hygiene and health messaging (Component 5).

Another **Direct beneficiary** of the project will be the **Water and Sanitation Engineering Department (WSED)** under the **Ministry of Infrastructure and Sustainable Energy (MISE)**: The Department seeks to take its water resource assessment capacity up to 100% of regional / international standards from the current 60-70% capacity level, according to a department self-assessment. Through this project the Department will gain knowledge, improved processes, tools and practices to provide high standard and ongoing water and sanitation services to the islands less reliant on projects. This is discussed further under Section A Project Components, Component 2.

The **indirect beneficiaries** of the project's outputs will include national, regional, or international individuals, organisations, civil society, programmes/projects of similar initiatives who will provide inputs into, or partner with the Project, on activities in the targeted outer island villages. Key national government agencies will also be included into the coordination mechanisms.

Ministry of Internal Affairs: The project will engage and coordinate with the Ministry of Internal Affairs (MIA) which has responsibility for support services to the outer islands, to ensure effective coordination across the project activities and governance protocols on the outer islands. The Ministry of Internal Affairs will be represented on the Project Steering Committee and will be expected to report on any issues or feedback from the outer islands concerning this project through this mechanism and directly to the project management unit (PMU).

Ministry of Health and Medical Services: As water has a critical role in people's health the ministry has priorities and targets to strengthen Water, Sanitation and Hygiene for All (WASH) actions to protect public health. Successes from this project will contribute to the Ministry's target achievements, through the three islands' population having improved access to clean water.

Approach to gender mainstreaming: Given the unique cultural and governance context of the outer islands, the Project will adopt an inclusive approach, progressing from a "do no harm" approach to addressing gender vulnerabilities in accessing water safety and improved hygiene in an intersectional manner, focusing on all community groups – women, men, youth, and vulnerable groups – to ensure gender equality and that the whole of community benefits from the project's interventions. The gender and social inclusion strategy (Annex 4) will rely on strong, participatory community engagement and be assessed bi-annually to further support gender responsive interventions and social inclusion across the project's activities. Technical partners and selected Service Providers will follow the gender policy and social inclusion strategy and ensure that the project's approach to gender mainstreaming will achieve the following objectives:

- At least 50 percent of women in the targeted villages have access to decision-making forums, capacity building, training and information and awareness activities. Specific services and trainings will target women in outcome 1.1, outcome 1.2, output 2.2.1, outcome 3.1, outcome 4.1 and outcome 5.1.
- **Increase women's and youth's voices in decision-making at the community level**. Working in complementarity with the island cultural norms, the project will endeavour to increase the participation of women and youth in the decision-making related to water infrastructure and treatment, water usage and conservation and water

safety and drought management plans. Specifically, the project will target a 50-50 gender representation at these forums.

- **Increase men's, women's and youth's access to skills and knowledge**. Capacity on the outer islands remains low, with skilled workers usually leaving the island for other opportunities.[38] Gender and socially inclusive participation in the trainings across activities under outputs 1.1.1 (repair and maintenance), 1.2.1 (water quality testing and monitoring), 3.1.1 (water plans), 3.1.2 (coordination mechanisms) and 5.1.1 (WASH programmes) will help to facilitate increased knowledge and skills, and ownership across the communities. In particular, the project is targeting for at least 50 percent of participants at training events to be women and youth.
- **Develop skills to improve the well-being of households.** Gender and socially inclusive participation will be encouraged to deliver on actions under outputs 3.1.2 (developing improved coordination and decision-making mechanisms) and output 5.1.1 (WASH programmes). In particular, encouraging the active participation of men, women and youth in the WASH programmes and water awareness programmes is expected to lead to improvements in household well-being through water conservation and usage i.e., water availability, and hygiene, reducing the levels of water-borne diseases.
- **Train project staff and service providers on gender-related issues** and on finding entry points for participation by women and youth at the community level. Training modules will include gender sensitive topics and will assist participants identify positive cultural mechanisms that will ensure socially appropriate approaches. The project will produce and/or adapt training modules that will be delivered to targeted communities and the work of Island Facilitators and all project staff.

B. Project / Programme Objectives:

The project's objective is to ensure the three selected island communities have continuous, equitable, and sustainable access to safe drinking water, water borne diseases are kept to a minimum and clean water is available for other uses, under expected climate change impacts.

Theory of Change

Kiribati's water security challenges have been well documented in past and demonstrated by the projects before this. The project recognises the complex context in which interventions have been attempted to achieve a similar objective. Such key challenges this project aims to overcome to reach the objective are:

- Legacy of unsuccessful projects where infrastructure have not been fit for purpose or fallen into disrepair quickly.
- National government capacity needs to enhance ongoing water services support to outer islands.
- Not enough focus on creating and establishing water management and coordination mechanisms in the outer island communities.
- People's behaviours and attitudes to water resources.
- Climate change and weather impacts affecting clean water availability.

[38] Annexes 1-3 Outer island consultation reports, 2022.

To overcome these the project will be structured around five components:

i. Rapid (repair & replace) response to existing water supply systems in the targeted villages.
ii. Building long-term options for water resource management and use
iii. Strengthening coordination mechanisms and community participation
iv. Construction of water infrastructure to fill in gaps of supply
v. Education, awareness raising and knowledge management

As outlined in Figure 11 diagram for the theory of change, the basic strategy employed by the project through component activities and resulting outputs will affect outcomes for Increased working water supplies, lower incidence of waterborne diseases, more equitable access to safe drinking water and sustainable management of water for safe drinking and other domestic and livelihood uses.

The success and learning from the project will become approaches that are scaled up in other outer island projects.

The project component outcomes and outputs are described in more detail in the following subsections and in Part II of this proposal document.

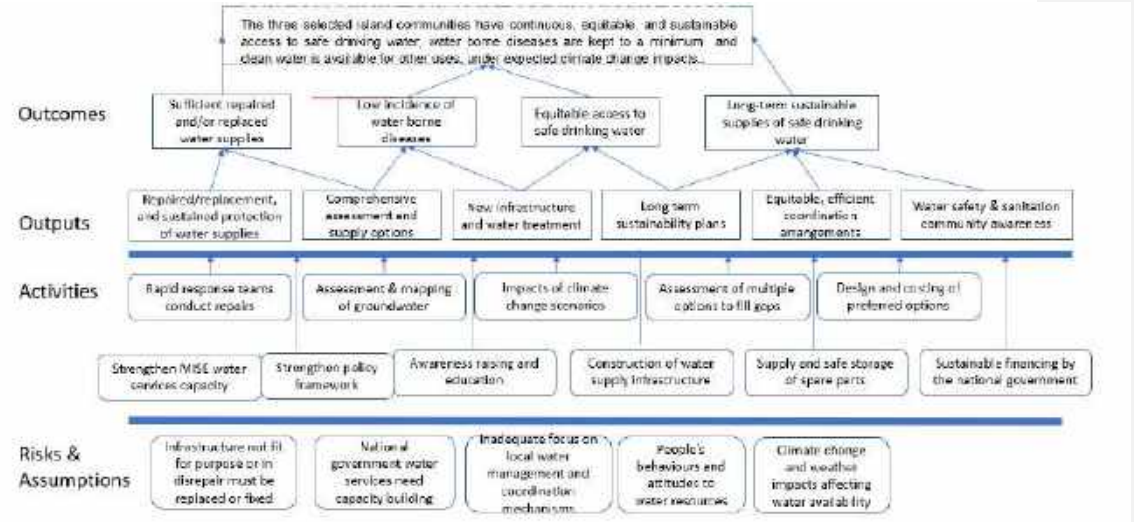

Figure 11. Project Theory of Change

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, outcomes, outputs, and the corresponding budgets

Table 11. Components, Outputs, Outcomes, and Budget

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
Component 1 Rapid response for existing damaged and unused water supply systems in the targeted villages	**Output 1.1.1** Rapid assessment and response through the completion of repairs and/or replacement on existing water infrastructure in the targeted villages on the three islands.	**Outcome 1.1** The three selected island communities have repaired and/or replaced water supplies for safe drinking water and clean freshwater for other water uses	769,000
	Output 1.2.1 Assessments and survey to recommend appropriate water treatment system(s) for the repaired existing water supply systems through to implementation of water treatment systems to the repaired existing water supply systems.	**Outcome 1.2** Incidence of water borne diseases on the three islands continues to decline	220,000
Component 2 Strengthening Government of Kiribati's capacity and capability in sustainable water resource management	**Output 2.1.1** i) Comprehensive assessments for safe water sources and supply for water uses by targeted communities, under a range of climate change scenarios.	**Outcome 2.1** Strengthened WSED (MISE/GoK) capacity and capability to provide comprehensive water assessments, analyses, and reports at regional and international standards.	583,200
	Output 2.2.1 Long-term sustainability plans for water resources on the three islands and climate change adaptation.	**Outcome 2.2** Strengthened planning process for developing sustainable supplies of safe drinking water, clean freshwater for other water uses, and effective, affordable maintenance arrangements.	200,000
	Output 2.3.1 Development of a National Water Act and a Long-term	**Outcome 2.3** Commenced strengthening of policy	189,600

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
	Water Strategy for sustainable water resource management and capacity development	and legal framework for sustainable management of water resources & capacity development	
Component 3 Strengthening coordination mechanisms and community participation in water resource management	**Output 3.1.1** Practices of the target outer island communities are consistent with the protection, sustainable, and equitable use of water (Integrated Community Water Management Plans).	**Outcome 3.1** Equitable access to safe drinking water and clean freshwater for other uses in all three island communities.	416,400
	Output 3.1.2 Equitable and efficient coordination arrangements for water supply at all levels, from the household to the national government levels		
Component 4 Construction and repair of infrastructure to adapt to future climate impacts	**Output 4.1.1** Completion of new water infrastructure and water treatment systems designed to fill in the current supply gaps.	**Outcome 4.1** Availability of long-term sustainable supplies of safe drinking water, clean freshwater for other uses, and effective, affordable maintenance arrangements are in place in the three island communities	5,796,000
Component 5 Education, awareness raising, and knowledge management	**Output 5.1.1** Sustainable water uses and safe sanitation practices and knowledge disseminated to the three selected island communities	**Outcome 5.1** Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water	247,000
Project Execution cost			800,000
Total Project Cost			9,221,200
Project Cycle Management Fee charged by the Implementing Entity			778,800
Amount of Financing Requested			10,000,000

D. Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Table 111~~1~~2. Proposed project milestones

Milestones	Expected Dates
Start of Project/Programme Implementation	Q4 2024
Mid-term Review (if planned)	Q4 2027
Project/Programme Closing	Q4 2029
Terminal Evaluation	Q2 2030

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Project Components

Describe the project components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.

Component 1. Rapid response for existing damaged and unused water-supply systems in the targeted villages

Across the three islands is a total of 388 water supply infrastructure units (i.e., tanks, wells, and desalination plants). However, only 272 or 70 percent of these are in use. As indicated in Table 12, most of the functioning infrastructure units situated on Makin with 86 percent of its water infrastructure in use, whilst Aranuka has no useable water supply infrastructure and Tabiteuea South have just over half its water infrastructure in use (Table 12). This equates to only 804,000 litres available at maximum capacity – or 179 litres per person in total, well below the WHO guidelines of 50-100 litres per day per person to meet daily basic needs. Furthermore, the island consultations found that available water supplies remain contaminated due to coastal inundation/overflow or lack of water safety regimes leading to runoff of contaminants into wells and tanks[39].

For a rapid response to community need for access to clean water, Component 1 focuses on (a) the repair or replacement of existing infrastructure, and (b) ensuring the current water supply is safe for drinking purposes through water treatment.

Outcome 1.1 The three selected island communities have repaired and/or replaced water supplies for safe drinking water and clean water for other water uses.

Accessing safe, clean water on the islands of Makin, Aranuka and Tabiteuea South is exacerbated by periods of drought, rising seawater and sporadic rains, but also lack of functioning water infrastructure.

Output 1.1.1 Rapid assessment and response through the completion of repairs and replacements for existing water supply systems in the targeted villages on the three islands.

Activity will commence with the procurement of a rapid response team to undertake the detailed water supply assessments on each island for identifying which infrastructure (tanks and wells) is suitable for repair or replacement. The rapid response team will work in collaboration with the Ministry of Infrastructure and Sustainable Energy (MISE) and local water technicians. Assessments will also consist of an analysis for including household rainwater harvesting systems as part of the repair and replacement programme.

Community consultation will be an integral part of the assessment and the prioritisation process in determining infrastructure repair and replacement plans. Consultations will adopt a participatory approach where the views and priorities of all members of the communities including women, youth and other vulnerable groups are addressed. Considerations for household rainwater harvesting systems will add another layer where consultations will assist

[39] Island consultation reports, Annex 1-3

to determine criteria for household level water infrastructure. Island decision-making processes will be observed for prioritising repair and replacement works, although the executing entity will ensure the consultations include women and vulnerable groups as part of the process.

Considerations for work under Component 2, Component 3, and Component 4 will also need to be configured into the assessments.

Table 1213. Water resource infrastructure in Makin, Aranuka and Tabiteuea South

Makin								
Water infrastructure type	**Number**	**Not in use**	**In use**	**Ownership**				
				Private	**Village**	**Church**	**School**	**Others***
Poly Tanks	104	15	89	11	30	18	16	29
Concrete Tanks	30	11	19	2	15	5	2	6
Wells	109	3	106	93	8	4	0	4
Desalination	1	1	0	0	1	0	0	0
Total	**244**	**30**	**214**	**106**	**54**	**27**	**18**	**39**
Aranuka								
Water infrastructure type	**Number**	**Not in use**	**In use**	**Ownership**				
				Private	**Village**	**Church**	**School**	**Others***
Poly Tanks	17	17	0	1	4	0	3	9
Wells	29	29	0	14	1	0	3	11
Total	**46**	**46**	**0**	**15**	**5**	**0**	**6**	**20**
Tabiteuea South								
Water infrastructure type	**Number**	**Not in use**	**In use**	**Ownership**				
				Private	**Village**	**Church**	**School**	**Others***
Poly Tanks	53	34	19	0	1	0	2	50
Concrete tank, Gallery & Overhead	7	4	3	0	3	1	0	3
Wells	37	2	35	22	2	0	0	13
Desalination	1	0	1	0	0	0	0	1
Total	**98**	**40**	**58**	**22**	**6**	**1**	**2**	**67**

Once the prioritisation exercise has been completed, the work programme will be finalised with the island council and communities before the repair and replacement works are undertaken.

Outcome 1.2 *Incidence of water borne diseases on the three islands continues to decline.*

UNICEF data shows in 2020, the proportion of population using safely managed drinking water services (i.e., using drinking water from an improved source that is accessible on premises, available when needed and free from contamination) is 14 percent an increase from 9.9

percent in 2000[40]. For rural areas of Kiribati (i.e., outer islands), only 7 percent of the population was using improved water supplies free from contamination in 2020[41].

On the target islands of Makin, Aranuka and Tabiteuea South, the restricted access to clean and safe water, has led to high levels of reported water-borne disease cases at health clinics on the target islands (Table 13). For example, 496 people across the three islands reported to health clinics with diarrhoea in 2020.

Table 134. Water-borne disease statistics for Makin, Aranuka and Tabiteuea South (2020 data)

Island & Clinic with Water-borne disease	Aranuka			Makin			Tab South		
	Aranuka	Baurua	Takaeang	Anrawa	Kiebu	Makin	Buariki	Taku	Tewai
Diarrhoea	70	32	48	62	53	103	79	9	40
Dysentery	21	0	20	12	14	58	78	7	50
Scabies	9	55	1	22	1	27	16	3	13
Tinea Corporis	20	8	7	44	6	141	22	3	7
Tinea Veriscolor	8	9	2	22	9	21	14	4	2
Worm Infestation	98	13	26	42	56	234	18	2	34

Data Source: Island Health Clinics

As water treatments and water safety measures are critical parts of the response for communities to have access to clean and safe water, Output 1.2 aims to address the incidence of water-borne diseases through improved water treatments for both existing, repaired, and new water systems supported under Components 1 and 4.

Output 1.2.1 Assessments and survey to recommend appropriate water treatment system(s) for the repaired existing water supply systems through to implementation of water treatment systems to the repaired existing water supply systems

Coordinated with the detailed assessment under output 1.1.1, water treatment expertise will be procured to work with the Ministry of Health and Medical Services (MHMS), to undertake the initial water quality testing of the water supplies in the target communities. Results from the water quality testing will serve as (a) the baseline for monitoring under activity 1.2.2, and (b) provide the inputs into the assessment of longer-term water treatment options to be implemented under the project.

Through this process an initial assessment will also be undertaken to ascertain which water treatment technologies would be best for sustained use and effective monitoring in these three outer island communities. The technologies will be designed for, and tested in, remote communities and include ultraviolet water purification systems, clay filters, portable filters, chlorine dispensers, solar stills, and chlorine treatments.

The chosen technologies from the above-mentioned list will then be installed in villages and households as part of the rapid response efforts. This will provide a short-term solution for improving the safety of current water sources.

[40] UNICEF, https://data.unicef.org/resources/data_explorer/unicef_f/?ag=UNICEF&df=GLOBAL_DATAFLOW&ver=1.0&dq=KIR.WS_PPL_W-SM.&startPeriod=1970&endPeriod=2022

[41] UNICEF, https://data.unicef.org/country/kir/

As part of implementation of water treatment systems, a water quality monitoring program will be developed or revisited and coordinated by the Water Technical Specialist and Island Coordinators and identified community champions. This program will involve the training of local water technicians and community members to monitor and provide data to ensure the effectiveness of the water treatments, and awareness programmes. The program will form part of the Integrated Community Water Management Plans under Component 3

Training under the water quality monitoring program will include usage of the testing kits, record keeping of the test results and action to be taken when the results are positive in coordination with the WASH programmes and awareness programmes in outcome 5.1. Gender inclusivity in the training program will be provided for men, women, and youth on each island to ensure that there is meaningful equal representation of all sectors of the communities in monitoring work undertaken. Results will be regularly collected and uploaded into the Project's monitoring and evaluation database and provided to the Ministry of Health and Medical Services.

An example of water test kits that could be made available to the target communities is, *Aquagenx* portable water test kits and Bacteriological H2S field test kit bottles for regular water quality testing and monitoring. Both types have had proven usage and results, through implementation in the outer islands of Federated States of Micronesia (FSM), with similar environment and context, under an Adaptation Fund project. The advantage of these kits is their simplicity to use in detecting if pathogens are in the water, that anyone in the community could use for testing.

Assessment will be made using the most suitable test kits for the outer islands based on conditions and capacity of the local communities.

Linkages with other components: Consultations and assessments from activities under Component 1 will input to:
Component 2 – Input to water assessments and development of long-term sustainable plans
Component 3 – Input to development of integrated community water plans
Component 5 – Input to engagement of beneficiaries in WASH programmes and with communication products to be produced.

Component 2. Strengthening Government of Kiribati's capacity and capability in sustainable water resource management

The Water and Sanitation Engineering Department (WSED) under the Ministry of Infrastructure and Sustainable Energy (MISE) is responsible for ensuring that the people of Kiribati have sufficient access to reliable, safe water supplies and safe sanitation facilities and practices. The department aims to consolidate and coordinate national water quality monitoring programs, implement and enforce water protection and conservation measures, and strengthen national enforcement and coordination mechanisms in protecting water quality and quantity. The MISE and Department recognise the need to enhance their capacity and capability to achieve these aims and provide sustainable water resource management and support to outer islands – not always project bound. Under this component, WSED will work with technical assistance to undertake and develop water assessments and long-term sustainable planning for the target islands whilst strengthening their knowledge, processes, and operations.

Outcome 2.1 *Strengthened WSED (MISE/GoK) capability to provide comprehensive water assessments, analyses and reports at regional and international standards*.

Under this outcome, the strengthening of WSED's water resource assessment capacity will be gained through the undertaking of water resource assessments on the target islands with technical assistance on all aspects of the process.

Output 2.1.1: Comprehensive assessments for safe water sources and supply for water uses by targeted communities under a range of climate change scenarios.

Understanding of the water resource availability and reliability in the three target islands is limited. Makin had water assessments undertaken during the KIRIWATSAN project while the islands of Aranuka and Tabiteuea South have not had comprehensive assessments done yet. Groundwater is the main source of water in the outer islands, but there remain considerable pressures on the limited water resources, and these pressures are further exacerbated by climate change.

Comprehensive assessments (updated and new) will be undertaken by WSED with technical assistance. The technical assistance is expected to take WSED capacity up to 100% of regional / international water resource assessment standards from the current 60-70% level, as viewed from a department self-assessment. This technical assistance is also expected to enhance WSED's assessment and analysis incorporating climate and population scenarios.

The assessments will take a stepwise approach involving: (i) a data review; (ii) establishment of a strategic measurement and monitoring programme; (iii) data analysis and interpretation for developing water balances and conceptual models; (iv) development of a hydrological risk assessment model; and (v) evaluation of 'possible' groundwater extraction rates considering the risk of saltwater intrusion, as well as future climate impacts on recharge.

The project will utilise and enable MISE's ongoing water assessment programme into the target islands as the basis for undertaking an extensive review of all available data and reports from previous studies to identify key data gaps required to be addressed prior to developing a hydrological model for a given island. This exercise will help inform if enough baseline water infrastructure and data exist to practically undertake a water resource assessment, but also for establishing a strategic hydrological measurement and monitoring program required to collate enough data to proceed with building a hydrological risk assessment model.

This activity will also build on the monthly salinity and pH monitoring programme already established under MISE. Working in conjunction with island water technicians as well as Government of Kiribati staff, a hydrological measurement and monitoring programme will be implemented on the three islands. This will involve strategically selecting target groundwater wells to install data loggers for high-resolution (hourly) groundwater level and salinity measurements. This would also include training of the outer island water technicians and Tarawa MISE staff to undertake monthly manual water level measurements using a down-hole electrical water level meter (this is important for ensuring reference values for the data loggers, but also training for a future monitoring programme after the project ceases). The hydrological monitoring program will feed into the development of the Water Safety Plans (output 3.1.1) and the water quality monitoring (output 1.2.1).

The table below summarises WSED's self-assessment of its water resource assessment technical capacity and where the project will enhance this:

Table 1415. WSED Self-Assessment of Water Resource Assessment/Technical Capacity

Component of WRA	Description of current capability and capacity	Capacity strengthened under the project:
1. Planning / preparation phase a. Collection of hydrological data b. Collection of physiographic data	i. Understanding of island environment ii. Ability to select areas and plan the duration of the survey based on the width and length of the island iii. Able to calibrate and undertake nulling procedures for the EM34 equipment before use iv. Ability to use water quality testing equipment for required parameters including E.coli, nitrate testing, salinity testing, turbidity, pH, including calibration of these hand-held equipment v. Use of GPS	In-depth understanding of water cycle relationship with the quality and quantity of groundwater, as well as drilling skills to understand the complete geology of the area, and other physiographic data such as soils as well as how to present these in a comprehensive GIS format Need 30% of TA input to this phase
2. Surveying and data collection Phase a. Use of the EM34 machine to collect groundwater data b. Surveying of other water resources utilising prepared templates	Use of the EM34 equipment to survey lines on the selected areas Intimate knowledge of different parts of the EM34 (e.g., cables) and where to use them depending on the topography / area Correct reading and recording of the data	Use of other techniques or other equipment to conduct WRA
3. Reporting Calculation and mapping – Using GPS and QGIS Work with sophiscated GIS software to enhance quality of report and increase products from report Include advice on availability of water resources and suggested water and	Able to utilise EM34 survey results to calculate freshwater depths and connect those lines as QGIS	Work with sophiscated GIS software to enhance quality of report and increase products from report Include advice on availability of water resources and suggested water and sanitation technologies for the sites surveyed Include demand forecast based on available water

Component of WRA	Description of current capability and capacity	Capacity strengthened under the project:
sanitation technologies for the sites surveyed Include demand forecast based on available water resources under various climate and population scenarios		resources under various climate and population scenarios.
% of existing capacity and TA input required	**Estimate existing capacity – 60- 70%**	**Required TA input 30 - 40% to upskill and improve WSED capacity by this % by end of project.**

Outcome 2.2 *Strengthened planning process for developing sustainable supplies of safe drinking water, clean freshwater for other water uses, and effective, affordable maintenance arrangements.*

Under this outcome WSED information, advice and guidance to islands will be enhanced through incorporation of other technical environmental, social, economic considerations necessary for determining sustainable water management plans.

Output 2.2.1 Long term sustainability plans for water resources and climate change adaptation on the target islands. In addition to the information generated from Output 2.1.1, technical assistance will work with WSED and MISE to undertake technical, social, environmental, and economic assessments of multiple options to ensure the provision of sustained access to safe drinking water for all communities on the three islands. This will strengthen WSED's decision-making process to provide considerable recommendations and water options and plans for the target islands.

The technologies to be assessed include current technologies such as continued use of tanks and wells, desalination plants, and where appropriate the new and emerging technologies which are suitable for small islands e.g., solar desalination, solar pumps, and portable desalination units. Lessons learned from previous water-related projects in Kiribati and other SIDS will be an important part of this assessment, as cost-effectiveness may not be the most important criterion if the technology is too difficult to maintain (e.g., constant replacement of filters), too exposed to the expected climate-related hazards such as over-wash, or culturally and socially unacceptable. Example of infrastructure and technologies that will/may be considered are listed under Component 4 - Construction and repair of new and existing water infrastructure to adapt to future climate impacts.

MISE will work with the island councils and technical assistance provided under the project to deliver this output and in the process build capacity to enhance processes and operations for determining sustainable water plans for the islands. Activity under this output will also refer to the Memorandum of Understanding on the roles of Government, Island Councils and Communities for Kiribati as well as established and relevant national committees.

Outcome 2.3 - *Commenced strengthening of policy and legal framework for the sustainable management of water resources and capacity development*

Project activity under this outcome will instigate long outstanding reviews of the national legislation that will support WSED and MISE's mandate to ensure communities have sufficient access to reliable, safe water supplies and safe sanitation facilities and practices. This includes consolidating and coordinating national water quality monitoring programs, implementing and enforcing water protection and conservation measures and improving national enforcement and coordination mechanisms in protecting water quality and quantity.

The expectation is that in the life of this project, the initiation of reviews, early drafts and targeted stakeholder consultations can be supported in the three islands. A further expectation is that MISE will seek co-funding from other sources e.g. from within government and other projects to support consultations with islands beyond the reach of this project and to progress the finalisation endorsement of the strategy/policy and legislation over time. The timeframe for the latter, especially for finalising and endorsing legislation, is expected to be beyond the five-year period of this project.

Like many other initiatives of this nature in the past, this project will continue in lieu of an updated or endorsed water and sanitation policy and water Act. The project will do so by instigating this work to start filling the gap that has long been outstanding and which is critical for WSED and MISE to promote sustainable management of water resources across the country's islets. Given the clear linkages of water resource management to sanitation, health, and the environment, WSED and MISE will collaborate with relevant agencies and stakeholders to ensure a cross-cutting approach is undertaken when strengthening the policy & legal framework. Section D (below) on Strategic Alignment discusses the KV20, the Kiribati Development Plan (KDP) and other existing policies which can form the basis for the development works under this outcome of the project.

Output 2.3.1 – Development of a National Water Act and long-term Strategy for sustainable water resource management and capacity development

Technical assistance will work with MISE on the review of the National water resources policy (2008) and the National Sanitation Policy (2009). These policies along with the ten-year plans should have been revised in 2018 and 2019 respectively. The revision was necessary to take stock of current progress, outstanding issues and to propose ways forward for both water and sanitation. However, this did not occur for a combination of issues including that the WSED/MISE did not have the resources.

Recent steer from MISE is for a combined water and sanitation strategy and policy, given the linkages between the two and implementation of the policy to be done through the WSED/MISE and/or its subsidiaries, for example, the Public Utilities Board (PUB). The policy and strategy are expected to complement existing national policies including the Climate Change policy.

Regarding water and sanitation legislation, at present only a Public Utilities Act is in place for provision of water and sewerage systems in South Tarawa. Technical assistance will work with MISE on the development of a Water and Sanitation Act for Kiribati. Drafting of a Water Act started nearly a decade ago, however, it stopped due to a lack of resources. A new Water and Sanitation Act should complement the combined water and sanitation strategy/policy. Areas for consideration in the Act is expected to include water and sanitation infrastructure,

community water plans and existing structures, community ownership, management of these infrastructure, address future commercialisation of the provision of water and sanitation services for all communities, and declaration of future water reserves on all the islands of Kiribati.

Development of the strategy/policy and Act is expected to consider gender, equality and inclusion aspects, traditional and cultural norms on governance of island natural resources, and societal norms and the Memorandum of Understanding between the Government of Kiribati, Island Councils and Communities.

For developing of the draft policy and legislation, activities under all components of the project may be seen to provide a level of current observations, consultations, and information towards understanding the reach of WSED and MISE's water and sanitation mandate at the island and community levels. At the time of resubmission there is no other project looking to address the policy gap.

Linkages between Component 2 and others include:
Component 1 – to enhance efficiency or effectiveness of existing water systems.
Component 3 – to inform integrated community water management plans.
Component 4 – to inform programme for construction and/or installation of new water systems.

Component 3. Strengthening coordination mechanisms and community participation in water resource management

Outcome 3.1 *Equitable access to safe drinking water and clean freshwater for other uses in all three island communities.*

Output 3.1.1 Integrated Community Water Management Plans - Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water.

Within the outer islands, maintenance of infrastructure is the responsibility of the community and/or village, leading to a strong sense of ownership of the facilities by the community. Integrated Community Water Management Plans will define and guide the island communities on the management of their water supply through asset management, drought response plans, water safety, and sustainability plans. The Integrated Community Water Management Plans will consist of assessment management, sustainable maintenance and repairs plan, drought response, and water safety plans.

Asset management plans are critical tools in recording and maintaining the water and sanitation infrastructure on the outer islands, providing guides to the communities and villages on how to maintain their water and sanitation infrastructure. Led by the islands' existing Water Infrastructure Technicians and in partnership with MISE and technical assistance from the project, the asset management plans will be reviewed during early activity with the rapid response team under output 1.1.1 to reflect the water infrastructure currently in use and the units which will be repaired and/or replaced under the output's rapid response action. They will again be referred to and updated as works progress under outputs across outcomes 1, 2 and 4. Responsibility for the updating and finalising of the plans will be led by the Water Infrastructure Technician in partnership with MISE and the suppliers of the water supply and treatment infrastructure. Training on asset maintenance will build the capacity of the island

Water Technicians and other interested community members in maintaining and servicing the infrastructure of the island water supply system.

Sustainable maintenance and repair plans. Led by the project management unit (PMU) in partnership with MISE and consultations with Island stakeholders and repairs plans will be developed over the course of the project to ensure ongoing arrangements for the repair and maintenance of the assets can be funded and undertaken routinely. During outer island consultations across six islands (Makin, Aranuka, Tabiteuea South, Kuria, Abaiang, and Maiana) it was noted the very limited ability for island communities to undertake ongoing maintenance and repairs to water infrastructure. This demonstrated a gap between theory vs reality where past projects have expected outer island communities to self-fund, maintain and undertake repairs. To address this gap, the project will explore long-term options with the national government for the ongoing provision of spare parts, equipment and tools and training of the island water technicians and communities (Activity 3.1.1.3). This project will provide for an initial supply of spare parts and maintenance tools and equipment (activity 4.1.1.3) the usage and management of which is to be guided by these plans.

Drought Response Plans: With the current drought situation in Kiribati, there is an urgent need to have a clear response framework on the three islands for future drought situations, to ensure responses are put in place quickly and effectively, coordinated across outer island councils and national government ministries.

Utilising the approaches undertaken in developing the South Tarawa and Abaiang drought management plans, the project will focus on developing outer island drought response plans for the three target islands. The approach will focus on two core areas: (i) the development and implementation of the drought response plans (DRP) for each island; and (ii) strengthening the capacity of the Government of Kiribati to effectively act on drought response plan implementation.

The DRPs will articulate to specific communities how to prepare and implement mitigation actions such as reducing water demand and monitoring water resources and water use in drought situations. Furthermore, the plans will identify the early warning indicators for drought at different levels, including the incorporation of traditional knowledge into these indicators. The response plans and subsequent data collected will strengthen the coordination mechanisms between the **National Drought Committee** and the Island Councils, thus enabling implementation of actions in the lead-up to drought situations based on island-specific circumstances, rather than relying upon old information and the DRP for South Tarawa.

The DRPs will be developed in full collaboration and consultation with the relevant government ministries, Island Disaster Committees, Island Councils, and other relevant stakeholders at the village, island, and national levels.

Water Safety Plans: Kiribati has a very high incidence of water, sanitation, and hygiene related diseases; and it has among the highest rates of infant mortality in the Pacific region. Diarrhoeal disease, which is often linked to inadequate water supply, sanitation, and hygiene, is one of the three leading causes of under-5 mortality in Kiribati[42].

[42] ADB 2014, '*Economic costs of inadequate water and sanitation: South Tarawa, Kiribati*', Asian Development Bank, Manila; UNDP 2014, '*Harvesting rainwater to improve access to safe drinking water and adapt to climate*

Only the current fresh groundwater sources in South Tarawa have specific regulations aimed at protecting them from contamination. There are no equivalent regulations for protecting water sources in rural areas or outer islands and training/information on water safety is *ad hoc*. This activity aims to work with the island communities to develop village-level water safety plans which can be implemented at the village level, and train villagers in water safety to reduce contamination of the water supplies.

The plans will be developed and implemented through the Ministry of Health and in full collaboration and consultation with the relevant government ministries, Island Disaster Committees, Island Councils, UNICEF WASH and other relevant stakeholders at the village and island level.

Output 3.1.2 Equitable and efficient coordination arrangements for water supply at all levels, from the household to the national government levels.

Output 3.1.2 is a cross-cutting component, linking the activities from inception through to project completion since effective coordination is critical to long term sustainability of the outer islands water security. The island coordination mechanisms, both vertically (household to national government) and horizontally (across government agencies and other island institutions) will be closely examined to determine areas that need strengthening as well as appropriate points of entry for project activities. Care will be taken to ensure that the project starts well with all key stakeholders fully informed and agreed on the project approach. Potential conflict points like which island to start working on under Component 1 or which parts of the island to start on will need to be avoided through extensive consultation with the mayors and social groups on the island, as well as the national government agencies involved.

What is crucial in building the adaptive capacity of the communities on the three islands is the need for the Government of Kiribati and local communities to jointly agree on water management solutions, including:

a. Negotiating equitable responses to water shortages and/or inadequate water supplies (i.e., agreements on water allocations, infrastructure investments, etc.) due to drought, storm surges, increasing population, and/or infrastructure failures.
b. Incorporating community inputs into engineering designs, i.e., so they address community needs, are culturally appropriate and sensitive, and consistent with government standards and environmental and social safeguards. This is key for drought management plans.
c. Defining roles and responsibilities regarding operation and maintenance, including the monitoring and ongoing assessment of infrastructure conditions. This includes ensuring adequate resources and training, especially of the island Water Technicians, to complete ongoing jobs and the sourcing of spare parts. This is key for asset management plans.
d. Agreeing on practical measures to protect the groundwater resources, (i.e., to limit freshwater extraction to within sustainable levels, clearing vegetation around groundwater wells, and limiting animals or human activity close to wells). This is part of water safety plans.
e. Incorporating traditional knowledge and practices from Kiribati and learning from the Pacific region.

change: Spotlight on Kiribati', UNICEF.

Building adaptive capacity through the engagement and mobilisation of the communities on the three islands, including the involvement of community members in the decision-making on the prioritisation of investments in water supply (output 1.1.1 and output 2.1.1) and the ongoing management of local water resources and associated infrastructure (output 3.1.1), is critical in building the longer-term sustainability of the water resources.

Output 3.1.2 will therefore focus on implementing co-management approaches to address common problems including:

- **Poor adherence to water-safe practices**: although water safety plans exist, typically provided by representatives for the Government of Kiribati, it remains a fact that water safety is poor in the outer islands of Kiribati, as evidenced both by field observations as well as widespread reports of waterborne disease through field observations and official reports. For example, there are widespread examples of poorly protected shallow wells and activities such as keeping pigs on the land of freshwater lenses that will severely contaminate groundwater. There is also no universal observance of mitigation measures, such as boiling water or treating drinking water with ultraviolet (UV) light (i.e., sunlight), and the resulting problems of contamination combined with inadequate mitigation measures are plain to see in reports of waterborne diseases.
- **Widespread failure in the management of infrastructure assets**: asset management plans exist, and the Government of Kiribati provide local staff to maintain infrastructure, but the reality on the ground is that infrastructure is largely poorly maintained and operated, with very frequent reports of asset failure, as well as poor access to spare parts, limited funds to maintain assets, and frustrated community members when they are asked to contribute to maintenance activities.
- **Common examples of engineering designs that do not consider community needs and/or local context**: for example, rainwater tanks installed that do not survive the first major storm, composting toilets in culturally and socially inappropriate location(s) making them inaccessible for women, installation of desalination facilities when there is no easy access to spare parts and where salt spray from the ocean makes corrosion an insurmountable problem; or locating water tanks in association with churches which could create inequitable access for communities.
- **Inadequate action and conflicts at times of water scarcity**: although plans exist for what communities on outer islands in Kiribati ought to do at times of water scarcity (usually triggered by drought) it is clear from field reports that responses tend to be largely uncoordinated, generally not resulting in adequate supplies (many would argue even at normal times, there is not adequate supply) and additionally, there are reports of conflicts in the community about access to limited supplies.

The reasons for the persistence of these types of problems have been shown to be socially and culturally complex, associated with power dynamics, unhelpful beliefs, poor understanding of the hydrological cycle, limited financial capacity of households, and informal and formal networks in the community[43], and at least in part due to a problem of strong doubts about the Government of Kiribati's capability to manage water resources, and communities feeling forced into implementations of plans they do not necessarily agree with[44].

[43] Kuruppu, N., Adapting water resources to climate change in Kiribati: the importance of cultural values and meanings. *Environmental Science & Policy* 2009, *12*, (7), 799-809

[44] Dray, A.; Perez, P.; Jones, N.; Le Page, C.; D'Aquino, P.; White, I.; Auatabu, T., The AtollGame Experience: from Knowledge Engineering to a Computer-Assisted Role Playing Game. *Journal of Artificial Societies and*

In other words, these problems persist not just because of a lack of education and/or awareness. In fact, awareness-raising efforts can be counter-productive, especially when they communicate about the implications of climate change, in which case they could be disempowering and disabling rather than allowing for anticipatory community-driven change[45]. Importantly, national plans (such as for water safety etc.) are likely to be ineffective due to their inability to capture nuances and factors associated with the local contexts, which we know are critical for the success of water and infrastructure management and planning[46].

Technical assistance will be procured to facilitate and guide project staff and local i-Kiribati consultants to lead on this work. This is partly to ensure cost-effectiveness but importantly also to ensure capacity building that will make sure that these mechanisms can embedded over the long term, and possibly used in other islands.

The output will ensure the inclusion and effective participation of key community groups (including churches, nongovernmental organisations (NGOs), women's groups, youth groups, etc.) in a way that is culturally appropriate and equitable. Care will be taken to ensure that the project starts well with all key stakeholders fully informed and agreed on the project approach. The project's co-design and community engagement activities will allow both effective inclusion as well as help to build evidence-based and adaptive decision-making capacity.

Linkages between Component 3 and others include:
Component 1 – Coordination and integration of consultations to obtain information from stakeholders for informing activities.
Component 2 – Coordination and integration of consultations to obtain information from stakeholders for informing activities.
Component 5 – Coordination and integration of consultations and engagement with stakeholders to obtain and provide information to and from beneficiaries.

Component 4. Construction and repair of new and existing water infrastructure to adapt to future climate impacts

Outcome 4.1 *Availability of long-term sustainable supplies of safe drinking water, clean freshwater for other uses, and effective, affordable maintenance arrangements are in place in the three island communities*

Output 4.1.1 Completion of new water infrastructure and water treatment systems designed to fill in the current supply gaps.

Social Simulation 2006, *9*, (1). Moglia, M.; Perez, P.; Burn, S., Water troubles in a Pacific atoll town. *Water Policy* 2008, *10*, (6), 613-637

[45] Kuruppu, N.; Liverman, D., Mental preparation for climate adaptation: The role of cognition and culture in enhancing adaptive capacity of water management in Kiribati. *Global Environmental Change* 2011, *21*, (2), 657-669.

[46] Moglia, M.; Perez, P., Participatory assessment of water developments in an atoll town. *Adaptive and Integrated Water Management: Coping With Complexity and Uncertainty* 2008, 381. Moglia, M.; Perez, P.; Burn, S., Assessing the likelihood of realizing idealized goals: the case of urban water strategies. *Environmental Modelling & Software* 2012, *35*, 50-60.

Based on assessments, recommendations and decisions made under Components 1-3, construction work will be undertaken using a suitable company, local labour, and island water technicians. Procurement of materials and delivery to the islands including procurement and safe storage of spare parts is planned under this component.

The new infrastructure and spare parts will be added to the asset inventory maintained by the water technician, which will be mirrored with the national government as part of the normal checks and balances and to guard against any loss of information. The spare parts inventory will cover larger items like solar panel brackets (which are subject to corrosion), downpipes, pump filters, taps etc. The island communities will be given further advice and instruction on the proper care and maintenance of the water supply infrastructure, the need for water conservation, and the means of protecting against water contamination under Component 3.

Household rainwater harvesting system – The technical design section of the Ministry of Infrastructure and Sustainable Energy (MISE) have completed technical designs for self-harvesting rainwater systems for households that overcomes the catchment issue with thatched rooves, elevation and shelter to aide water safety measures and storage for up to 1000 Liters. Harvested water may be considered for other water usage needs besides drinking.

Polyethylene tanks: Rainwater harvesting from rooftops and tank storage is potentially an important supplement to groundwater resources, especially as a drinking water source and a reliable drought reserve. While many of the houses have thatched roofs that are unsuitable for rainwater harvesting, some options include (i) using government buildings and churches to collect rainwater and store water in community owned tanks; (ii) providing individual houses with plastic or metal shaded areas connected to a tank (i.e., with multiple uses of the shaded roofs); and (iii) collecting water from hard surfaced areas like roads or runways and pumping the water into tanks, predominantly for agricultural or garden uses, thus taking pressure off the groundwater resources. The main drawbacks of this option are (i) the logistics of supplying dozens of tanks to the outer islands; (ii) the limited supply capacity of each tank; (iii) the possible need for additional energy for pumping; (iv) difficulty in cleaning the tanks if contaminated or clogged with built up sediment; (v) possible microplastic contamination as the polyethylene becomes more brittle due to sun exposure; and (vi) contamination from animal and bird faeces.

Solar desalination: Brackish water can be distilled using the sun's energy to evaporate the water, which is then condensed and available as pure freshwater. Small portable units are currently available for sale, no larger than a suitcase, and can be easily transported to the outer islands. For drinking purposes, however, additional minerals for taste and possibly fluoride for teeth protection need to be added. A further drawback is that the solar panels need to be placed in the most exposed locations to get the maximum sunlight, which may make them susceptible to vandalism or potential accidents (e.g., falling coconuts or tree branches in high winds).

Solar pumps: Submersible pumps in groundwater wells need a local source of energy, and if there is no electricity grid supply, then solar pumps may be the best option (rather than fossil fuel generators). The technology is relatively simple to maintain but exposure to salt spray from the ocean means that any metal brackets or other parts will have limited lifetimes. As for solar desalination, the solar panels may also be subject to vandalism or accidents and there

would need to be readily available spare parts as there is no off-site storage of water beyond one- or two-days' supply.

Hydro-panels: In humid climates, it is possible to extract drinking water from the air. Commercially available hydro-panels collect distilled water from the atmosphere and, as for solar desalination, additional minerals and fluoride need to be added to the water to make it suitable and safe for drinking. A constant supply of these minerals and the need for well-trained people to add the correct amounts are the main drawbacks of this technology for use at the household level. Another possibility would be for a private sector company to utilise this technology on a larger scale and provide bottled water for sale.

Island scale desalination and a reticulated supply: For densely populated communities an option that needs to be considered is a publicly owned large reverse osmosis desalination plant and a reticulated water supply to each household. Apart from the obvious cost and technical sophistication of this option, the main drawback may be the provision of the reticulated supply and the retrofitting costs for each household to connect to the water supply system. Other possible options would be for piping to a standpipe in the centre of the community that all households could draw from or a central location close to the desalination plant where local villagers could come with their own water containers. Another drawback of large-scale desalination is the need to dispose of concentrated brine which can destroy coastal habitats and coral reef ecosystems.

Component 5. Education, awareness raising and knowledge management

Outcome 5.1. *Practices of the target outer island communities are consistent with the protection, sustainable and equitable use of water*

Output 5.1.1 Sustainable water uses, and safe sanitation practices and knowledge disseminated to outer island communities. The importance of the education and awareness-raising of sanitation and hygiene is critical in reducing illness. A review undertaken by Bosch et al 2013[47], illustrates hygiene interventions such as handwashing and hygiene education in childcare centres significantly contribute to reducing diarrhoeal disease.

Complementing the project's overarching awareness raising activities and integrated with the water management plans (output 3.1.1), the project will focus on continued education and training of communities in the water, sanitation and hygiene (WASH) principles (activity 5.1.1.1). Comprehensive WASH programmes for schools, health clinics and communities already exist in Kiribati, and go hand-in-hand with major water supply and sanitation projects conducted in the past 40 years[48]. The project will work with UNICEF to value-add to existing WASH programmes, particularly in schools and health facilities in Makin, Aranuka and Tab South and expand the WASH programmes into the community on the three islands.

Awareness raising and knowledge management. Awareness raising and knowledge generation and dissemination will form a core part of the project. A communication officer will be supported by a consultant, in developing and implementing the project's communication and knowledge management programme over three (3) phases.

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[47] Bosch et al., 2013, 'Water and Sanitation' (Chapter 23) in Jeni Klugman (ed), *A sourcebook for Poverty Reduction Strategies (Vol. 2): Macroeconomic and sectoral approaches*, The World Bank Group

[48] Ridge to Reef

Phase 1: Stakeholder Identification and Development of Project Communication & Engagement Strategy

Complementing the WASH education programmes, one of the first tasks of the PMU's communication team, will be to review the stakeholder identification and mapping developed during the planning phase, and update based on any new information or change in priority groups. The mapping will enable the project to have a clear and coordinated framework of target audiences, including their involvement, across the outcomes.

Second, one of the first tasks corresponding to the stakeholder review, will be to develop the project-level communication and engagement strategy which will articulate the project's approach to the key messaging, tools and tactics to be used at the project level in communicating and raising awareness, delivering uptake of project outputs across the stakeholder groups. This phase will also involve the development of initial project communication materials, which will be critical for the stakeholder consultations on the outer islands.

Phase 2: Implement the Communication & Engagement Strategy and produce Knowledge Management Materials

This phase will focus on the implementation of the communication and engagement strategy, including the development of appropriate communication, awareness, and knowledge management materials, so that the island communities are not only aware that the project is commencing but also the planned intended sequencing of events (i.e., a rapid response to repair or replace damaged water supply systems as one of the first project activities). As radio and face-to-face communication appears to be the most effective and universal media (along with Facebook and Messenger), the PMU will use these media outlets to convey important messages about the project as well as water safety, hygiene, water conservation, and health messages.

Phase 3: Handover of Communication and Knowledge Management Resources

The completion phase will be the handover of the project's complete library of resources, communication materials, knowledge management materials including training materials etc. to the relevant government ministries e.g., MISE, MIA, and the outer island councils to ensure the resources are easily accessible by all stakeholders and can continue to be used. Throughout the life of the project, stakeholders will be trained in the use of the materials as part of the sustainability/exit strategy.

B. Economic, social, and environmental benefits

Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

Economic Benefits

Water and economy are inextricably linked with inadequate water and sanitation services to the poor increasing their living costs, lowering their income earning potential, damaging their well-being, and making life riskier[49]. A country's overall development strategy and macroeconomic policies – including fiscal, monetary and trade policies – directly and indirectly affect demand and investment in water-related activities. Improved access to water services and improved management of water resources contribute substantially to economic growth through increasing business productivity and development[50].

Kiribati continues to experience a high economic burden due to poor water and sanitation conditions. Conservatively, it is estimated the Government, individual households, and the whole economy, share the burden of annual economic costs between A$3.7 million – A$7.3 million, or 2-4 percent of national GDP[51]. In 2014, this translated to an annual economic cost of A$550 - $1,083 per household, or an equivalent of A$71 – A$140 per resident of South Tarawa[52].

Improved access to safe water can lead to increases in national income and GDP. A 0.3 percent increase in investment in household access to safe water is associated with a one percent increase in GDP[53], as increased access to safe water will increase the income-earning potential due to improved health, reduced loss of working days due to illness, and reduced time spent collecting water[54].

The IFAD-funded Outer Islands Food and Water Project (OIFWP) (2014-2023), initially funded rainwater harvesting systems on four outer islands: Abebama, Beru, North Tabiteuea and Nonouti, with a total population of over 11,600 people (2,200 households) and will be scaled up to an additional 1,300 households in five South Gilberts Group islands: Aororae, Nikunau, Onotoa, Tabiteuea Maiaki (Tabiteuea South) and Tamana. Phase 1 of the project benefited 2,501 households, who now have improved access to water. Reported cases of diarrhoea and dysentery have reduced amongst the households with access to improved water supply, from 90 percent to 69 percent. In the scaling up Phase 2,275 additional water harvesting facilities of 10,000 litres each will be established to serve 1,650 households. The economic analysis, principally based on time savings in water collection, generates an internal economic rate of return of 13.9 percent, plus other non-quantified benefits.

The lack of convenient and affordable access to water reduces a poor household's consumption of other commodities and services, leaves it consuming less than the optimum amount of water for good hygiene, and impacts health and labour productivity of the household

[49] Bosch et al, 2013, 'Water and Sanitation' (Chapter 23) in Jeni Klugman (ed), *A sourcebook for Poverty Reduction Strategies (Vol. 2): Macroeconomic and sectoral approaches,* The World Bank Group
[50] ADB 2014, '*Economic costs of inadequate water and sanitation: South Tarawa, Kiribati'*, Asian Development Bank, Manila
[51] ADB 2014, 'Economic costs of inadequate water and sanitation: South Tarawa, Kiribati', Asian Development Bank, Manila; UNDP 2014, '*Harvesting rainwater to improve access to safe drinking water and adapt to climate change: Spotlight on Kiribati*', UNICEF
[52] ADB 2014, '*Economic costs of inadequate water and sanitation: South Tarawa, Kiribati'*, Asian Development Bank, Manila
[53] Ibid
[54] Bosch et al, 2013, 'Water and Sanitation' (Chapter 23) in Jeni Klugman (ed), *A sourcebook for Poverty Reduction Strategies (Vol. 2): Macroeconomic and sectoral approaches,* The World Bank Group

members. It may also reduce income-generating opportunities of the household, thereby further reducing income and consumption[55].

Drought and rising sea level causing saltwater intrusion into the groundwater supply are critical threats to the livelihood of the people of Kiribati, both socially and economically. Everyone in Kiribati relies on underground water for means of survival. If this water continues to be polluted, the atolls will be no longer suitable for living. It must be noted that the underground water is also crucial for vegetation. Continued increase in sea-level rise and the ever-rising temperature due to unabated climate change will turn the Kiribati islands into uninhabitable atolls.

Security implications regarding water is the root of all other security implications in Kiribati. Without freshwater supply (underground) there will be no vegetation. Without vegetation, there will be no food supply and no more copra for export. The *babai* (taro) pits, which are a key crop in Makin and Aranuka, will no longer be hospitable for these root crops[56].

Through the evidence base and decision-making frameworks in Outcomes 2 and 3, culminating in the implementation of water harvesting and supply interventions (Outcomes 1 and 4), this project will assist the Government of Kiribati to provide improved access to safe drinking water and other freshwater to the outer islands' populations, indirectly leading to improvement in the economic burden caused by water-related health problems, economic livelihoods, and the GDP of Kiribati.

Social Benefits

The social benefits of equitable access to clean water and sanitation include improved health conditions, improved gender equality and enhancing women's empowerment, and basic human dignity. The Project will contribute towards these social benefits through the gender and social inclusion actions and the implementation of water resource infrastructure for the long-term future of the outer islands.

Access to safe water sources and improved sanitation leads to improvements in the health of women, men, and children with a reduction in water-related diseases. Water-related diseases and those derived from poor sanitation are among the main causes of mortality in children under 5 years of age[57]. Early childhood development, in particular, is impacted by the lack of safe water and basic sanitation with stunting, a condition characterized by low height for age among children under 5 years of age, partly caused by loss of nutrition during bouts of disease, particularly diarrhoea[58].

A 2013 household survey in South Tarawa[59] showed the health effects of poor water and sanitation (i.e., diarrhea and dysentery or dia_dys) within households were borne by females. The study found (i) females had a higher likelihood of suffering from dia_dys than males; and (ii) younger persons were more likely to suffer from dia_dys, with boys showing significantly lower chances of suffering dia_dys than girls. In the three target outer islands, health data for 2020 showed 756 people from the islands reported to a health clinic suffering from diarrhoea

[55] Bosch et al. 2013
[56] Security Implications of Climate Change in Kiribati, 2009.
[57] ESCAP 2018
[58] ESCAP 2018
[59] ADB 2014, '*Economic costs of inadequate water and sanitation: South Tarawa, Kiribati'*, Asian Development Bank, Manila

or dysentery[60]. This does not account for the number of cases unreported or not requiring medical treatment.

With the provision of the minimum amount of 50 litres per person per day, there will be a significant decrease in occurrence of water-borne diseases and water-washed diseases which are preventable by higher quality and quantities of water[61].

Access to clean freshwater is also critical for achieving gender equality and enhancing women's empowerment. Women often bear the brunt of a household's domestic work as they are responsible for supplying water for childcare, house maintenance, food gardens, and food preparation. In PICs, water collection is primarily considered the responsibility of women and girls, although men contribute to collecting and carrying heavier loads[62]. Collecting and carrying water while pregnant may cause difficulties in pregnancy or reproductive health consequences, including uterine prolapse[63].

When water is not directly available in the premises, collecting it is often an arduous task. Worldwide, it is estimated that those without access to clean water spend over 30 minutes per round trip to collect it. More than time-consuming and dangerous, this activity restricts women from engaging in income-generating work or educational activities[64].

Increases in educational attendance is also a social benefit brought about by access to safe water and sanitation. Inappropriate school sanitation or total lack of toilets or latrines, lack of water, and lack of privacy can lead to declines in the number of girls attending school with improvements in these areas encouraging attendance[65].

Feasibility studies for the South Tarawa Water Supply project highlighted the importance of the availability of a more reliable source of drinking water, noting it would greatly increase the water security of the area, including increasing the quantity of water available for everyday use, improving the health and well-being of the people of South Tarawa[66].

The studies have also found the most significant positive impact from the project will be the health benefits, and the expected reduction of infant mortality rates that are attributed to diarrhoea occurrence. The cost of treatment upon disease occurrence would be greatly reduced, in addition to the losses due to the reduction of productivity, and losses of income or benefits of the infected people[67].

Equal involvement of women in the public consultations held during the project development and implementation process will enable an even share for women in the benefits of the project and ensure that the special needs of women can also be met.

[60] Makin, Aranuka and Tab South Health Clinic data, 2020
[61] NewTap, 2019. *South Tarawa Water Supply Project Kiribati*.
[62] Anderson et al 2019, *'Water, Sanitation and Hygiene in the Pacific and the need to meet SDG6',* Discussion Paper; ESCAP 2018
[63] Anderson et al 2019, *'Water, Sanitation and Hygiene in the Pacific and the need to meet SDG6',* Discussion Paper
[64] Anderson et al 2019, '*Water, Sanitation and Hygiene in the Pacific and the need to meet SDG6*', Discussion Paper; ESCAP 2018; Bosch et al. 2013
[65] Bosch et al. 2013
[66] NewTap, 2019. *South Tarawa Water Supply Project Kiribati*.
[67] Ibid

However, the benefits of such water supply projects are known to extend beyond the enhancement of health and well-being. Water projects can have indirect positive impacts on the residents by enabling higher income levels through improved productivity and time management, better childcare, and the overall enhancement of the quality of life. An adequate supply of water will also improve psychological aspects of the residents' life by lower stress levels, higher self-esteem, and the enrichment of communication, interactions and relationships between individuals and groups. It will also enable the observation of religious rites and customs with little to no limitations[68].

The project will implement water treatment options and undertake water quality testing and monitoring (outcome 1.2) to provide some concrete solutions to the water safety issues. Initial water treatments such as ultraviolet water purification systems, clay filters, portable filters, chlorine dispensers, solar stills, and chlorine treatments will be implemented. The water quality testing and monitoring programme will establish a baseline and monitor the effectiveness of the water treatment measures, water safety plans, and the educational and awareness activities under outcome 5.1.

The project will have a strong WASH component that is aimed at reducing the vulnerability to the adverse effects of climate change, but also combatting effects of villages practicing open defecation or poor sanitation practices. To this end, the project will promote good water safety, sanitation and hygiene practices, expanding beyond schools and health clinics, to the broader community. The WASH programmes will complement the project's educational and awareness activities promoting water safety and water conservation.

Beyond the targeting of women, youth and vulnerable groups, the project will additionally have a strong focus on ensuring an equitable participation rate (at least 50 percent of women and youth) in the decision-making, training, and active participation in activities on each of the three islands. For example, decisions on which water infrastructure should be repaired or upgraded under phase one, and which new water infrastructure and technologies are to be constructed and their location under phase two, will involve a strong representation from women. In addition, the Community Action Groups will be comprised of women, men and youth and these groups will form an important conduit for the project's activities on the islands.

Environmental Benefits

Threats to water sustainability arise in both quality and quantity dimensions, driven by pollution and competing demands from many sectors[69]. Improving water safety and security on the outer islands will assist in increasing access to safe drinking water and lead to improvements in the water quality for other uses, from rainwater harvesting, groundwater, and marine sources (e.g., through solar desalination).

A single prolonged drought can have disastrous consequences and can lead to the rapid depletion of an island's surface and groundwater resources. Additionally, the rising sea level is causing saltwater intrusion into the groundwater supply, further exacerbated by reduced water catchments area from coastal erosion. This is an especially serious problem for atoll islands, which are permeable and prone to flooding from within. Additionally, higher air

[68] NewTap, 2019. *South Tarawa Water Supply Project Kiribati*.
[69] Bosch et al. 2013

temperatures are leading to higher rates of water evaporation, reducing soil moisture, and decreasing the rate of groundwater recharge[70].

These are critical threats to the livelihood of the people of Kiribati, both socially and economically. Everyone in Kiribati relies on underground water for means of survival. If this water continues to be polluted, the atolls will no longer suitable for living. The underground water supply is also crucial for vegetation.

Within Kiribati the main sources of fresh water, rainwater and shallow unconfined groundwater lenses are very vulnerable to contamination from poor sanitation systems and facilities. Improved access to, and education on, safe and clean water and improved sanitation facilities will assist in reducing contamination and improving water quality.

Open defecation is practiced in the outer islands of Kiribati (field observations), with human waste containing nutrients such as nitrogen and phosphorus[71] entering the marine system, leading to eutrophication. Eutrophication and grazing can profoundly alter the biotic community structure of marine ecosystems[72]. The need to reduce anthropogenic nutrient inputs to aquatic ecosystems to protect drinking-water supplies and to reduce eutrophication, including the proliferation of harmful algal blooms and "dead zones" in coastal marine ecosystems has been widely recognized[73].

Raising awareness and changing behaviours under the project's outputs (i.e. output 3.1.1, 3.1.2 and 5.1.1) regarding water safety, conservation and usage, and sanitation practices will contribute towards the efforts to reduce the environmental impacts from overuse and pollution.

Project Compliance with the Environment and Social Policy of the Adaptation Fund

Benefits stemming from the project will be strengthened by the inclusion of lessons learned from previous projects in the outer islands. Several key lessons were learned during the planning consultations with stakeholders and community representatives on the outer islands. There were several cross-cutting concerns raised over potential social impacts/risks mostly stemming from past experience of poor consultation and engagement; poor planning resulting in delayed implementation; lack of understanding of the uniqueness of each islands water resource challenges; unreasonable demands on community members; and lack of capacity building within communities.

The Adaptation Fund Environmental and Social Policy, as amended in 2016, has a series of policy principles which the proposed project will follow strictly, as indicated in Table 14 below.

Table 6. Adaptation Fund Environmental and Social Policy Principles

Adaptation Fund Policy Principles	Project Compliance
1. Compliance with the law (domestic and international)	The project will comply with all relevant laws, including the Disaster Risk Management and Climate Change Act 2019, Environment Act 1999 (and 2007 amendment), plus other relevant laws.

[70] Security Implications of Climate Change in Kiribati, 2009.
[71] Amin et al 2017
[72] Smith et al 2006
[73] Conley et al 2009

Adaptation Fund Policy Principles	Project Compliance
2. Fair and equitable access to benefits in a manner that is inclusive and does not impede access to basic health services, clean water and sanitation, energy, education, housing, safe and decent working conditions, and land rights.	The overarching project objective refers to equitable, and sustainable access to safe drinking water, water borne diseases are kept to a minimum, and adequate freshwater is available for other uses, under all expected climate change outcomes.
3. Avoid imposing any disproportionate adverse impacts on marginalized and vulnerable groups.	The project will ensure that marginalized and vulnerable groups are fully included in the community participation activities and decision making and will form island-level women's and youth groups with specific roles in project implementation.
4. Respect and where applicable promote international human rights.	The project does not anticipate any major issues in relation to international human rights but will effectively promote the right to a clean and safe environment.
5. Gender equality and women's empowerment	The project's gender, disability and social inclusion action plan ensures that men and women have equal opportunities to participate, receive comparable benefits, and no one will intentionally suffer any adverse effects during implementation.
6. Core International Labour Organisation (ILO) labour rights.	The project will ensure that the ILO labour rights are followed when local labour is employed in project activities.
7. Consistency with the rights and responsibilities set forth in the UN Declaration on the Rights of Indigenous Peoples.	The project is not expected to contravene any rights of indigenous peoples.
8. Avoids or minimize the need for involuntary resettlement.	The climate change investigations of the coastal zones of the three islands may provide advance warning of the ultimate need to relocate vulnerable communities. The project will not, however, engage in any relocation, voluntary or involuntary.
9. Avoid unjustified conversion or degradation of critical natural habitats.	The project will not involve any conversion or degradation of natural habitats.
10. Avoid any significant or unjustified reduction or loss of biological diversity or the introduction of known invasive species.	The project will not cause any reduction or loss of biodiversity nor introduce any invasive species.
11. Avoid any significant or unjustified increase in greenhouse gas emissions or other drivers of climate change.	The project involves adaptation to climate change impacts and will not contribute to GHG emissions or other drivers of climate change.

Adaptation Fund Policy Principles	Project Compliance
12. Meet applicable international standards for maximizing energy efficiency and minimizing material resource use, the production of wastes, and the release of pollutants.	The project will promote energy efficiency through solar distillation, will minimize material use and production of waste, and will have a strong focus on remedial measures for contaminated groundwater and future environmental protection.
13. Avoid potentially significant negative impacts on public health.	Part of the overarching objective of the project is to protect public health on the three islands.
14. Avoid the alteration, damage, or removal of any physical cultural resources, cultural sites, and sites with unique natural values.	The project will not involve any sites of physical or cultural heritage.
15. Promote soil conservation and avoid degradation or conversion of productive lands or lands providing valuable ecosystem services.	The project will not damage productive lands or lands providing ecosystem services but may identify the need to provide additional protection of coastal ecosystem services.

Environmental and Social Safeguard screening was undertaken against the AF environmental and social safeguard (ESS) Policy Principles by an experienced safeguard specialist during the preparation of this project proposal. To mitigate negative impacts, the following measures have been undertaken or will be implemented through the project lifetime:

Project planning: This funding request document has been developed to take into account the ESS assessment findings. The design of the project plan, the structure of the proposed activities and the level of detail paid to project outcomes all reflect a high level of influence from the safeguard assessment findings. Community consultations, outer island site visits and the AF ESS policy guidance document have led to the development of a safeguards inclusive project plan.

Environmental and Social Management Plan (ESMP): As per the AF ESS Policy Guidelines, the risks and/or impacts that have been identified and determined as unavoidable have been captured in an ESMP which is submitted as part of this proposal and summarised in Section K of this proposal. The ESMP describes the risk mitigation measures that will be taken to ensure consistency with the AF ESS Policy Principles and the laws and regulations of the Republic of Kiribati. The ESMP consists of the specific management measures and related activities that were identified during the ESS assessment and provides detailed instructions to the Executing Entity (EE), EE Project Management Unit (PMU) and any contractors on how to implement the mitigation and monitoring plans. The ESMP is applicable to the design, construction and operational phase of the project and should be implemented in parallel to the project's Gender, Disability, and Social Inclusion (GEDSI) Action Plan.

Capacity Building and Training: To ensure that the project ESMP can be fully integrated and implemented, the EE PMU will be staffed with officers specifically tasked to oversee its implementation. Training will be given to these officers by SPREP and to the Project Manager on the safeguard requirements of the Adaptation Fund and on the requirements of the ESMP, including monitoring and reporting. To further ensure compliance with the ESMP on the outer

island project sites, each island will have community members trained on ESMP monitoring of construction works and empowered to report on the findings through established channels.

A **Grievance Redress Mechanism (GRM)** has been designed and included in the ESMP. The GRM allows for traditional level and project level complaints and grievances to be lodged and provides structured guidance for managing resolutions. The field teams will interact regularly with the relevant people and organisations to achieve more efficiency and resolve any possible conflict. The first and most important part of the GRM is the problem-solving function. The PMU will record complaints about any aspect of the project and will attempt to solve the problems before they need to be elevated to a more formal grievance redress process. Nevertheless, the island communities need to be made aware of any additional grievance redress avenues in addition to their traditional problem-solving approaches through the Island Councils to the national Government.

C. Cost effectiveness

Describe or provide an analysis of the cost-effectiveness of the proposed project.

The project will produce concrete adaptation actions and will prove cost-effective through the interwoven components which looks at:

- utilisation of existing infrastructure,
- rapid response to repairing infrastructure,
- providing science informed data and information on status of water resources and climate modelling to support decision making for present and future.
- filling in gaps in island water system with new infrastructure and planning mechanisms.
- Invested support to strengthen government, island and village ownership and partnership for improved management of water systems for the long term.

The project looks to build these island communities adaptive resilience to climate change taking on learning from past projects in the islands themselves, from others in Kiribati and other countries with similar context.

The mapping of water resources will enable to fill a knowledge gap about the health of the groundwater resource and will also improve the data gathering process for understanding which groundwater resources are being over exploited. This will be key in assessing the groundwater overexploitation to meet future water needs and enable the government and communities to better prepare for drought episodes. The aim is for the groundwater resource to be fully mapped on all three islands, along with the climate projections – enabling improved decision-making on the medium to long-term water infrastructures including both location and type – for the communities. Currently, there is no mechanism in place to determine the best type and location of water infrastructure to be able to ensure the communities are resilient to the impacts of climate change. Through the training of Ministry of Infrastructure and Sustainable Energy (MISE) staff and other key government and island personnel, the capacity at the national level will be enhanced to ensure the data is being collected and used in decision-making.

The investment in resources to engage, involve and empower people, train people, raise awareness and trigger behaviour changes is also critical to long term sustainability of the concrete adaptation measures. Investment in reparation, new infrastructure and technical assistance is only cost-effective if utilised by stakeholders and proves to provide for better

adaptive decision-making to climate impacts in present and future. The project therefore invests resources for developing/strengthening and establishing local mechanisms for managing and maintaining water resources for the long-term – a downfall in past projects that was highlighted during consultations.

A socio-economic assessment will be undertaken as part of Component 2 to also inform decision-making on investments in physical improvements and planning.

Table 17. Cost effectiveness Analysis

Outcome	Baseline Scenario	Benefits of Proposed Solution
1.1	**% of existing water infrastructure in use** Makin - 86 %, Aranuka – 0 Tabiteuea South – 52%	• Cost savings from repairing or reusing existing infrastructure, • Re-enforcing benefit of strong asset management mechanisms • (re)training local water technicians and community on repairs and maintenance • More water systems available in the short term • Less waste
1.2	% of water systems intended for drinking that are unsafe	• Cost-saving from treating existing water sources for drinking. • Re-enforcing importance of water testing and monitoring • (Re)training community water management mechanisms on testing • More clean water available in the short term
2.1	Makin - Preliminary water resource assessment under KIRIWATSAN project (2015–2019), Aranuka - No water resource assessments Tabiteuea South – No water resource assessments	• Update Makin groundwater resource data. • Fully mapped groundwater resource on all three islands • Climate projections to enable improved decision-making on the medium to long-term water infrastructures including both location and type
2.2	All three islands – existing water system management plans	• Updated water resource plans with accurately mapped water climate projections, existing and new infrastructure and technologies, current and trending social and economic behaviours.
2.3	A Public Utilities Act is in place for provision of water and sewerage systems only for South Tarawa. Draft Water Act from a decade ago.	• National legislative framework to improve management of water sources and supply for sustainable use by the population. •
3.1	All three islands – existing water management plans	• Strengthened and integrated community water management plans. • Community engagement and co-development from the outset for greater ownership and ongoing implementation of water management plans, particularly operations and maintenance (behaviour change) • Improved data and information for present and future planning.
4.1	Existing number of water system infrastructures	• Plan for tidying up the existing water infrastructure, including unused and unsafe tanks and wells. • Increase in number of water systems providing clean and safe water for everyday drinking and use.
5.1	Currently limited reach of WASH Programmes in Aranuka and Tabiteuea South.	• To work with existing WASH programme focused on schools and health centers in the three islands to outreach and engage with wider communities.

D. Strategic Alignment

Describe how the project is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

Kiribati is a signatory to the Pacific framework for action on drinking water quality and health, with water, sanitation, and hygiene a critical priority for action within the country. Furthermore, the Government of Kiribati has a well-established framework of sector policies, ministerial strategic plans and operational plans at the national and island levels – all of which directly contribute towards the Kiribati Development Plan (KDP) and ultimately the Kiribati Vision 20 (KV20) (Figure 9).

Kiribati's national policies related to three core sectors within this framework, are relevant to this Project – climate change, water, and sanitation policies. This Project will contribute directly towards the achievement of goals within these sector policies and operational plans through these sectoral linkages. For example, at the highest level, the project will assist the Government to respond to the Kiribati Vision 20 (KV20) which stipulates all Kiribati households have access to potable water and suitable sanitation facilities by 2036. Through working in three islands under this funding, this Project will provide villages in three islands with equitable access to safe and sustainable water and developed approaches for suitable sanitation facilities by the whole-of-project end date.

Figure 12~~12~~. Integration of project outputs and activities into the context of Kiribati policies and national frameworks and processes

Furthermore, the KDP identifies goals relating to reducing: (i) vulnerabilities to the impacts of climate change; (ii) disaster risk; and (iii) incidence of communicable diseases through access to safe water and basic sanitation. The project is building the resilience of communities in the outer islands to climate change through the development of water and sanitation solutions which are island and culturally specific and appropriate. Through the project interventions, capacity will be established for island communities to contribute towards the ownership, construction, and maintenance of the facilities, thereby directly linking to the KDP goals of engagement, ownership, and involvement of communities in the implementation of water and sanitation projects. Access to, and the use of, safe water and basic sanitation will be improved for the target communities through the interventions, capacity building and training, and information provision.

The Project will also ensure it is contributing towards the goals of the Kiribati Climate Change Policy and the Joint Implementation Plan for Climate Change and Disaster Risk through the delivery of scientific evidence on water resource availability, future climate projections, and coastal inundation projections. The evidence base created by the project will inform the options for the best and most appropriate interventions in each island. The project responds directly to the five objectives outlined in the Climate Change Policy relating to water security: (i) Objective 1: Strengthen national water governance so all key stakeholders are enabled to perform their allocated functions in a coordinated manner to address all water issues, including the impacts of climate change, climate variability and natural disasters; (ii) Objective 2: Provide efficient harvesting systems and innovative solutions to water availability issues (water availability, quality and quantity); (iii) Objective 3: Enhance support and enforcement of regulations for water security and safety; (iv) Objective 4: Strengthen community engagement in safeguarding water sources, and; (v) Objective 5: Ensure access to improved sanitation facilities, including monitoring the impacts of pollution sources.

Lastly, the project will contribute towards national sector policies including the National Water Resources Policy and the National Sanitation Policy. Both highlight the importance of and prioritise access to safe drinking water, and the urgent need to address these complex and critical issues through an "enlightened and coordinated approach led by the Government using a whole-of government approach and engaging the entire community particularly at the village and island level'[74]. By working with Government as the Executing entity and instilling a coordinated approach utilising all relevant Government ministries and island mechanisms, the project will directly contribute towards the achievement of strategies under these policies.

Table 15 identifies the links between the key Government of Kiribati policies and project components in more detail, confirming the strong alignment of the project to the Government policy framework.

Table 8. Project alignment with national policies and strategies

Strategy / Plans	Project Alignment
Kiribati 20 Year Vision 2016 – 2036	The KV20 is Kiribati's long-term development blueprint for the country. The KV20 has four strategic pillars: wealth, peace and security, infrastructure, and governance. The project aligns to the goals for utilities through assisting the Government to meet the target to provide support for the provision of improved water and sanitation services. The Government aims to extend access to potable water to 75% of households by 2019 and to all households by 2036. Government also

[74] National Water Resources Policy 2008

Strategy / Plans	Project Alignment
	aims to increase access to suitable sanitation facilities to 50% by 2019 and to all households by 2036.
Kiribati Water Resources Policy 2008	The project is aligned to the Water Resources Policy through the key objectives to: - Increase access to safe and reliable water supplies. - Achieve sustainable water resource management. - Improve understanding and monitoring of water resources and their use. - Improve protection of public freshwater sources - Increase community awareness of and participation in the protection, management, and conservation of water. - Improve governance in the water sector. - Decrease unaccounted for water losses, improve cost recovery, and find alternate sources of water. The project components are designed to assist the targeted for the outer islands of Makin, Aranuka and Tabiteuea South through outcomes 1, 2, 3, 4 and 5. These outcomes will be targeting an increase in the access to safe and reliable water supplies through the repair and upgrade of existing water infrastructure, and the construction / installation of new water infrastructure and technologies. Additionally, the development of the water resource assessments and climate modelling will assist in improved water resource management and understanding of how to manage water resources under climate change impacts in the future. Lastly, the water management plans and subsequent training and awareness campaigns will coordinate the efforts to improve the governance, protection and usage of water resources.
Kiribati National Sanitation Policy 2010	The National Sanitation Policy calls for: - Improved understanding of effective sanitation and the benefits to improved community health, natural resources, and the environment - Improved and well-maintained systems and practices/behaviour that avoids pollution of groundwater resources and lagoon waters. - Increased community awareness of and participation in the choice, provision, management, and maintenance of effective sanitation. - Community health education, awareness, and behaviour - Reduced risks of cross-contamination of water supplies and ground water sources The project will complement the above objectives of the Policy through the development and implementation of water safety plans in the three islands, the expansion of current WASH programmes beyond schools and health clinics into the broader community and undertake educational and awareness campaigns to highlight good practice in water, sanitation, and hygiene. The water quality testing and monitoring (output 1.2.1) will enable island communities to monitor levels of contaminants in the water supply and implement measures to improve water quality.
Kiribati Climate Change Policy	The project directly links to the Climate Change Policy through the adaptation measures implemented under the activities. In particular, the project responds to the pillars of water security; environmental sustainability and resilience; health security; climate finance; and capacity building and education. The project, furthermore, responds to the climate finance objective through increasing access to funding to respond to important water priorities in the outer islands for Kiribati.
Kiribati Integrated Environment Policy 2013	The Kiribati Integrated Environment Policy aims to: (i) strengthen national capacity for effective response and adaptation to climate change, with a particular focus on environmental protection and management; and (ii) strengthen national capacity and institutional frameworks for the effective

Strategy / Plans	Project Alignment
	conservation, management, and sustainable use of Kiribati's terrestrial and marine biodiversity. The AF Project directly responds to these objectives through the provision of data and information will inform adaptation planning and decision-making undertaken as part of the project and can be utilised for future decision-making or scaling up of the methodology to other outer islands. In addition, the improvement to water infrastructure and water safety (outcomes 1 and 4) will assist the communities to adapt to future climate impacts through the protection and conservation of water resources i.e., groundwater. Capacity to manage the water resources will be strengthened through a series of training courses and educational and awareness campaigns on water resource assessments, and water conservation and safety.
Kiribati Gender Equality and Women's Development Policy 2019-2022	The project will ensure activities and gender-based actions are directly responding to the Kiribati Gender Equality and Women's Development Policy through the inclusion of women into the decision-making and participation on activities. This will aim to improve gender mainstreaming, economic empowerment, women's participation and leadership. Educational and awareness campaigns and trainings will target at least a 50 percent participation rate from women and youth – with the aim to respond to the Policy's 'stronger, informed families' pillar.

E. National Technical Standards and Environmental and Social Policy

Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

Compliance with National Technical Standards. The project will ensure compliance with Kiribati's governing Acts and Policies relating to construction of infrastructure – the Building Act 2006 (directs all design proposals to be assessed by MISE), and the National Building Code of Kiribati (the technical standard to guide all design and construction work). Lessons learnt from previous projects has demonstrated the importance of working with the relevant government ministry to ensure compliance with the National Building Code of Kiribati and the Building Act 2006.

In constructing the water and sanitation infrastructure, the project will work through MISE which is responsible for the oversight and management of any water and sanitation construction in the outer islands. Furthermore, the project will operate within MISE's procurement mechanisms to ensure the materials are standardised, of good quality and conform to the national building standards. The standardisation of infrastructure to ease future supplies, parts, and maintenance issues. Additionally, all designs for infrastructure will be submitted and approved through MISE's approval process. Under this process the Quality Control Inspection Unit and the Director of Engineering approve the design and issue building permits. The unit will also undertake site inspections to ensure the construction complies with the approved design and complying with the national building code. At the completion of the construction, the unit will issue a completion certificate.

Any requirements for environmental assessments will be identified in the ESMP for the project[75] (refer Annex 5). The ESMP also ensures the project complies with the Environmental and Social Policy of the AF. The PMU will be responsible for ensuring the plan is implemented and will monitor and report annually on progress any risks and mitigation activities underway to mitigate the risks raised in the Plan. Additionally, a review of the ESMP will occur annually to ensure compliance, identify any new or emerging safeguards and to ensure the Plan continues to comply with the AF's ESS Policy.

Compliance with the Environmental and Social Policy of the Adaptation Fund. Principle 1 of the AF's ESS Policy requires project activities comply with all relevant national laws. As such, a review of the applicable law and standards has been undertaken and, where applicable, they have been carried forward into the ESMP and project planning process. Table 19 below outlines the standards and laws that have been assessed, their applicability to the project and how they have been incorporated into the project to ensure compliance.

Table 9. Table summarizing the National Standards applicable to the Project

Standard	Applicability	Comment
Environment Act 1999 (amended 2007)	Focuses on controlling pollution and the impacts of development. Objectives: • To provide for and establish integrated systems of development control. • Reduce risks to human health and prevent degradation of the environment by all practical means. • To prevent, control and monitor pollution • Protect and conserve natural resources. • Comply with regional and international conventions and obligations. • Promote sustainable development. • Control, manage and regulate hazardous substances. • Protect, conserve, and promote heritage.	These are the main guiding national standards of sustainability, protection of the environment and social participation. The project complies with these standards through their incorporation into the governing ESMP.
	Environmental Impact Assessment (Part III): Determines environmental license process for proposed developments listed in the Schedule. Deals with: • Application processes and considerations • Requirements for EIA reports • Amendments to proposed activities. • Conditions for environmental licenses	The proposed project activities are not listed on the Schedule therefore an Environmental License is not needed. However, the principles of this national requirement have been applied to the project's ESMP to ensure that both national environmental standards and the AF requirements have been met.
Native Lands Ordinance 1956 (amended 2013)	Governs the ownership of native lands in Kiribati. Deals with leases of native land and surveys	This is applicable to the project as water interventions will be installed on private lands in many instances. Securing long term access to these lands through leases or easements will be critical in ensuring equitable access to the water. The requirements of this act are integrated into the project planning and the ESMP for land leases.

[75] The complete Environmental and Social Safeguards Plan is available from the ~~Implementing Agency~~Implementing entity. Annex G provides details of the ESM Plan.

The project's ESMP (Annex 5) has been developed to guide the implementation of the project in a way that promotes compliance with the national laws and the AF ESS Policy. To ensure this compliance with the ESMP the following measures will be applied:

a) **Safeguards Supervision and Reporting**: the ESMP has a weekly monitoring plan embedded in it. This monitoring will be carried out on a weekly basis at any active project sites on the outer islands. On each island there will be dedicated community members who will be trained in correct implementation of the ESMP and how to use the monitoring plan and checklist. The results of the weekly monitoring will be reported to the PMU who will, in turn include a summary of the results in their monthly reporting. The ESMP includes ESS reporting requirement, including instances of non-compliances, rectification measures and reports on any problems or grievances received and how those have been resolved.

b) **ESS Audits**: During project implementation, there will be periodic audits carried out in country and at active outer island project sites to ensure that the ESMP is being correctly implemented and that the project is continuing to adopt an inclusive approach to community engagement. The audits will be undertaken by the IE who may choose to bring in international safeguard specialists.

c) **Monitoring and Evaluation**: Specific indicators on key social and environmental variables are integrated into the project's results framework, thus ensuring compliance with the ESMP (and therefore the AF ESS Policy). These indicators will be monitored regularly and communicated to all project personnel and contractors and suppliers.

F. Duplication

Describe if there is duplication of project with other funding sources, if any.

During the design process, all stakeholders, including donor-funded projects were consulted to avoid any potential duplication of efforts, resources, or geographical coverage, and to ensure synergy between ongoing initiatives and the proposed project. Whilst there are several complementary initiatives underway in the outer islands in response to Kiribati's recent drought emergency, the proposed project has been designed to complement current, recent and past activities rather than duplicate or re-do unnecessarily. Despite the many water security and WASH related projects in Kiribati this currently the only project looking to address the policy gap.

Table 20. Relevant projects and synergies

Other projects	Summary of project	Synergies with proposed project
KIRIWATSAN	The Kiribati Water and Sanitation in Outer Islands Phase II project, better known as KIRIWATSAN II was implemented by the Government of Kiribati and the Pacific Community (SPC) with European Union funding of 3.185 million Euro (4.75 million AUD). The program was launched in August 2014 to improve water and sanitation in eight islands of Kiribati's Gilbert Group. New water and sanitation infrastructure was established in the targeted areas and a capacity development programme was put in place to help maintain and improve existing water and sanitation infrastructure in all 16 islands of the Gilbert Group.	This AF project was designed at concept to complement the KIRIWATSAN project. That is, the original concept design was for 11 islands and 50 villages – the project would target villages not incorporated into the KIRIWATSAN project on overlapping islands. Subsequent changes were made to the concept to reduce the number of islands from 11 to 3. The AF project will complement the work of the KIRIWATSAN project by continuing to focus on those villages in Makin, Aranuka and Tabiteuea South

Other projects	Summary of project	Synergies with proposed project
South Tarawa Water Supply Project South Tarawa Sanitation Project	The project will increase access to reliable, safe and climate resilient and metered drinking water supply, 24/7. All households on South Tarawa, Betio and Buota will be connected to the new water supply network." The project is targeting the capital South Tarawa with a population of over 60,000 and with high rates of water-borne diseases such as diarrhoea, dysentery to name a few, said a statement from the Office of the President The project is jointly funded by the Green Climate Fund (GCF), the Asian Development Bank (ADB), the World Bank (WB), and the Government of Kiribati together with the Global Environment Fund (GEF).	The AF Project is focusing on the three outer islands of Makin, Aranuka and Tabiteuea South. Discussions have taken place with the ADB consultant during the planning of the South Tarawa project to explore complementarity on capacity development issues e.g. water safety and drought response training. The AF Project will continue these discussions with the South Tarawa project to identify any possible synergies in this space under the implementation phase. In addition, lessons learned will be shared between the two projects as outlined under Outcome 5 description in the body of this proposal.
The Safe and Sustainable Drinking Water for Kiritimati Island (SPC)	The Safe and Sustainable Drinking Water for Kiritimati Island (EUR 6.2 million) aimed at improving access to safe, sustainable and clean drinking water for the people of Kiritimati (the world's largest coral atoll island). The project will also support Kiribati in building a greater socio-economic and climate resilience, and the specific objective to improve public sector services with a focus on water, sanitation and hygiene in Kiritimati Island. This project will increase access to safe, clean and sustainable water while ensuring effective management of the island's fragile groundwater reserves into the future as a lifeline in times of severe drought conditions.	The AF Project will share lessons learned from the SSDW Kiritimati project given the similar environment and context. In particular, lessons or advice regarding water resource assessments and infrastructure designs will be integrated into the AF Project under outcomes 1, 2 and 4.
Kiribati Outer Island Food and Water Project	The Kiribati Outer Island Food and Water Project is designed to improve the livelihoods of people living in the rural islands through promotion of agricultural food supplies and provision of safe drinking water sources through installation of rainwater catchment systems. The impact of the project is expected to generate income sources through selling of agricultural products and to improve health of people through their access to fresh vegetables supplies and safe drinking water sources. The project focused on the four islands of Abemama, Beru, Tab North and Nonouti.	The AF Project will be working in different outer islands, however, lessons learned from this project have been incorporated into the project design.
The Kiribati Outer Islands Resilience and Adaptation Project	The Kiribati Outer Islands Resilience and Adaptation Project (KOIRAP) is to strengthen the capabilities of island councils for risk-informed land development planning, and resilient basic infrastructure and service delivery. This objective will be achieved through (1) expansion of basic infrastructure and services on outer islands which includes local government-community partnerships for water, sanitation, and hygiene (WASH) improvements, and local government investments for resilient infrastructure and services; (2) strengthening risk-informed spatial planning and asset management, and (3) project management and monitoring.	The AF project will coordinate within MISE on KOIRAP on confirmed plans for Makin, Aranuka and Tabiteuea South where complementarity and synergies or lessons learned between projects could be achieved or shared. The AF project is unique in its consideration of household rainwater harvest system designed by MISE to be included in the options.
Managing of Water Scarcity through strengthened Water Resources Management	Water Resource Assessment, Rehabilitation and Installation of new water systems, Trainings and Building Capacity and Improving Asset Management Plan targeting Makin, Butaritari,	The AF project will factor in the work the Water Scarcity project was able to start in the target islands of Aranuka, Makin and Tabiteuea South, since it was unable to

Other projects	Summary of project	Synergies with proposed project
	Marakei, Abaiang, Maiana, Kuria, Aranuka, Abemama, Nonouti, Tab South, Beru, Nikunau, Tamana and Arorae.	deliver all expected outputs to all its target islands. This was due to capacity issues from project design.
UNICEF 2023-2027 WASH Programme	Continues working in the Pacific with Governments and partners to accelerate efforts to improve water, sanitation, and hygiene to meet the 2030 SDG targets. Construction of water and sanitation facilities for communities, schools and health centres; Supporting communities to achieve total sanitation coverage; Construction of WASH facilities in schools; Providing WASH assistance during emergency responses; and Strengthening national level legal systems and policies for WASH.	The AF project will coordinate with UNICEF and MISE on the WASH programme plans for Makin, Aranuka and Tabiteuea South where complementarity and synergies or lessons learned between projects could be achieved or shared. The AF project seeks to supply water to all households where the WASH programme is covering water supply to schools and health centers only.

G. Learning, Knowledge Management and Lessons Learned

Describe the learning and knowledge management component to capture and disseminate lessons learned.

Effective knowledge management including the collection, generation and dissemination of data and information, is an important component of climate adaptation in the Pacific region, and particularly in SIDS where there remains little access to, or generation of, climate related data and information. Learning from adaptation activities and being able to transform knowledge into products for various audiences is an essential component to climate change adaptation. Component 5 will be the key driver in the knowledge management strategy of the project. Outcome 5.1 will generate and disseminate project information, experience, and results on an ongoing basis.

The overall responsibility for the communication and knowledge management will reside with the Project Management Unit supported by an international communication advisor on retainer. The PMU will work closely with project members to ensure the information developed and disseminated is effectively monitored and reported against. The communication team will be responsible for the development and implementation of the communication and knowledge management strategy and action plan (to be delivered within the first 6 months of project implementation), and the development and implementation of resulting activities and actions from the action plan.

Output 5.1.1will form the key communication and knowledge management effort with radio programmes, social media and face-to-face interactions functioning as the key delivery mechanism of the awareness raising programme. A community-wide (across the three islands) educational and awareness raising campaign will highlight the benefits of water management and conservation, water safety, sanitation, and hygiene, to better adapt to the challenges posed by climate change. This will include the production of local language educational activities, leaflets and radio and social media campaigns on drought response strategies and the importance of good sanitation and hygiene practices. Radio and face-to-face communication are the most effective and universal media (along with Facebook and Messenger) in use in the outer islands. The communication mechanisms will form the basis of the dissemination of knowledge to the communities on the three outer islands.

This effort combined with the WASH programme will form part of a community wide awareness raising campaign highlighting the benefits of water safety, conservation and use, and good sanitation and hygiene habits to better adapt to the impacts posed by climate change on island water resources.

The importance of improving data capability in climate change adaptation and resilience in the Pacific SIDS cannot be underestimated. Outcomes 1.1, 1.2, and 2.1 – will all contribute significantly towards filling data and knowledge gaps in Kiribati. Specifically, the water resource assessments, and the vulnerability and hazard mapping and modelling generated under outcome 2.1, will provide Kiribati with the evidence-basis for informing sustainable on-ground adaptation interventions to address compelling water security issues and associated climate change risks for local communities, now and into the future.

Lessons learned. Experiences, success stories and lessons learned will be captured and reported against as part of the monitoring and evaluation component. Lessons learned will be integrated back into the project implementation as appropriate and be made publicly available through reporting and other mechanisms for use in future plans and projects.

H. Consultative Process

Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

An extensive consultation process was conducted from June until August 2022 in the targeted outer islands, supported by extensive outer island consultations in 2019 and stakeholder consultations during the development of the concept note in 2017. This was checked again through cross-referencing with project teams that targeted the islands into 2024. The full list of consultations is available in Gender & Social Inclusion Strategy (Annex 4), Environmental and Social Safeguards Management Plan (Annex 5) and island consultation reports (Annexes 1 to 3). The design of the 'enhancing resilience in the outer islands of Kiribati' proposal has been undertaken in close collaboration with key stakeholders in the national government in Tarawa and on the outer islands. Discussions have also taken place with organisations involved in water related projects in Kiribati –SPC, UNICEF, IFAD, IUCN, ADB, New Zealand High Commission and the Australian High Commission. The main challenges facing the design team have been the lengthy delay in obtaining Government of Kiribati notification of the chosen three target islands; the COVID-19 pandemic that has limited both international and outer island travel; and funding availability to undertake the required planning processes.

The main findings of the outer island consultations validated the understanding that access to safe drinking water and water supplies for daily needs including both household and agricultural needs, was one of the main challenges affecting the daily lives of communities in the islands. All the outer islands reported that access to sufficient safe and clean water is a critical problem and as one of the top priorities to be addressed.

Community consultations highlighted the following:

- Health issues arising from people having to walk further from home in the sun to fetch cleaner, carry back heavy containers and to collect wood for burning to boil water. Consumption of raw water straight from wells and not boiled has caused skin diseases,

diarrhea, and cholera. There is also local concern of women health issues rising due to bathing in brackish or dirty water.

- Previous water projects installed poorly designed water infrastructure in which roofing broke quickly and tank parts were worn out too easily.
- Water asset Management arrangements were weakly developed and established leading to no clear accountability or responsibility on anyone and therefore tanks falling into disrepair. Memorandums of understanding despite signing were not understood by people in the community. Plans for supply and sustainability of supplying spare parts were also not well established. The equipment spare parts fell short very quickly and technicians unable to do their jobs.
- During the drought period in 2022 people began digging their own wells. This showed low awareness in consideration of managing the natural resource and personal health.

I. Justification for Funding

Provide justification for funding requested, focusing on the full cost of adaptation reasoning

This project aims to build resilience in local communities residing in the outer islands of Kiribati, through the development and application of science-based evidence to inform on-ground adaptation interventions that reduce exposure and increase adaptive capacity to climate and environmental stressors. The outer islands in question are remote and subject to a range of climate and other environmental stressors which have yet to be fully assessed or quantified in a way that the full socio-economic benefits can be fully determined.

There is insufficient data and information currently available to define either a baseline or 'with-project' scenarios based on the proposed interventions. That said, it is a fact that the lack of secure water and culturally acceptable sanitation practices, in these outer islands, is placing increased pressure on the economy, and the social wellbeing of the local communities. This tension is aggravated further by the significant additional costs of repatriating community members to Tarawa for medical treatment that is otherwise unavailable in the outer islands. Over the longer term, the habitability of these islands is being impacted by a combination of broader environmental and social stressors, which if not adequately managed, will be compounded by climate change, that acts as a stress multiplier. The effect of climate change on these environmental stresses is to bring forward or accelerate the need for relocation (which by association has its own social, economic, and environmental impacts). On-ground interventions that can enhance the habitability of the outer islands over the longer term will intuitively provide more cost-effective outcomes for local communities, the Government of Kiribati and relevant donors/development partners when considering related development and associated climate finance options.

Component 1: Rapid response for existing damaged and unused water supply systems in the targeted villages.

Baseline Scenario

The project area is characterised by the critical vulnerability of the target stakeholder groups on the three outer islands of Makin, Aranuka and Tabiteuea South caused by the lack of access to sufficient clean, safe, and sustainable water. Kiribati is currently experiencing

severe drought conditions and the three target islands are among the most vulnerable in the Gilbert Chain and are the most populous of the islands.

The three islands have been the recipients of past water projects with the installation of 248, 46 and 98 water infrastructures (tanks, wells, desalination units) respectively - 392 infrastructures in total. However, 116 or 30 percent of the infrastructures are not in use. The amount of water available based on the 'in use' infrastructures total 804,200 litres or 179 litres per person. Based on 50 litres per day per person, this water supply, if at full capacity, would last 3.5 days.

Note that on the island of Aranuka, all 46 water infrastructures are currently not in use and the population is reliant on groundwater for daily use. Not all wells are suitable for drinking and there are no pumps to supply water to the village from wells that are suitable for drinking. Another contributing factor to the poor water quality on the island is that the wells are open and not protected, thus leading to contamination. Many of the households do not have proper sanitation systems in the house and during heavy rains, the wells overflow and get polluted. The majority of households and wells are located in close proximity to the coastline, hence prone to overtopping. According to the villagers of Baurua about 80 percent of people live near the coastline and well water in the area is becoming increasingly brackish[76].

On the island of Makin, the main water source for both drinking and washing is the freshwater lens. Only nine percent of households use rainwater as their main source of drinking water, even though rainfall is high, because most households have roofs of local thatch which is not suitable for collecting rainwater. Well-water on Makin is often polluted due to the proximity of some open wells to pit latrines, and people are advised to boil water before drinking. Most of the infrastructure is located along the coastline and prone to saltwater intrusion.

The main source of drinking water on Tabiteuea South is groundwater, tapped by wells dug 3-5 meters into the ground. The quality of groundwater is easily affected by both droughts and heavy rains. Not only is the livelihood of the population dependent on the quality of groundwater but so is the terrestrial fauna and flora. Being a dry island, water becomes an issue during drought times when the freshwater lens sitting atop the seawater in wells are depleted without rains restoring the lens. The village of Takuu suffers brackishness and with the nearest freshwater site being approximately 8km away on the separate islet of Katabanga, the community must suffer drinking their only means of water, brackish as it is. The only shortcut to fetching water from Katabanga by those on Takuu would be by using canoes or boats to cross 3 km of lagoon to get to the freshwater site at Katabanga. The community of Tewai also suffers greatly from water but not because there is not enough freshwater but because the community prefer living on the adjacent islet of Buatua than on mainland Tewai. However, the distance to freshwater by those on Buatua is not as far when compared to the Takuu community.

Previous water projects have not provided ongoing or short-term future support through the provision of spare parts and equipment to enable communities or island water technicians to be able to undertake basic repairs and maintenance. There has been little support in the past from the national government to support ongoing repairs and maintenance. Historically, there has been an expectation that the community itself will raise the funding to be able to provide for the ongoing repairs and maintenance. This is a barrier given the low employment and

[76] Aranuka Consultation report (Annex 2)

income rates on the outer islands. Hence communities are unable to raise the funds required to provide for these services and many of the infrastructures have fallen into disrepair.

Whilst projects have provided the water infrastructure, little has been done to treat the water to ensure it is safe for consumption, and water contamination therefore remains an issue in the outer islands. There are currently no water treatment options implemented on the three islands, leading to a number of health issues with reported cases to health clinics in 2020 of diarrhoea and dysentery totalling 756.

Additionality (with AF funds)

The AF project aims to firstly increase the volume or capacity of the current water storage through the repair and upgrade to existing water infrastructure. If all current water infrastructure was eligible for repair or upgrade, the storage capacity based on tanks only, would increase to 1,530,200 litres or 340 litres per person at full capacity. However, the 340 litres per person would still only equate to enough water to meet basic needs for 6.8 days. Hence, the project will construct additional water infrastructure and technologies (based on the water resource assessments and climate modelling) to enable the communities to increase the water storage and supply and adapt to the increasing impacts of climate change on their water supplies.

One of the core additionalities the AF project will add is the inclusion of water treatments to existing water infrastructure. As mentioned previously, whilst the repair or installation of water harvesting and storage facilities provides for an increase in the volume of water available, it does not necessarily equate to clean, safe drinking water, and thus a reduction in water borne diseases. As outlined in the baseline scenario, there are currently no water treatments or water safety measures undertaken on the three islands. The AF project will value add by implementing initial water treatment measures during phase one of the project and assessing longer-term measures to be executed for the new infrastructures and technologies.

The project will also value add through the provision of the initial consignment of spare parts and equipment for the infrastructure. Long-term sustainability plans will be developed (Output 2.2.1) in which agreement is reached with the national government to continue to support the provision of spare parts and equipment (output 3.1.1) to the communities.

Lastly, the project will build knowledge and skills through the provision of training for island water technicians and community members in the maintenance and repair of the water infrastructure. This will ensure ongoing repairs and maintenance to current and new water infrastructures are undertaken with the necessary parts and equipment available.

Component 2: Strengthening the Government of Kiribati capacity and capability in sustainable water resource management

Baseline Scenario

The Government of Kiribati's Water and Sanitation Engineering Department has capacity to undertake water resource assessments however are reliant on projects to bring in external technical assistance to fill in gaps. By their own assessment the Department is at 60-70% capacity to capably provide high standard water management services and support to outer islands.

Water resource assessments are a critical element in water resource management in Kiribati given the reliance on groundwater. As part of the KIRIWATSAN project (2015-2019), SPC undertook a preliminary water resource assessment on the island of Makin, however this assessment will need to be reviewed and updated with new information. There are currently no water resource assessments undertaken for Aranuka and Tabiteuea South and there is limited data and information available to undertake modelling and scenario building.

There are no long-term water management plans for the islands either at national or island level and there is no policy to bind government and island communities to water management practices for access to sustainable clean safe water.

Additionality (with AF funds)

Funds from the Adaptation Fund will provide technical assistance to support the WSED to deliver water services to 100% regional/international standards. The technical assistance will systematically work to instil and build knowledge and capacity within the WSED whilst working together to carry out water resource assessments, modelling and scenario building and long-term sustainable planning for the three islands. This will include updated hard or software where necessary.

To adapt and build resilience to climate change, islands require the information and data of what may occur in the future to be able to make decisions relating to their livelihoods, resources, and well-being. The AF project will enable complete water resource assessments of the groundwater to be undertaken on the three islands as well as climate modelling and scenarios building. The latter are critical evidence bases in assessing viable options for the management of the fragile water lens and for determining what the best water options might be for the future, particularly if coastal inundation continues to increase. Understanding the location of groundwater, yields, salinity issues etc will enable the government and outer islands to make improved management decisions on the use of the groundwater to meet current and future uses without causing adverse environmental and socioeconomic consequences and thereby inform the development of the long-term sustainability plans for each island.

The MISE will also reinitiate work through this project to fill gaps in the legal framework to support sustainable water resource management. The AF funds will provide technical assistance to support Government of Kiribati with the development and drafting of the national water act and long-term strategy.

Component 3: Strengthening coordination mechanisms and community participation for water resource management

Baseline Scenario

Coordination between the national government and island councils remains low in Kiribati. Additionally, decision-making and inputs into key issues for communities on the outer islands follows the cultural traditions, limiting the participation of women, youth and vulnerable groups. Whilst some islands are experiencing some changes to the traditional culture mechanisms (i.e. some islands are now considering women (*unaine*) to participate as elders) this is not widespread and is relatively new.

However, the ownership and maintenance of water sources, infrastructure, and equipment will rely on the island councils and the communities. Women, youth, and vulnerable groups will

play a key role, and there is strong evidence of women in local communities being responsible and expected to collect water for households. The consultative processes of the project shall lessen the limitations on the participation of these groups in ensuring water security across the three islands. They will have a vital role in ensuring the maintenance and sustainability of efforts under this project.

With previous water projects as evident in findings from the consultative process in Section H (and in Annexes 1-3), there is already some understanding in communities of the issues in water resource management that shall be addressed through this project. The existing coordination mechanisms and community participation needs improvement and a shift in attitudes towards ensuring an efficient and reliable working relationship between the government and the islands' governance systems.

The consultative process in Section H additionally refers to issues raised by the communities such as the poorly designed water infrastructure in previous water projects, the weak water asset management arrangements which were unclear on accountability and responsibility for maintenance of assets, MoUs were used but not understood, plans for supply of spare parts were not well established, and there was an overall lack of training and community ownership.

To achieve sustainable water resource management and water security for the target outer islands, there must be community engagement and ownership through consultative processes, capacity development, and gender equality in decision making. The coordination mechanisms for community participation in water resource management needs to establish clearly outlined procedures for operations, communications, and maintenance for both the government and communities.

Since component 2 focuses on policies and legislation at the national level, this component addresses the much-needed structures and procedures on the ground in the target islands for coordination of community participation and ownership. The key aspects which have been discussed in Section A (above) include the need to strengthen water asset management, ensuring safety water is accessed to reduce illnesses and other health effects, and improving capability to respond to increasing incidents of drought and other climate impacts on the already vulnerable villages.

Additionality (with AF funds)

Building adaptive capacity through the engagement and mobilisation of the communities on the three islands, including the involvement of community members in the decision-making on the prioritisation of investments in water supply and the ongoing management of local water resources and associated infrastructure, is critical in building the longer-term sustainability of the water resource.

The AF project will focus on establishing sustainable coordination mechanisms between national government, islands councils and island communities to jointly agree on water management solutions to combat the impacts of current and future climate change on the target islands. The approaches to be implemented will explore the barriers and solutions to overcoming common problems such as poor adherence to water-safe practices, failure to manage water infrastructure assets, engineering designs of infrastructure that are unsuitable for the social and environmental context, and inadequate action and conflicts during times of water insecurity.

The action undertaken through the AF project will result in important outputs including (i) joint decision-making on new water technologies and infrastructure; (ii) the development and implementation of integrated community water management plans enabling ongoing support for the operations and maintenance of water infrastructure on the islands including effective, inclusive water safety plans and drought response plans; and (iii) more efficient, targeted educational and awareness campaigns.

Component 4: Construction and repair of new and existing water infrastructure to adapt to future climate impacts.

Baseline Scenario

As evident in the description of Section A and the funding justification for component 1, there is unsustainable water supply in all three islands. Most of the communities are accessing unsafe water for drinking and other uses which in turn affect their health and livelihoods. The situation of each of the target islands in terms of the environment and climate factors in relation to water accessibility has been described extensively in this proposal to reflect the vulnerabilities which must be addressed urgently (hence the rapid assessment & response in component 1).

While there are existing water infrastructures because of previous efforts, there are still extensive gaps and challenges, as well as capacity constraints on maintenance of the assets and equipment, and water treatment. Several options for water supply such as household water harvesting systems, polyethylene tanks, sola desalination, solar pumps, and hydro panels can be applied in the islands as and where appropriate. Some of these options have already been used in other parts of Kiribati which are not included in the scope of this project. Lessons learned from those parts of the country can inform the assessment in identifying relevant options for the target outer islands. The selection options and their application in the communities must be customized based on the assessments and technical assistance which will be provided through this project.

Additionality (with AF funds)

This component aims to address gaps in the existing water supply systems and infrastructure, including the incorporation of maintenance arrangements for the islands (which will form part of the Integrated Community Management Plans under component 3). Following the rapid assessment and response (outputs 1.1.1 and 1.2.1) and the comprehensive assessments (output 2.1.1), AF funding will support the purchase and installation of new water infrastructure and water treatment systems to fill the current gaps identified in all three outer islands. These will be linked to priorities and plans established under Outputs 2 and 3 and promoted through Outputs 3 and 5.

Unlike previous water projects, this action will identify and apply what is suitable and train the communities on how to maintain the assets and infrastructure to promote local ownership and long-term sustainability. It will include water treatment and will be linked to the regular testing of water quality as outlined in component 1.

AF funding will finance the purchasing of water infrastructure materials and water treatment installation, as well as the labour costs for installation and repairs as necessary. The establishment of the national policy & legal framework, the development of long-term

sustainability plans and integrated community management plans will ensure the integration of sustainability for water security across the target outer islands.

Component 5: Education, awareness raising and knowledge management.

Baseline Scenario

The actions under this project rely heavily on the buy-in of the community whose health and livelihoods are widely affected by the scarcity of clean water supply, unsafe sanitation and water use practices, and other conditions of their environment. Additionally, the support of the government and its employees to execute the activities effectively will underpin the key areas under different components.

Inclusive and participatory approaches shall enhance the communities' capability to influence policies, planning, and options for ensuring water security and resilience. These approaches will not just focus on promoting water security and water resource management, but also raise awareness on hygienic sanitation practices to minimize illnesses caused and/or related to water, understanding of the groundwater and other sources of water, the impact of climate change, and the types of interventions which could prove useful to the communities in the three outer islands.

There is a lack of awareness and education in the target communities, and limited understanding of water resource management, health issues relating to raw water and poor hygienic practices, as well as the types of interventions that can help maintain and sustain water access to improve health and livelihoods. Therefore, awareness through communication and knowledge management throughout the project will strengthen community understanding in water security and associated areas as outlined above.

Additionality (with AF funds)

The project aims for social inclusion and the targeting of the most vulnerable and has set targets of at least 50 percent of participants in decision-making and on-ground activities are to be women and youth. AF resources will focus on the establishment of strong coordination mechanisms (output 3.1.2) and community engagement and outreach to assist in achieving these targets. In addition, the project will work through island-based councils, focal points, and community action groups to help build a community of champions and advocates.

A key aspect of the project will be to develop a community engagement and outreach strategy (a mapping exercise was undertaken during the project planning phase) which will link closely with the communication and knowledge management strategy and action plan, and training programmes, to build the body of knowledge and capacity that will help improve the knowledge base around the impacts of climate change on water resources, the management of water resources, and reduce health issues brought about by water-borne diseases.

The development and implementation of the communication and knowledge management strategy and action plan will be fundamental to the project's success in identifying, developing, and disseminating knowledge and information to fill the knowledge gaps across the identified stakeholder audiences. The focus on water safety, water management and sanitation and hygiene will be instrumental in assisting the monitoring and reporting of effectiveness of the project's interventions.

Training programmes to complement the educational and awareness programs under component 5, will be provided under outcome 1, 2, 4 and 5 to disseminate the knowledge and skills to national government, island councils, island water technicians and community members on the repair and maintenance of water infrastructure, understanding the process and requirements to undertake water resource assessments (for replication on other outer islands), and roles and responsibilities under the water management plans as appropriate depending on the target audience.

J. Sustainability

Describe how the sustainability of the project outcomes has been taken into account when designing the project.

The sustainability of the project stems from the participatory approaches involving the national government, island councils and island communities throughout each activity. The participatory approaches will be inclusive and involve women, men and youth in the planning, decision-making and implementation components. This will provide awareness and ownership of the project outputs. In particular, output 3.2.1 will utilize participatory methods to work with stakeholders to develop effective, long-term coordination mechanisms for working together and future decision-making related to the water resource management. This activity will be critical to both the short-term project outcomes and the longer-term sustainability, given the current lack of coordinated decision making between the national government, island councils and community members.

Sustainability measures are also built into outcome 2 focusing on the water resource assessments and vulnerability studies and climate modelling. The necessary data and information will be important tools for both the government and island councils to undertake decisions on the future of the island including the water resources. The data and information can go beyond the project use and be utilised for future infrastructure, agriculture, and livelihood initiatives.

The development of water management plans, water safety plans and drought response plans for each of the three islands, also provides the valuable information base to island councils in coordinating responses with the national government for future events including droughts. With the integrated community water management plans, the islands will have a single point of reference that they helped to develop to inform decisions and ways of doing things to support water security and resilience. These instruments promote sustainability of the interventions undertaken under this project.

The inclusion and expansion of WASH programmes to go beyond schools and health clinics an into the community, will bring about an increased awareness and behaviour change relating to sanitation and hygiene, with the goal of reducing water-borne diseases over the longer-term. The sustainability of the WASH programmes is a key component of the partnership with UNICEF and will be built into UNICEF's ongoing commitment in Kiribati. In addition to behaviour change because of increased awareness, WASH programmes will also strengthen community ownership and motivation to continue working with the Government in efforts for water resource management.

Underpinning the long-term sustainability of project outcomes and outputs will be the education, awareness raising and knowledge management components. These activities will complement and build on existing programs to embed behaviour change for the protection and sustainability of water resources as well as the health and wellbeing of individuals and communities.

K. Environmental and Social Impact Risks

Provide an overview of the environmental and social impacts and risks identified as being relevant to the project.

Project activities have been designed and will be further developed and implemented to minimise any risk for negative social and environmental impacts. Activities have been designed in consideration of the consultation undertaken to-date with beneficiaries – including the vulnerable groups – and accounting for the different needs and constraints of these groups.

A social and environmental risk assessment has been carried out based on the AF's 15 environmental and social principles outlined in the Adaptation Fund Environmental and Social Policy (refer to Table 16). Components 1, 3 and 4 might have potential negative environmental and social risks if not implemented properly, while Components 2 and 5 are not expected to have any impacts.

Specific activities under Component 1 and 4 will be further defined with the communities during project implementation.

Activities under Component 2 strengthens the legal and policy framework for water resource management and use to help ensure long term climate resilient and water security by providing groundwater mapping of existing resources and building capacity of the government through MISE.

The project is therefore categorised to be "medium risk", or category B. Annex 1 Table 21 shows the results of the social and environmental risk assessment carried out during the development of this project proposal. The environmental and social risk management plan which includes mitigation actions for identified activities and a grievance mechanism has been included in Annex 5. As reported in the ESMP, unidentified subprojects will be further screened during their detailed design development.

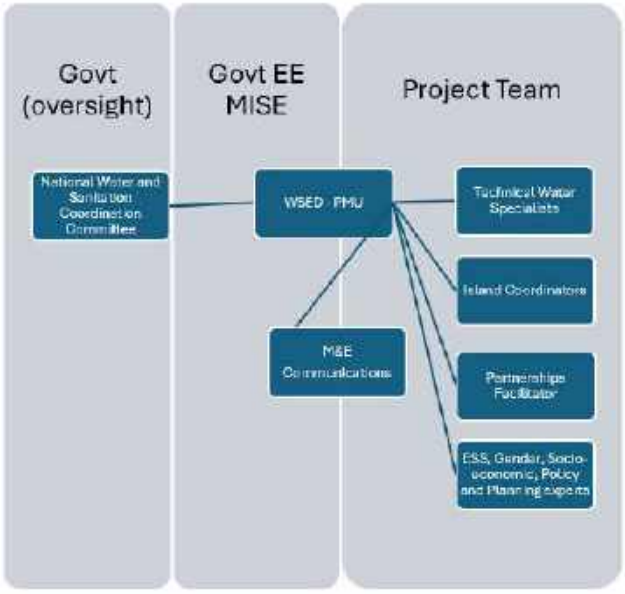
A Gender Action Plan is provided (see Annex 4) in line with the Gender Policy of the Fund and will be used in the detailed design development and fine-tuning of the activities so that gender is fully integrated. Further gender analyses will be carried out during implementation to further develop the activities so that they promote gender equality and women's and men's resilience to climate change.

Categorisation. Based on the above presented findings, from an environmental and socioeconomic risks perspective, the project is ranked as Category B (across all components). The impacts and design of the program are not overall high risk when evaluated against the ESP Principles. Risks identified at this stage have potential adverse impacts that are fewer in number, smaller in scale, less widespread, reversible, or easily mitigated. However, the project design and budget allocations have been designed to focus on those areas with moderate or potentially low risks.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Arrangements for project implementation

Describe the arrangements for project implementation.



The project will be executed by the Ministry of Infrastructure and Sustainable Energy (MISE). A PMU will be embedded within MISE to provide management and oversight of the project during the implementation phase.

Project Management Unit. The PMU will be responsible for the day-to-day management and executing of project activities including the supervision and oversight of activities, fiduciary management, procurement, and contract management, reporting, and monitoring and evaluation.

The PMU will be staffed by a **Project Manager, two Project Officers (1 x Finance and Procurement and 1 x Administration and Logistics)**, with technical assistance from the below positions forming part of the wider project team.

Project Team. Several specialist positions will be procured to undertake and/or manage core activities and functions within the project. These include:

- **Water Technical Specialists (consultants)**: the role is a specialised function, with the person(s) having wealth of experience in water engineering, water management especially in the environments like Kiribati. The Water Technical Specialists will have responsibility for oversighting the implementation of outcomes 1 and 4 and will also contribute towards the achievement of other outcomes and outputs, in particular output 3.1.1 – the development of the Integrated community water management plans.
- **(Island) Partnership Facilitator (consultant)**: the Partnership Facilitator will ensure the communication and feedback pathways, and relationships are established and maintained for on-ground development and establishment of island coordination mechanisms to sustainably manage water resources. The facilitator will work closely with the Island Councils, *unimwane / unaine* and community groups and Island Coordinators, MISE and the PMU to ensure the sustainability of activities and actions beyond the project completion on the three islands. Additionally, the Partnership Manager will work closely with the Project Manager to establish and maintain strong

networks and relationships with stakeholders on Tarawa and ensure the stakeholders are engaged with, and aware of, the project's activities.

- **Island Coordinators**: Each of the three islands will have an appointed focal point to assist in the implementation of activities for logistical support, stakeholder engagement, communication and feedback of project information and outputs, ensuring the water quality testing and monitoring is continued to be undertaken, and reporting on actions undertaken on island.
- **Communications Advisor (consultant):** A Communication consultancy to support the development and implementation of the Project's communication and knowledge management strategy and action plan. The consultant will work closely with the PMU, Water Technical Specialist, Technical Partners, Partnership facilitator, and other project team members to develop and highlight project progress, achievements, case study stories etc. Additionally, the consultant will work with the UNICEF WASH programme to raise awareness of water, sanitation, and hygiene to reach beyond schools and health centers.
- **Monitoring and Evaluation Advisor (consultant):** The consultant will establish with the project team a monitoring and evaluation plan for the collection and collation of data and information specific for tracking progress and achievements against the results framework. This is discussed in detail in Part D of Section III of this proposal.
- **Policy and Planning Consultants:** It is envisaged that a team or firm of consultants will be procured to assist the project team with the development of policies and plans under Components 2 and 3. These consultants should have background in government sector planning and policy development in water and sanitation and relevant experience to the context of Kiribati. The Consultants will support the Project Manager in technical water-related matters, environmental and social safeguards, gender, social inclusion and policy and planning.

Recruitment and procurement of the project team will take place upon approval of the proposal by the Adaptation Fund Board, with appointment to be made upon signing of the Executing Partner Agreement between the implementing entity – Secretariat of the Pacific Regional Environment Programme (SPREP) – and the executing entity – Ministry of Infrastructure and Sustainable Energy (MISE) - (this will follow the signing of the Head Agreement between the Adaptation Fund and the Secretariat of the Pacific Regional Environment Programme).

The project will seek to work with other key regional and international organisations, if not selected through procurement process, that are presently working or involved with Kiribati in this same space, for example:

- The Pacific Community (SPC) (Pacific): water assessment data and was the executing entity under for the KIRIWATSAN project
- UNICEF (Kiribati): UNICEF have a well-established international reputation for the implementation in developing countries of the highly successful WASH programme. Partnering with UNICEF on the awareness raising and WASH programmes to expand beyond schools and health clinics on the islands, and into communities, will value-add to the effort (output 5.1.1).

Where necessary technical partner agreements will be discussed with the IE and established by the executing entity during implementation.

Project Steering Committee. Kiribati's **National Water and Sanitation Coordination Committee** will take on the Project Steering Committee role. This established senior government management level committee coordinates implementation of strategic and operational water plans and activities across Ministries including oversight of all water and sanitation related projects in pipeline and under implementation in Kiribati. Annual steering meetings specific to the project will be scheduled and include technical partners to review workplans, budgets and make decisions on resource allocations consistent with performance and priorities agreed at inception. The project's internal coordination arrangements with other established committees in Kiribati such as the **water quality monitoring committee, WASH sector coordination committee and national drought committee**, will also be established during inception.

Community Action Groups. The project will utilise current island mechanisms - community actions groups - which are being established by the Kiribati Local Government Association (KILGA) on all outer islands in the Gilbert Islands to champion project activities and assist in the implementation. The community action groups on the three islands will be the conduit for all project activities on the respective islands. The group is to have a broad representation from women, youth, and vulnerable groups.

The Island Coordinator for each island, with the Partnership Facilitator, will be responsible for ensuring the committee and relevant island decision-makers remain up to date on project activities and are included in the island decision making processes.

Contractors and Suppliers. Procurement will be undertaken throughout the project cycle for various contractors (e.g., repair and upgrade of existing water infrastructure, installation of water treatments, installation of new water technologies etc) and suppliers (e.g., equipment, materials, shipping and transportation, travel etc). The procurement will be undertaken in-line with the procurement methods outlined in the Executing Partner Agreement between SPREP and MISE.

B. Project Risks

Describe the measures for financial and project risk management.

Financial and project risk management measures will be assessed throughout project execution by MISE and the PMU with regular technical supervision missions by SPREP. Potential risks related to project implementation and response measures are provided in Table 22 below. The overall risk rating for this project is medium, due mainly to logistical and on-ground challenges.

The Project Manager will monitor risks quarterly and report on the status of risks to the Project Steering Committee. The Project Manager, along with relevant project members will be responsible for managing these risks as well as the effective implementation of mitigation measures. The Monitoring and Evaluation (M&E) system will serve to monitor outcome and output indicators, risks to the project and mitigation measures. The Project Steering Committee will be responsible for monitoring the effectiveness of the mitigation measures and adjusting mitigation strategies accordingly, as well as identifying and managing any new risks that have not been identified during Project preparation, in collaboration with project partners.

The quarterly project reports and the annual AF Project Performance Reports (PPRs) are the main tools for risk monitoring and management. The PPR includes a section on systematic

monitoring of risks and mitigation action identified in previous PPRs. The PPR also contains a section on identifying new or emerging risks, risk rating and mitigation actions as well as those responsible for monitoring such actions and estimated timeframes. SPREP will closely monitor project management through its internal mechanisms such as the Project Review and Monitoring Group and will support the Executing Entity and PMU in the adjustment and implementation of strategies where necessary.

Table 22. Financial and Project Risks and Response Measures

Risk	Category	Response Measure	Final Risk Assessment
Delay in recruiting appropriately skilled staff and continuity of staff	High	Additional advertisements in a number of different countries in both employment sites and industry associations. Also utilise advertising through social media and ask contacts to promote job through their networks.	High
Lack of an enabling environment for the Project to work effectively on the outer islands. Constraints in the political environment and coordination at national and island level, and / or poor relationship building between the project and national and island level	High	Project will work through the GoK and Outer Island mechanisms; community engagement and participation is a priority and has focused activities across components 1,2,3 and 5. PMU and the Partnership Facilitator to identify alternative measures.	Medium
Failure to engage effectively with stakeholders and achieve implementation of activities	High	The project has consulted with three outer island stakeholders during the planning process. Further stakeholder consultations are also built into the scoping phase under implementation. Furthermore, a Community Engagement Plan during inception will be developed for each island outlining how stakeholders are to be continually engaged throughout the project. Island communities will be directly engaged in the decision-making processes for water and sanitation interventions. Islands will be represented in the decision- making process through their Island Councils via the governance arrangements. The outer island communities will also be trained and mentored in various aspects of the project	High
Endorsement of interventions in outer islands may take longer than expected. The island and	High	The project is designed to ensure all sectors of the community are engaged in consultations and decision-making as per the cultural appropriateness through the Community Engagement	Medium

national political environment do not enable the turnaround time for approval of interventions or any necessary policies and procedures.		Plans, Gender Action Plan, ESM Plan and in the project activities work programmes. The national Government will be kept informed of progress via regular communications from the Executing entity. With the Engagement Plan and Participatory approaches being prioritized, all Island communities are to be advised of the project timeline and outcomes prior to execution of activities.	
Training is not customised for outer island audiences "Off the shelf" training courses do not address cultural issues and practicality of systems and available services in the outer islands, so are inappropriate and do not achieve desired project outcomes.	Medium	The Executing Entity (MISE) and PMU will ensure that any training is appropriately framed for the audience. Training and mentoring will be ongoing throughout the life-of-the project and not based on one-offs. The training will also focus on train-the-trainer to ensure sustainability.	Low
Funds misappropriation, corrupted procurement, contract, and human resource management processes	Medium	Engagement with known partners with good reputation; Government of Kiribati financial management and procurement systems and controls are in place confirming appropriate management capacities and controls; budgets and program deliverables designed to ensure effective procurement; budget categories clearly defined; proactive monitoring of programs, budgets and acquittals. PSC and SPREP oversight will also help avoid these type of issues.	Medium
Activities are under-budgeted or costs increase (e.g. transportation costs)	Medium	In addition to the existing controls, the IE and EE will work closely together during the scoping and inception phase to realign the budgets against activities as more detailed information comes through. Ongoing discussions throughout the life of the project will also occur to adjust and realign budgeted costs for activities as and where appropriate.	Medium
Project is delayed due to delays in services and goods supply contracts	High	SPREP and the Government of Kiribati are experienced in contract administration and will support the PMU to ensure contractual negotiations are undertaken in a timely manner.	Medium
Complaints on	Medium	Government of Kiribati procurement	Medium

inappropriate procurement of work packages		processes are in place to handle these types of risks.	
Financial audits are not provided in a timely manner or show discrepancies	Medium	Government of Kiribati procurement processes are in place and there is already previous experience in projects of this nature/size to address risks associated with delayed audits.	Medium

C. Environmental and Social Risk Management

Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

According to the assessment undertaken against the AF ESS Policy, the project has a risk rating of Category B meaning that it can have minor (or easily reversible) environment, social or gender impacts. These risks and impacts have been evaluated during the preparation of this project proposal and includes the ESMP that is attached to this document as Annex 5.

The ESMP focuses on process-oriented risk management, where the mechanisms are incorporated into the program's implementation to ensure that rigorous risk assessment and management measures are applied to each intervention, as they are defined, approved, and implemented across the relevant activities.

ESS considerations will be reviewed at points of inception and during implementation to inform decision-making and to update and finalise the ESMP, particularly for water infrastructure and system options and for development of water management/coordination mechanisms.

Screening for Interventions

During implementation of the project, the SPREP ESMS Screening Tool (Annex 1 of the ESMP) will be used for the regular examination of the components and activities. This document applies to the 15 Principles of the AF ESP to all proposed water security and sanitation interventions as they are designed, in a way that the PMU can easily understand better what they are trying to achieve and the AF objectives.

Community Engagement

Critical to the management of risk and expectation during project design and implementation is the continual, inclusive, and well-planned consultation and engagement plan using a GESI approach. The plan is aimed at early and consistent stakeholder involvement and engagement with particular focus on the target communities, including women, youth, and vulnerable groups. The PMU will be resourced with a Gender and a Communications experts who will work with the PMU to ensure GESI considerations when facilitating all community consultations. It is also proposed for an Island Coordinators foreach of the target outer islands to ensure that communications between the PMU and the communities are regular and support effective execution of activities.

The PMU will ensure that marginalised and vulnerable groups in the targeted areas are included in public consultations, holding smaller focus groups as necessary, including: the disabled, single mothers who are heads of households and the elderly.

Land Access

Lessons learnt from previous water investments highlight that previous investments have been installed on private land without any formal agreements between MISE and the landowner which brings about a risk to secure long term equitable access to the resource. The project requires that no infrastructure can be installed on any lands without a formal agreement in place with the landowner. The process for securing the land is detailed in the ESMP and will be carried out during the initial scoping phase of the project to prevent delays during installation.

Grievance Mechanism

The ESMP has established a complaints procedure, which will be the formal Grievance Redress Mechanism (GRM). Preference will be given to solving problems at the site level, rather than allowing them to become more serious and elevated to the formal GRM. Complaints pertaining to the project activities implemented with AF resources will be addressed to executives of the PMU. The GRM is designed to ensure that members of the public can submit grievances to the PMU via email, in writing, by telephone or in person. Additionally, it is designed to account for the traditional complaints processes in villages by which community members can submit grievances directly with their Island Council, or village leaders who will, in turn, then forward the complaint to the PMU.

The five-step grievance management process will be applied to the project by the following process.

Table 23. GRM Process

Step	Application/How	Responsibility
1. Publicise the GRM process	Develop a procedure which explains how the grievance mechanism will work on the specific project site	SPREP, MISE
	Present the grievance mechanism at a public meeting help with affected communities	MISE PMU
2. Receive and register	Identify locations to receive grievances and ensure accessibility to all affected stakeholders	Receiving authorities (Island Councils, Village Leaders, Construction Supervisors), MISE PMU
	Recognise that some grievances may be submitted in writing while others will be communicated verbally. All grievances are to be treated with the same level of seriousness and respect.	
	Log all complaints into a database	
3. Review and investigate grievances	Review and investigate grievances	MISE PMU
	Explain the process and the timeframe for the GRM process	

	Appoint an appropriate person to obtain information and investigate.	
4. Develop resolution options, response to grievances and closeout	Develop a proposed resolution process, involving communities where appropriate	MISE PMU
	Implement the agreed solution	MISE PMU and Receiving Authority
	Follow-up with complainant to ensure satisfaction	
	If unsatisfied: Discuss further options. Identify local partners who might be able to assist in finding solutions	
	If still unresolved, refer matter to third-party mediation or external review.	
5. Monitor and Evaluate	Regularly monitor the number and type of grievances received, resolved and outstanding	MISE, SPREP
	Evaluate trends over time and stages of project development	
	Report all grievances to the PSC and SPREP via relevant periodic reporting	MISE

D. Monitoring and Evaluation Arrangements

Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan, in compliance with the ESP and the Gender Policy of the Adaptation Fund.

Monitoring and Evaluation Approach

A comprehensive Monitoring and Evaluation (M&E) Plan based on the Results Framework will be developed during the inception phase upon approval of the project. It will provide the Implementing and Executing Entities with a functional system that can be immediately introduced and implemented from project commencement. This approach has the following advantages:

- Indicators and targets for outcomes, outputs, and activities (see section E. Results Framework) are reviewed, refined, supplemented, and agreed before the project starts
- AF core indicators, gender considerations, and environmental and social safeguards are incorporated.
- Those who eventually have roles in contributing to project M&E are aware of the requirement for M&E and have the tools and guidance they need to conduct their particular duties within the overall M&E process.

- Information collection (monitoring) and illustration of progress (evaluation and reporting) is underway and enables the preparation of well-informed situation assessments and reports in the critical early months and years of the project.

Design of the M&E Plan aligns with the following requirements:

- Application of "complexity-aware" monitoring that incorporates both performance monitoring metrics (the project results framework outcomes), adaptive monitoring metrics (baseline conditions, guidance content) and salient qualitative metrics (demonstrable capacity development, sense of project ownership)
- Streamlined monitoring to improve real-time coordination of M&E activity across the full project footprint through a defined M&E schedule of activity
- Real time evaluation capability to reduce burden associated with formal reporting activity (i.e., only midterm and exit reports) through automated data analysis in M&E tools
- Provision of relevant information around the project's ESMP, the AF fund-level outcomes and indicators, and provision for a Gender Action Plan.

In summary, the M&E plan for this project will:

- Provide people at all levels and roles across the project (including national government focal points, project operational personnel or coordinators, Executing Entity staff, Implementing Entity representatives, contractors) with logical, self-explanatory lists that specify the types of information that different people are required to collect and convenient templates to be populated with that information
- Provide tools with in-built functions that analyse and convert populated information into clear and logical outputs that display progress status against indicators and highlight issues that need to be reviewed and managed
- Link all tools within one cohesive step-by-step system that is relatively easy to understand and is supported by a detailed user manual (i.e., responsible collectors, explanatory notes, data collection frequency)
- Enable the Executing Entity to maintain a 'satellite' tracking view across all project components with access to a complete body of project information, status verification evidence, summary display options and the ability to see and respond to important issues, and to report to the AF.

M&E Roles and Responsibilities

Roles and responsibilities for M&E will be shared by the Implementing entity, the Executing entity and PMU, delivery partners (national, regional, and international), and Island Councils as described in Table 24.

Table 24. M&E roles and responsibilities

Stakeholder	Roles and Responsibilities
Implementing entity	• Provide high level oversight, guidance and M&E expertise as required. • Ensure M&E is embedded in project operations • Progress reporting to the AF • Mid-term review • Terminal evaluation

Stakeholder	Roles and Responsibilities
Project Management Unit and Executing entity	• Lead and manage M&E activities and project reporting • Develop detailed results framework and M&E Implementation Plan during the scoping phase • Design and carry out or commission the baseline/situation analysis • Ensure responsibilities and timing for collection of monitoring data is clear • Report on progress of execution of activities as outlined in the executing partner agreement. • Ensure collection of monitoring data is integrated into project activities • Coordinate gathering of information from monitoring visits • Manage and analyse project M&E data as required • Carry out or commission and manage real time studies as required • Use M&E data and information to guide project implementation, including through the convening of regular reflection sessions with the IE, DPs and other stakeholders as appropriate • Manage dissemination of M&E data and reporting to stakeholders
Delivery Partners	• Provide regular progress reports and data as required by the M&E Implementation Plan
Island Councils	• Provide access to data and information as required. • Facilitate M&E at the Island level by arranging access and authorising activities

The PMU staff will need a range of skills and experience to design and commission studies, collect, manage, and analyse data, especially qualitative data. M&E technical assistance will be provided to the PMU through the project (contracted on retainer) if required. This will be particularly important in transitioning the project from the plan into the implementation phase and therefore the development of the detailed results framework and M&E Implementation Plan. The M&E Advisor (consultant) will provide advice, guidance, and training to all project personnel on the monitoring and evaluation aspects of the project. SPREP as IE will provide additional support e.g. training where deemed needed (whether requested by the EE or identified by IE).

Lastly, Kiribati's recent policy of mandatory retirement for government employees at age 55[77], has created a cohort of experienced people, many of whom are available to provide support to projects on a short-term basis. Some have research experience and could provide a pool of expertise for carrying out or supporting situation/baseline analyses, real-time evaluative studies, and end-of-program studies.

M&E Budget

The M&E budget for the Project is outlined below:

Description	US$

[77] Retirement age was dropped to 50 under President Tong and has been raised recently to 55 under President Maamau (Source: MFED).

M&E Staff	
M&E Advisor* (Consultant)	$40,000
Evaluations	
Mid-term review* (tbd)	$30,000
Final evaluation	$50,000
Real-time studies^	$41,850
Total	**$161,850**

Note: In addition to the above budget, the project aims to have all activities undertaking real-time monitoring and evaluation. These costs are incorporated into the activity budgets.
* denotes under IE fee budget
^ the real-time studies are to undertake focused studies across the project however, they will have an M&E focus as well

E. Results Framework

Include a results framework for the project proposal, including milestones, targets and indicators, including one or more core outcome indicators of the Adaptation Fund Results Framework, and in compliance with the Gender Policy of the Adaptation Fund.

Table 1525. Project Results Framework

Please refer to Annex 2 for Table 25. Project Results Framework

F. Alignment with the Adaptation Fund Results Framework

Demonstrate how the project aligns with the Results Framework of the Adaptation Fund.

Please see Annex 3 for table

G. Project Budget

Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Summary Total Project Budget

Total Outcome Budget	**8,421,200.00**
Project Management Costs (Executing Entity) – 9.5% of Outcome budget	**800,000.00**
Sub-Total	**9,221,200.00**
Implementing Entity Management Fee - 8.45% of the Sub-Total	**778,800.00**
Total Project Budget (requested from the Adaptation Fund)	**10,000,000**

See Annex 4 for detailed budget with explanation/notes and breakdown of execution costs and Implementing Entity management fee use and explanation.

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H. Disbursement Schedule

Disbursement Schedule with timebound milestones

	Tranche 1	**Tranche 2**	**Tranche 3**	**Tranche 4**	**Tranche 5**	**Tranche 6**	**Total USD**
Milestone	Signing of Agreement	By end of month 15 For months 1-12 Annual Progress Report Financial Report Audited Financial Report Next disbursement request after 70% spend	By end of month 27 For months 13-24 Annual Progress Report Financial Report Audited Financial Report Next disbursement request after 70% spend	By end of month 39 For months 25-36 Annual Progress Report Financial Report Audited Financial Report Next disbursement request after 70% spend	By end of Month 51 For months 37-48 Annual Progress Report Financial Report Audited Financial Report Next disbursement request after 70% spend	By end of Month 66 Final Reports and Closure reports, Terminal Evaluation, Audited Reports	
Project Funds	$ 2,157,580	$ 4,636,020	$ 1,689,100	$ 499,500	$ 239,000	-	**$ 9,221,200**
Implementing Entity Fees	$ 233,640	$ 194,700	$ 140,184	$ 101,244	$ 85,668	$ 23,364	**$ 778,800**
Total	**$ 2,391,220**	**$ 4,830,720**	**$ 1,829,284**	**$ 600,744**	**$ 324,668**	**$ 23,364**	**$ 10,000,000**

GOVERNMENT OF KIRIBATI

MINISTRY OF FINANCE & ECONOMIC DEVELOPMENT

Phone: (686) 74021806, Address: PO Box 67, Tarawa, Kiribati

File ref: FED2/1 Date: 21 January 2025

The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Resubmission of Proposal 'Enhancing the resilience of the outer islands of Kiribati'

In my capacity as designated authority for the Adaptation Fund in Kiribati, I confirm that the above project proposal remains in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Kiribati.

Accordingly, endorsement of the above project/ proposal remains with support from the Adaptation Fund. The implementing and executing entities of which are respectively the Secretariat of the Pacific Regional Environment Programme (SPREP) IE and the Government of Kiribati Ministry of Infrastructure and Sustainable Energy (MISE) EE also remain the same.

Sincerely,

Dr Teuea Toatu
Honourable Vice President and Minister for Finance and Economic Development
Designated Authority for the Adaptation Fund

Annexes

Annex 1: Part II - Section K Environmental and Social Impacts Risks

This table shows the results of the social and environmental risk assessment carried out during the development of this project proposal. The environmental and social risk management plan (ESMP) which includes mitigation actions for identified activities and a grievance mechanism has been included in Annex 5 - ESMP. As reported in the ESMP, unidentified subprojects will be further screened during their detailed design development.

Table 16~~121~~. Checklist of environmental and social principles

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law *Projects supported by the Fund shall be in compliance with all applicable domestic and international law.*	No further assessment required	**No Risk** Relevant national and local authorities have been consulted during the proposal development process to ensure compliance with all relevant laws. Project activities will be implemented in alignment and compliance with national and international regulatory and policy frameworks signed by the Government of Kiribati.
Access and Equity *Projects supported by the Fund shall provide fair and equitable access to benefits in a manner that is inclusive and does not impede access to basic health services, clean water and sanitation, energy, education, housing, safe and decent working conditions, and land rights. Projects should not exacerbate existing inequities, particularly with respect to marginalized or vulnerable groups.*		**Low to Medium Risk** The exact sites for installation of water security interventions in the Outer Islands are not yet determined. Based on previous experiences by some community members, there is a risk of inequitable or restricted access to the provided water supply if sites ultimately come with restrictions placed on access by third parties. To avoid this risk the ESMP provides mitigation measures including and requires ongoing screening during site selection. The Project Proposal understands this risk and is developed on the basis of equitable access to the installed water security investments will be a crucial guiding principle for the selection of all installation sites and the process of allocating access to these project benefits will be fair and impartial. A fair process treats people equally without favouritism or discrimination, and an impartial process treats all rivals or disputants equally. Project ensures that equity begins with the Project staff, and then with the approaches and processes in design and finally in project implementation. The principles of access and equity have been captured in the Projects ESMP which all project staff and relevant community members will receive training on.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
		Equitable access requirements of the Project have been clearly and transparently communicated with communities, relevant stakeholders, Island Council, and government agencies. The projects M&E Framework will measure developments related to 'access and equity' throughout the Project duration and the Project will be adaptive should the evaluations require changes. Ongoing environmental and social screening during site selection will ensure ongoing compliance with this Principle.
Marginalized and Vulnerable Groups *Projects supported by the Fund shall avoid imposing any disproportionate adverse impacts on marginalized and vulnerable groups including children, women and girls, the elderly, indigenous people, tribal groups, displaced people, refugees, people living with disabilities, and people living with HIV/AIDS. In screening any proposed project, the implementing entities shall assess and consider particular impacts on marginalized and vulnerable groups.*	X	**No Risk** Through its equitable access approach, the Project focuses on marginalized and vulnerable groups (women, youth, elderly, disabled etc.) and aims to assist them to improve their water supply and sanitation access thus their living conditions. The project will be focusing on reducing the specific impacts of climate change by building resilience in the water security, with both individual households and community services. In this way, all vulnerable groups are expected to be positively impacted. The project does not have negative impact on these groups and the Stakeholder Engagement Plan promotes a GESI approach to consultations.
Human Rights *Projects supported by the Fund shall respect and where applicable promote international human rights.*	X	**No to Low Risk** The AF ESP Guidelines state that this principle is triggered by all projects funded by the AF. The project affirms the fundamental rights of people in targeted areas, and thus does not affect their freedom. Furthermore, the Project does not integrate any activities contrary to custom law or traditions. Participation in the Project will be participatory, voluntary, and free. The project affirms the fundamental rights of people in targeted areas, and thus does not affect their freedom. Furthermore, the Project does not include any activities contrary to the custom law or traditions. Necessary monitoring for this principle is limited to those parameters already included in the ESMP.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Gender Equality and Women's Empowerment *Projects supported by the Fund shall be designed and implemented in such a way that both women and men 1) have equal opportunities to participate as per the Fund gender policy; 2) receive comparable social and economic benefits; and 3) do not suffer disproportionate adverse effects during the development process.*	X	**Low Risk** Gender plays a significant role in the interaction with water and the impact of waterborne diseases. Women's role in water and sanitation includes water collection from wells and communal rainwater harvesting systems, responsibility for household hygiene and sanitation, decision making on use of household resources and care for household members whose illnesses are a result of waterborne diseases such as diarrhoea. In the context of Kiribati, no specific regulation or policy disallows women form participation in decision making, community development and capacity building. However, traditional practices, traditional gender roles and societal acceptance of roles of men and women in communities hinders the active participation of women in projects such as this. To ensure that the Project (a) does not include elements that are known to exclude or hamper a gender group based on the Kiribati customary system and (b) does not maintain or exacerbate inequality or the consequences of gender inequality, a Gender Action Plan (GAP) has been developed and included in the Project Proposal document. The GAP is developed to attain the goal of gender equality and the equal treatment of women and men, including through targeted efforts to ensure participation of both men and women in the Project activities and outcomes. The GAP is designed to ensure that there is accountability over gender inclusion and empowerment of women through rigorous monitoring tied into the results framework of the Project. The ESMP requires the implementation of the GAP as part of its requirements for activity design and consultations.
Core Labour Rights *Projects supported by the Fund shall meet the core labour standards as identified by the International Labour Organization.*	X	**Low Risk** The Republic of Kiribati is a member of the International Labour Organisation and has ratified 7 fundamental ILO conventions. The project will be implemented in compliance with legislation including the Employment Act. No child labour nor forced labour is expected to result from this project. Core labour rights concern gender, respect, work hours, etc., and any labour standard will be observed and respected on infrastructure interventions.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
		Additionally, the Project will ensure that appropriate wages will be paid per assigned task. This is particularly important in the case of requiring community members to provide construction labour free of charge as has been the case in previous projects on the outer islands. No child will be employed. Core labour rights on gender, respect, work hours and national labour standards will be respected.
Indigenous Peoples *The Fund shall not support projects that are inconsistent with the rights and responsibilities set forth in the UN Declaration on the Rights of Indigenous Peoples and other applicable international instruments relating to indigenous peoples.*	X	**No Risk** All the population within the potential Project sites are indigenous, in the sense of having ancestral attachment to their land which is still important in the livelihoods of the majority who are rural dwellers. This reliance on natural resources and both customary and legal rights are recognised under national law. As Indigenous Peoples are the overwhelming majority of direct project beneficiaries safeguard measures have been integrated into the Project's overall design through the ESMP. They include: (i) free, prior, and informed consultation leading to broad community support during project preparation; (ii) measures to ensure culturally appropriate processes and benefits; (iii) measures to ensure that adverse impacts are mitigated; and (iv) measures for disclosing key project documents in a language understandable to them. Community consultation and regular engagement with the community is integral and the ESMP stipulates that this will be undertaken through the life of the Project.
Involuntary Resettlement *Projects supported by the Fund shall be designed and implemented in a way that avoids or minimizes the need for involuntary resettlement. When limited involuntary resettlement is unavoidable, due process should be observed so that displaced persons shall be informed of their rights, consulted on their options, and offered technically, economically, and socially feasible resettlement alternatives or fair and adequate compensation.*		**Low to Medium Risk** Water supply and sanitation services do not require any resettlement so there will be no involuntary resettlement under the project. Furthermore, there will be no compulsory land acquisition for the activities. Any long-term access to lands for installation of infrastructure will be secured through close consultations and formal and legally binding agreements with the landowners. The ESMP stipulates the process for securing land and monitoring will ensure that no installations are made on land without an agreement already being in place. Although no resettlements are necessary for the activities, this will be closely monitored. Frequent monitoring and regular consultations will identify risks of resettlement, including to physical natural assets and economic/livelihood activities, and manage potential risks as per the ESMP.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
		For the long-term protect the ground water resource or extraction site from contamination, there may be a need for land management of private lands. Any management measures will be developed in close consultation with the landowners and all measures will be voluntary. Ongoing screening of the activities during site selection, as required in the ESMP, will ensure compliance with this Principle.
Protection of Natural Habitats *The Fund shall not support projects that would involve unjustified conversion or degradation of critical natural habitats, including those that are (a) legally protected; (b) officially proposed for protection; (c) recognized by authoritative sources for their high conservation value, including as critical habitat; or (d) recognized as protected by traditional or indigenous local communities.*	X	**No Risk** It is expected that installation of water security interventions will be carried in areas surrounding the villages which are already changed from their natural condition. The project will work with measures for water conservation to limit the runoff and soil erosion during construction works. There are no critical habitats within the project islands urban or semi urban areas.
Conservation of Biological Diversity *Projects supported by the Fund shall be designed and implemented in a way that avoids any significant or unjustified reduction or loss of biological diversity or the introduction of known invasive species.*	X	**No Risk** As the physical works proposed under this project are small scale and in already altered habitats, there is no potential of a significant or unjustified reduction or loss of biological diversity. There will be no introduction of invasive species for this project.
Climate Change *Projects supported by the Fund shall not result in any significant or unjustified increase in greenhouse gas emissions or other drivers of climate change.*	X	**No Risk** The main drivers of climate change that are considered by the AF under this principle are the emission of carbon dioxide gas from the use of fossil fuel and from changes in land use, methane and nitrous oxide emissions from agriculture, emission of hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, other halocarbons, aerosols, and ozone. This is not applicable to the project.
Pollution Prevention and Resource Efficiency *Projects supported by the Fund shall be designed and implemented in a way that meets applicable international standards for maximizing energy efficiency and minimizing material*	X	**Low Risk** Installation of water security investments will require the production of concrete which has the potential to pollute soil or water if the concrete wastewater or slurry isn't correctly managed. It is expected that required concrete volumes will be minimal and can be readily avoided through the standard measures provided in the ESMP.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
resource use, the production of wastes, and the release of pollutants.		Waste will be generated by the project activities. Overburdening of islands existing solid waste systems and pollution (from leachate into ground water or direct dumping of waste into marine environment) stemming from poor solid waste management practices. The ESMP provides the required management measures to ensure that impacts are avoided through the standard waste hierarchy of reduce, reuse, recycle, minimum standards for waste storage and through stipulating no solid waste disposal on project islands.
Public Health *Projects supported by the Fund shall be designed and implemented in a way that avoids potentially significant negative impacts on public health.*	X	**Low to Medium Risk** By supplying more and better water services a positive impact is expected on the public health of targeted communities, due to water-related diseases and vectors. Proposed education and training in water management and planning at community level can be extended to prevent water-related diseases (amoeba, cholera, etc.) and vectors as mosquito, avoiding Zika, Dengue, Malaria, etc. There is a risk that water storage facilities may increase mosquito habitats, which carry vector-borne diseases. The ESMP requires design measures to avoid vector risks. There is a risk of contamination of the ground water from poor land use management and poor water extraction habits. The project activities are designed to minimise this and the ESMP provides guidance for the ongoing compliance with any land use plans and to adequate resourcing by MISE after project completion.
Physical and Cultural Heritage *Projects supported by the Fund shall be designed and implemented in a way that avoids the alteration, damage, or removal of any physical cultural resources, cultural sites, and sites with unique natural values recognized as such at the community, national or international level. Projects should also not permanently interfere with existing access and use of such physical and cultural resources.*	X	**No Risk** Sites will be selected to avoid any physical or cultural heritage.
Lands and Soil Conservation	X	**No Risk**

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Projects supported by the Fund shall be designed and implemented in a way that promotes soil conservation and avoids degradation or conversion of productive lands or land that provides valuable ecosystem services.		There are no fragile lands that would be lost or degraded by the project activities.

Annex 2: Part III Section F – Alignment with Adaptation Fund Results Framework

Table 26. Alignment with Adaptation Fund Results Framework

Project Outcome(s)[78]	Project Outcome Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Outcome 1.1 The selected three island communities have repaired and/or replaced water supplies for safe drinking water and clean freshwater for other water uses	Volume of water supply infrastructure improved and sustainably managed to withstand climate change and variability-induced stresses, such as droughts.	**Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors	**4.2.** Physical infrastructure improved to withstand climate change and variability-induced stress	**769,000**
Outcome 1.2 Incidence of water borne diseases on the three islands continues to decline	Volume of safe drinking water improved to withstand climate change and contribute to improved health outcomes.	**Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors	**4.2.** Physical infrastructure improved to withstand climate change and variability-induced stress	**220,000**
Outcome 2.1 Strengthened WSED/MISE/GoK capacity and capability to provide comprehensive water assessments, analyses, and reports at regional and international standards	Strengthened water services within MISE for maintenance of water resources under climate change and variability induced stress. Completed and updated island water assessments for the target islands.	**Outcome 4:** Increased adaptive capacity within relevant development sector services and infrastructure assets **Outcome 1:** Reduced exposure to climate-related hazards and threats	**4.1**. Responsiveness of development sector services to evolving needs from changing and variable climate **1.** Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	**583,000**

[78] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

Outcome 2.2 Strengthened planning processes for long-term sustainable supplies of safe drinking water, clean freshwater for other water uses and effective, affordable maintenance arrangements	Improved national government information for decision-making and planning. Strengthened water services within MISE for maintenance of water resources under climate change and variability induced stress.	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	**200,000**
Outcome 2.3 Commenced strengthening of policy and legal framework for sustainable management of water resources and capacity development	Completion of desk review and consultations Final long-term strategy approved. Initial draft of Act is endorsed for further development	**Outcome 7:** Improved policies and regulations that promote and enforce resilience measures	7. Climate change priorities are integrated into national development strategy	**189,600**
Outcome 3.1 Equitable access to safe drinking water and clean freshwater for other water uses is in place in the selected island communities	Number of island communities with increased capacity to maintain water supply. Number of people with reduced risk of inaccessibility to safe water during extreme weather events.	**Outcome 2**: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	**2.1**. No. and type of targeted institutions with increased capacity to minimize exposure to climate **2.2.** Number of people with reduced risk to extreme weather events	**416,400**
		Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	**3.1.** Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses **3.2.** Modification in behaviour of targeted population	
Outcome 4.1 Availability of long-term sustainable supplies of safe drinking water,	Number of physical infrastructure improved to withstand climate change and variability induced-stress.	**Outcome 4:** Increased adaptive capacity within	**4.2.** Physical infrastructure improved to withstand climate	**6,101,000**

clean freshwater for other water uses, and effective, affordable maintenance arrangements are in place in the three targeted island communities	Number of physical infrastructure installed to fill gaps in water supply.	relevant development and natural resource sectors	change and variability-induced stress	
Outcome 5.1 Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water	Percentage of targeted beneficiaries aware and practicing measures for improved safe and sustainable water use. Changes in behaviour of target communities.	**Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	**3.1.** Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses **3.2.** Modification in behaviour of targeted population	**302,000**
Project Output(s)	**Project Output Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Output 1.1.1 Rapid assessment and response through the completion of repairs and/or replacement on existing water infrastructure in the targeted villages on the three islands	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	**Output 4**: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	**4.1.2.** No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	769,000
Output 1.2.1 Implementation of water treatment systems to existing water supply systems	No. of physical assets strengthened withstand conditions resulting from climate variability and change (by asset types)	**Output 4**: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	**4.1.2.** No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	220,000
Output 2.1.1 Comprehensive assessment of safe drinking water	No. and type of natural resource assets maintained or improved to withstand conditions	***Output 4:*** Vulnerable development sector services	4.1.1. No. and type of development sector services modified to	583,200

sources and agreed supply options to fill gaps in supply for all water uses, under a range of climate change scenarios	resulting from climate variability and change (by type of assets)	and infrastructure assets strengthened in response to climate change impacts, including variability	respond to new conditions resulting from climate variability and change (by sector and scale)	
Output 2.2.1 Long-term sustainability plans for water resources on the three islands and climate change adaptation under future scenarios	No. and type of assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	***Output 2.1***: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	200,000
Output 2.3.1 Development of a National Water Act and a Long-term Water Strategy for sustainable water resource management and capacity development	No of national policy and strategy introduced	***Output 7:*** Improved integration of climate-resilience strategies into country development plans	7.1. No. of policies introduced or adjusted to address climate change risks (by sector)	189,600
Output 3.1.1 Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water (Integrated Community Water Management Plans)	No. of target beneficiaries trained to manage water resources in response to, and mitigate impacts of, climate-related events No. of indirect beneficiaries trained to manage water resources in response to, and mitigate impacts of, climate-related events No. of target beneficiaries or communities organized and prepared to manage water resources for sustainable, equitable and accessible water	**Output 2.1**: Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	**2.1.1**. No. of staff trained to respond to, and mitigate impacts of, climate-related events	416,400
		Output 2.2: Targeted population groups covered by adequate risk reduction systems	**2.2.1.** Percentage of population covered by adequate risk-reduction systems	

	use. Percentage of population covered by adequate risk-reduction systems			
Output 3.1.2 Equitable and efficient coordination arrangements for water supply at all levels, from the household to the national government levels	No. of target communities organized and prepared to manage water resources for sustainable, equitable and accessible water use. No. and type of risk reduction actions or strategies introduced or strengthened at local level No of case studies evidencing change at local and government level.	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities	**3.1.1** No. and type of risk reduction actions or strategies introduced at local level **3.1.2** No. of news outlets in the local press and media that have covered the topic	
Output 4.1.1 Completion of new infrastructure and water treatment systems designed to fill in the current supply gaps, including assessment of potential new technologies	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	**Output 4:** Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	**4.1.2.** No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	5,796,000
Output 5.1.1 Sustainable water use and safe sanitation practices knowledge disseminated to the three selected island communities	No. and type of risk reduction actions or strategies introduced at local level No. of case studies evidencing change at local and government level.	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities	**3.1.1** No. and type of risk reduction actions or strategies introduced at local level **3.1.2** No. of news outlets in the local press and media that have covered the topic	247,000

Type of Core AF Indicator	Target
Number of Beneficiaries	The project will directly target 4,491 beneficiaries on the three outer islands (average 5 members to a household), and 20 indirect beneficiaries being government staff and NGOs • 2,225 women (49.5% of population) direct beneficiaries • 2,266 men (50.5% of population) direct beneficiaries • 1,825 are under 14 years of age • 1,956 are youth (15-49 years old) • At least 50% of participants in trainings and educational / awareness activities are to be women and youth
Assets produced, developed, improved or strengthened	The project will repair and upgrade existing infrastructure, and construct / install new infrastructure that will increase resilience and adaptation to climate change. These include: • 100% repairs to damaged infrastructure assessed to be repairable and priority for target beneficiaries. • 100% replaced damaged infrastructure assessed to be irreparable and priority for target beneficiaries • 100% new infrastructure constructed as identified in long term sustainability plans to fill gaps and strengthen supply of accessible safe water to target beneficiaries. Actual numbers to be determined during implementation of components 1 and 2 in year one, whereby M&E plan will be updated.

Annex 3

Annex 3: Part III Section F – Alignment with Adaptation Fund Results Framework

Table 26. Alignment with Adaptation Fund Results Framework

Project Outcome(s)[1]	Project Outcome Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Outcome 1.1 The selected three island communities have repaired and/or replaced water supplies for safe drinking water and clean freshwater for other water uses	Volume of water supply infrastructure improved and sustainably managed to withstand climate change and variability-induced stresses, such as droughts.	**Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors	**4.2.** Physical infrastructure improved to withstand climate change and variability-induced stress	**769,000**
Outcome 1.2 Incidence of water borne diseases on the three islands continues to decline	Volume of safe drinking water improved to withstand climate change and contribute to improved health outcomes.	**Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors	**4.2.** Physical infrastructure improved to withstand climate change and variability-induced stress	**220,000**
Outcome 2.1 Strengthened WSED/MISE/GoK capacity and capability to provide comprehensive water assessments, analyses, and reports at regional and international standards	Strengthened water services within MISE for maintenance of water resources under climate change and variability induced stress. Completed and updated island water assessments for the target islands.	**Outcome 4:** Increased adaptive capacity within relevant development sector services and infrastructure assets	**4.1**. Responsiveness of development sector services to evolving needs from changing and variable climate **1.** Relevant threat and hazard information generated and	**583,000**

[1] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

		Outcome 1: Reduced exposure to climate-related hazards and threats	disseminated to stakeholders on a timely basis	
Outcome 2.2 Strengthened planning processes for long-term sustainable supplies of safe drinking water, clean freshwater for other water uses and effective, affordable maintenance arrangements	Improved national government information for decision-making and planning. Strengthened water services within MISE for maintenance of water resources under climate change and variability induced stress.	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	**200,000**
Outcome 2.3 Commenced strengthening of policy and legal framework for sustainable management of water resources and capacity development	Completion of desk review and consultations Final long-term strategy approved. Initial draft of Act is endorsed for further development	**Outcome 7:** Improved policies and regulations that promote and enforce resilience measures	7. Climate change priorities are integrated into national development strategy	**189,600**
Outcome 3.1 Equitable access to safe drinking water and clean freshwater for other water uses is in place in the selected island communities	Number of island communities with increased capacity to maintain water supply. Number of people with reduced risk of inaccessibility to safe water during extreme weather events.	**Outcome 2**: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	**2.1**. No. and type of targeted institutions with increased capacity to minimize exposure to climate **2.2.** Number of people with reduced risk to extreme weather events	**416,400**
		Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	**3.1.** Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	

			3.2. Modification in behaviour of targeted population	
Outcome 4.1 Availability of long-term sustainable supplies of safe drinking water, clean freshwater for other water uses, and effective, affordable maintenance arrangements are in place in the three targeted island communities	Number of physical infrastructure improved to withstand climate change and variability induced-stress. Number of physical infrastructure installed to fill gaps in water supply.	**Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors	**4.2.** Physical infrastructure improved to withstand climate change and variability-induced stress	**5,796,000**
Outcome 5.1 Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water	Percentage of targeted beneficiaries aware and practicing measures for improved safe and sustainable water use. Changes in behaviour of target communities.	**Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	**3.1.** Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses **3.2.** Modification in behaviour of targeted population	**247,000**
Project Output(s)	**Project Output Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Output 1.1.1 Rapid assessment and response through the completion of repairs and/or replacement on existing water infrastructure in the targeted villages on the three islands	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	**Output 4**: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	**4.1.2.** No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	769,000
Output 1.2.1 Implementation of water treatment systems to existing water supply systems	No. of physical assets strengthened withstand conditions resulting from climate variability and change (by asset types)	**Output 4**: Vulnerable physical, natural, and social assets strengthened in response to climate change	**4.1.2.** No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by	220,000

		impacts, including variability	asset types)	
Output 2.1.1 Comprehensive assessment of safe drinking water sources and agreed supply options to fill gaps in supply for all water uses, under a range of climate change scenarios	No. and type of natural resource assets maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	***Output 4:*** Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.1. No. and type of development sector services modified to respond to new conditions resulting from climate variability and change (by sector and scale)	583,200
Output 2.2.1 Long-term sustainability plans for water resources on the three islands and climate change adaptation under future scenarios	No. and type of assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	***Output 2.1***: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	200,000
Output 2.3.1 Development of a National Water Act and a Long-term Water Strategy for sustainable water resource management and capacity development	No of national policy and strategy introduced	***Output 7:*** Improved integration of climate-resilience strategies into country development plans	7.1. No. of policies introduced or adjusted to address climate change risks (by sector)	189,600
Output 3.1.1 Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water (Integrated Community Water Management Plans)	No. of target beneficiaries trained to manage water resources in response to, and mitigate impacts of, climate-related events No. of indirect beneficiaries trained to manage water resources in response to, and mitigate impacts of, climate-related events No. of target beneficiaries or communities organized and prepared to manage water resources for sustainable, equitable and accessible water use.	**Output 2.1**: Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	**2.1.1**. No. of staff trained to respond to, and mitigate impacts of, climate-related events	416,400
		Output 2.2: Targeted population groups covered by adequate risk reduction systems	**2.2.1.** Percentage of population covered by adequate risk-reduction systems	

	Percentage of population covered by adequate risk-reduction systems			
Output 3.1.2 Equitable and efficient coordination arrangements for water supply at all levels, from the household to the national government levels	No. of target communities organized and prepared to manage water resources for sustainable, equitable and accessible water use. No. and type of risk reduction actions or strategies introduced or strengthened at local level No of case studies evidencing change at local and government level.	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities	**3.1.1** No. and type of risk reduction actions or strategies introduced at local level **3.1.2** No. of news outlets in the local press and media that have covered the topic	
Output 4.1.1 Completion of new infrastructure and water treatment systems designed to fill in the current supply gaps, including assessment of potential new technologies	No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	**Output 4:** Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	**4.1.2.** No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	5,796,000
Output 5.1.1 Sustainable water use and safe sanitation practices knowledge disseminated to the three selected island communities	No. and type of risk reduction actions or strategies introduced at local level No. of case studies evidencing change at local and government level.	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities	**3.1.1** No. and type of risk reduction actions or strategies introduced at local level **3.1.2** No. of news outlets in the local press and media that have covered the topic	247,000

Type of Core AF Indicator	**Target**

Number of Beneficiaries	The project will directly target 4,491 beneficiaries on the three outer islands (average 5 members to a household), and 20 indirect beneficiaries being government staff and NGOs • 2,225 women (49.5% of population) direct beneficiaries • 2,266 men (50.5% of population) direct beneficiaries • 1,825 are under 14 years of age • 1,956 are youth (15-49 years old) • At least 50% of participants in trainings and educational / awareness activities are to be women and youth
Assets produced, developed, improved or strengthened	The project will repair and upgrade existing infrastructure, and construct / install new infrastructure that will increase resilience and adaptation to climate change. These include: • 100% repairs to damaged infrastructure assessed to be repairable and priority for target beneficiaries. • 100% replaced damaged infrastructure assessed to be irreparable and priority for target beneficiaries • 100% new infrastructure constructed as identified in long term sustainability plans to fill gaps and strengthen supply of accessible safe water to target beneficiaries. Actual numbers to be determined during implementation of components 1 and 2 in year one, whereby M&E plan will be updated.

	Outcomes / Outputs/Activity			Budget Categories	Detailed Budget (in USD)					Expenditure Plan (Year)						Budget Notes	
					Unit	# of Unit	Unit Cost	Total Budget (per budget category)	Total Budget (per output)	Total Budget (per Component)	1	2	3	4	5			
Component 1	Outcome 1.1 The three selected island communities have repaired and/or replaced water supplies and safe drinking water and clean freshwater for other water uses	Output 1.1.1 Rapid assessment and response for existing water supply systems in the targeted villages on the three islands Through to completion of repairs on existing water infrastructure – action on the assessments	Activity: 1.1.1.1a Rapid assessment and community prioritisation for the repair and/or replacement of existing water supply systems in the targeted villages. Activity 1.1.1.1b Assessment and survey for rainwater harvesting tanks at household level (survey requires looking at household / family structure, roofing, space/location Activity: 1.1.1.2 Repair and/or replacement of existing water supply systems in the targeted villages based on assessment reports and community prioritisation.	Consultants - Local	W/Day	20	800.00	16,000.00	769,000.00	989,000.00	16,000.00					16,000.00	A	2 Local consultants to assist EE in the rapid assessments@ daily rate USD400/pax for 20 days (can combine with Budget note H)
				Consultants/Firm - International												-		see Budget Note P
				Travel International												-		see Budget Note T
				Local travel for Rapid Assessment Team (x4 pax) - retrun airfare from Tarawa	Trips	6	2,000.00	12,000.00			12,000.00					12,000.00	B	2 consultants & 1 PMU & 1 Govt @ USD 500/pax/return airfare 2 trips per island, 3 islands
				Local travel for Rapid Assessment Team (x4 pax)- DSA	W/Day	30	800.00	24,000.00			24,000.00					24,000.00	C	2 consultants & 1 PMU & 1 Govt @ USD 200 DSA for 30 days
				Workshops/Training/Meeting	Events	3	1,000.00	3,000.00			3,000.00					3,000.00	D	3 consultations in the 3 islands @ USD 1000 /island for refreshments/lunchs for 25 people @ USD 40/pax
				Company /Firm	Package	3	125,000.00	375,000.00			375,000.00					375,000.00	E	package = 3 islands @ USD 125,000 for the company/firm includes provision of all materials & tools for the repairs of existing water infrastructure
				Spare parts, tools, maintenance support, extended waranty	Package	3	50,000.00	150,000.00			150,000.00					150,000.00		package = 3 islands @ USD 50000 each
				Transportation of materials to outer islands	Package	3	33,000.00	99,000.00			99,000.00					99,000.00	F	Transportation /shipping to the 3 islands at USD 50,000 per island to transport the materials and tools.
				Local labour for repairs work	Package	3	30,000.00	90,000.00			90,000.00					90,000.00	G	Budget estimate for local labour to assist the company/firm on the repair works at USD 30,000 per island.
	Outcome 1.2 Incidence of water borne diseases on the three islands continues to declines	Output 1.2.1 Assessments and survey to recommend appropriate water treatment system(s) for the repaired existing water supply systems through to implementation of water treatment systems to the repaired existing water supply systems	Activity: 1.2.1.1 Selection of the most suitable of water treatment options and implementation of treatments to repaired and new water infrastructure Activity 1.2.1.2 Water quality monitoring is undertaken in the target communities in partnership with Government ministries and island communities	Consultants - Local	W/Day	20	800.00	16,000.00	220,000.00		16,000.00					16,000.00	H	2 Local consultants to assist EE in the assessments@ daily rate USD400/pax for 20 days (can combine with Budget note A)
				Consultants / Firm International												-	I	see Budget Note P
				Consultations/Workshops	Event	3	1,000.00	3,000.00			3,000.00					3,000.00	J	3 consultations in the 3 islands @ USD 1000 /island for refreshments/lunchs for 25 people @ USD 40/pax
				Local travel for Assessment/Survey Team (x4 pax) - retrun airfare from Tarawa	Trips	6	2000	12,000.00			12,000.00					12,000.00	K	2 consultants & 1 PMU & 1 Govt @ USD 500/pax/return airfare 2 trips per island, 3 islands
				Local travel for Assessment/Survey Team (x4 pax)- DSA	W/Day	30	800.00	24,000.00			24,000.00					24,000.00	L	2 consultants & 1 PMU & 1 Govt @ USD 200 DSA for 30 days
				Company/Firm	Package	3	50,000.00	150,000.00			150,000.00					150,000.00	M	Treatment systems for the 3 islands at USD 50,000 per island.
				Transportation of materials to outer islands												-	N	included in output 1.1.2 - see row 12
				Sundries	Trips	6	2,500.00	15,000.00			15,000.00					15,000.00	O	on-ground travel costs, cultural customs
Component 2	Outcome 2.1 Strengthened WSED (MISE/GoK) capacity and capability to provide comprehensive water assessments, analyses, and reports at regional and international standards.	Output 2.1.1 Comprehensive assessment of safe drinking water sources and supply for water uses by targeted communities under a range of climate change scenarios	Activity 2.1.1.2 Mapping of surface and groundwater resource quantity and quality on the three islands Activity 2.1.1.1 Building the capacity of MISE in water resource assessments and climate modelling for decision-making in future water security planning	Consultant/Firm International - Water Technical Specialist	W/Day	200	1,600.00	320,000.00	583,200.00	972,800.00	160,000.00	160,000.00				320,000.00	P	2 International consultants @ USD800/day/pax for 200 each days over 18 months Provision of support and advice for activities under Component 2 (e.g. Water Resource Assessments for Aranuka & Tab South, update for Makin, long term sustainability plans); Component 1 (assessments and water testing/monitoring), Component 3 (water management plans) and Component 4 (infrastructure works). Provision of training.
				Consultants Local	W/Day	0		-								-	Q	Technicians to work with WSED
				Travel international	Trips	3	15,400.00	46,200.00			25,000.00	21,200.00				46,200.00	R	3 return airfares for the 2 consultants international, airfares USD 3500/pax, DSA 200/pax for 21 days per trip
				Travel local	Trips	9	15,000.00	135,000.00			70,000.00	65,000.00				135,000.00	S	2 international & 2 local consultants 2 EE personnel @ return airfare Usd 500/pax, USD 200 DSA per pax for 10 days each trip
				Workshop/Training/Meetings	Event	4	3,000.00	12,000.00			6,000.00	6,000.00				12,000.00	T	Workshops and training for WSED
				Data/information/imagery acquisition	Package	1	50,000.00	50,000.00			50,000.00					50,000.00	U	GIS package or other relevant as recommended by technical specialist
				IT Equipment	Package	1	20,000.00	20,000.00			10,000.00	10,000.00				20,000.00	V	Upgrade hardware e.g. laptops, printers and software for WSED / MISE
	Outcome 2.2 Strengthened planning process for developing sustainable supplies of safe drinking water, clean freshwater for other water uses, and effective, affordable maintenance arrangements.	Output 2.2.1 Long-term sustainability plans for water resources on the three islands and climate change adaptation.	Activity 2.2.1.1 Technical, social, environmental, and economic assessment of multiple options to ensure provision of sustained access to safe drinking water for all communities on the three islands	Consultants / Firm International	W/Day	100	800.00	80,000.00	200,000.00		80,000.00					80,000.00	W	Technical assistance for environmental, social, socio-economic assessments on options and development of long-term sustainability plans. ESS expert, gender expert, economist / socio-economic analyst
				Travel International	Trips	3	11,000.00	33,000.00			15,000.00	18,000.00				33,000.00	X	Return airfares USD 3500/pax; DSA at USD200 10 days per trip
				Consultant local	W/Day	100	400.00	40,000.00			20,000.00	20,000.00				40,000.00	Y	on-ground support for environmental, social, socio economic assessments
				Local Travel	Trips	3	7,500.00	22,500.00			10,000.00	12,500.00				22,500.00	Z	Return airfares USD 500/pax for (1 international consultant, 1 local consultant, 3 Govt = 5 pax) @ DSA 200 & 5 days per trip
				Workshops/Meetings/Consultations	Events	5	3,500.00	17,500.00			10,000.00	7,500.00				17,500.00	AA	consultations and workshops in Tarawa and three islands on development of longterm plans
				Publishing	Lumpsum	1	5,000.00	5,000.00				5,000.00				5,000.00	AB	printing and publishing of plans and materials for stakeholders
				Sundries	Lumpsum	1	2,000.00	2,000.00			2,000.00					2,000.00	AC	on-ground travel costs, cultural customs
	Outcome 2.3 Commenced strengthening of policy and legal framework for sustainable management of water resources & capacity development	Output 2.3.1 Development of a draft National Water Act and a Long-term Water Strategy for sustainable water resource management and capacity development	Activity 2.3.1.1 Drafting of Act and Long-term Strategy	Consultants / Firm International	W/Day	92	800.00	73,600.00	189,600.00		58,880.00	14,720.00				73,600.00	AD	To draft National Water strategy and Water and Sanitation Act and inititate consultations in Tarawa and three islands
				Travel International	Trips	3	11,000.00	33,000.00			11,000.00	11,000.00	11,000.00			33,000.00	AE	Return airfares USD 3500/pax; DSA at USD200 10 days per trip
				Consultant/Firm - Local	W/Day	90	400.00	36,000.00			28,800.00	7,200.00				36,000.00	AF	on-ground support for environmental, social, gender, socio economic assessments
				Local Travel	Trips	3	7,500.00	22,500.00			7,500.00	7,500.00	7,500.00			22,500.00	AG	Return airfares USD 500/pax for (1 international consultant, 1 local consultant, 3 Govt = 5 pax) @ DSA 200 & 5 days per trip
				Workshops/Meetings/Consultations	Events	5	3,500.00	17,500.00			7,000.00	7,000.00	3,500.00			17,500.00	AH	consultations and workshops in Tarawa and three islands on development of Water and Sanitation Strategy and Act
				Publishing	Lumpsum	1	5,000.00	5,000.00				5,000.00				5,000.00	AI	Editing, desktop publishing and printing of drafts and materials for stakeholder consultations
				Sundries	Lumpsum	1	2,000.00	2,000.00				2,000.00				2,000.00	AJ	on-ground travel costs, cultural customs
Component 3	Outcome 3.1 Equitable access to safe drinking water and clean freshwater for other water uses is in place in the selected island communities	Output 3.1.1 Integrated Community Water Management Plans - Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water.	Activity 3.1.1.1 Development of integrated community water management plans for island water supply sustainability including asset management, maintenance and repairs , water safety plans and drought response plans Activity 3.1.1.2 Agreement with the national government on future funding arrangements for	Consultant/Firm - international	W/Day	0	800.00	-	410,400.00	416,400.00	-	-	-			-	AL	Partnership Facilitator - 90 days (4.5 months) will ensure the communication and feedback pathways, and relationships are established and maintained between the project team and the outer islandsfor on-ground development and establishment of island coordination mechanisms to sustainably manage water resources.
				Island coordinators - Local Consultants	month	118.8	2,500.00	297,000.00			59,400.00	59,400.00	59,400.00	59,400.00	59,400.00	297,000.00	AE	3 x island coordinators 30 months each over duration of the project - assist in the implementation of activities in the islands through logistical support, stakeholder engagement, communication and feedback of project information and outputs, ensuring the water quality testing and monitoring is continued to be undertaken, and reporting on actions undertaken on island
				Travel international	Trips	6	4,900.00	29,400.00				20,000.00	9,400.00			29,400.00	AF	Return airfares USD 3500/pax; DSA at USD200 7 days per trip
				Travel local	Trips	6	6,000.00	36,000.00				18,000.00	18,000.00			36,000.00	AG	Return airfares USD 500/pax for (1 international consultant, 1 local consultant, 1 Govt 1 PMU = 4 pax) @ DSA 200 & 5 days per trip
				Workshops/Training/Meeting	Events	12	1,500.00	18,000.00				9,000.00	9,000.00			18,000.00	AH	Stakeholder engagements - consultations, workshops, training for developing plans
				Publications including translations	Package	1	30,000.00	30,000.00					10,000.00	20,000.00		30,000.00	AI	Translation costs, Editing, desktop publishing and printing of plans for communities
		Output 3.1.2 Equitable and efficient coordination arrangements for	Activity 3.1.2.1	Consultant - International	W/Day	0	800.00	-								-	AJ	included in 3.1.1
				Consultant local - island coordinators	month	0	2,500.00	-								-	AK	included in 3.1.1
				Travel - international	Trips	0	4,900.00	-								-	AL	included in 3.1.1

		water supply at all levels, from the household to the national government levels	Empowering community and government in joint decision-making	Travel local	Trips	0	6,000.00	-	6,000.00							-	AM	included in 3.1.1
				Workshops /Training /Meeting	Events	6	1,000.00	6,000.00						3,000.00	3,000.00	6,000.00	AN	stakeholder consultations, 2 events per island for 3 islands @ USD 1000 per event
				Publications including translations	Package	0	20,000.00	-								-	AO	included in 3.1.1
Component 4	Outcome 4.1 Availability of long-term sustainable supplies of safe drinking water, clean freshwater for other water uses, and effective, affordable maintenance arrangements are in place in the three island communities	Output 4.1.1 Completion of new and repaired infrastructure and water treatment systems designed to fill in the current supply gaps, including assessment of potential new technologies.	Activity 4.1.1.1 Design and costing of preferred options to fill in gaps in the current water supply systems Activity 4.1.1.2 Construction of new water supply infrastructure and water treatment systems Activity 4.1.1.3 Supply and safe storage of spare parts and maintenance equipment and tools, and training of local technicians in basic water supply repairs	Company /Firm local - new Infrastructure /technologies, Others	Package	3	1,260,000.00	3,780,000.00	5,796,000.00	5,796,000.00		2,646,000.00	1,134,000.00			3,780,000.00	AP	Supply all required materials for installation of new water insfrastructure on 3 islands, as determined from plans under output 2.1.2 which may include household rainwater harvesting
				Spare parts, tools, maintenance support, extended waranty	Package	3	120,000.00	360,000.00				120,000.00	120,000.00	120,000.00		360,000.00	AQ	package = 3 islands @ USD 120,000 each
				Transportation /Shipping to the outer islands	Package	1	100,000.00	100,000.00				100,000.00				100,000.00	AR	Transportation /shipping to the 3 islands of materials and tools.
				Workshop/Training/Meeting	Events	6	1,000.00	6,000.00				3,000.00	3,000.00			6,000.00	AS	Training on trouble shooting, maintenance - 2 per island
				Travel - Local	Trips	10	25,000.00	250,000.00			25,000.00	225,000.00				250,000.00	AT	Return airfares for 10 pax @ USD 500/pax; DSA USD200/pax/day for 10 days per trip
				Company /Firm - water treatment systems for new infrastructure	Package	3	300,000.00	900,000.00			300,000.00	600,000.00				900,000.00	AU	Supply & installation of water treatment systems at the 3 islands - includes repaired water infrastrures and new water infrastructures.
				Spare parts, tools, maintenance support, extended waranty	Package	3	100,000.00	300,000.00				100,000.00	100,000.00	100,000.00		300,000.00	AV	package = 3 islands @ USD 50000 each
				Transportation /Shipping to the outer islands	Package	1	100,000.00	100,000.00				100,000.00				100,000.00	AW	Transportation /shipping to the 3 islands of materials and tools.
Component 5	Outcome 5.1 Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water	Output 5.1.1 Sustainable water use and safe sanitation practices knowledge disseminated to the three selected	Activity 5.1.1.1 Implementing approaches aimed at inducing long-term changes to behaviours and practices in water, sanitation, and hygiene Activity 5.1.1.2 Awareness raising and education on the importance of water conservation under drought conditions, safe sanitation practices and protection of fragile water sources on the three islands	Company /Firm	Package	1	60,000.00	60,000.00	247,000.00	247,000.00	12,000.00	36,000.00	12,000.00			60,000.00	AX	Development and provision of WASH activity and communication products (implementing local practice and raising awareness in communities) complementary to existing UNICEF program; including development of guidebook
				Travel international	Trips	4	5,500.00	22,000.00			5,500.00	5,500.00	5,500.00	5,500.00		22,000.00	AY	Return airfares for 10 pax @ USD 500/pax; DSA USD200/pax/day for 10 days per trip
				Travel local	Trips	6	6,000.00	36,000.00				6,000.00	12,000.00	12,000.00	6,000.00	36,000.00	AZ	Return airfares for 10 pax @ USD 500/pax; DSA USD200/pax/day for 10 days per trip
				Publishing	Package	1	30,000.00	30,000.00				10,000.00	10,000.00	10,000.00		30,000.00	BA	Development, Editing, translation, desktop publishing and printing of Knowledge products for islands and WSED
				Awareness /dissemination costs	Package	3	15,000.00	45,000.00				10,000.00	10,000.00	15,000.00	10,000.00	45,000.00	BB	
				Consultants/firm - Local	Package	3	12,000.00	36,000.00						20,000.00	16,000.00	36,000.00	BC	Local consultants/firm - to develop at least 6 casestudies demonstrating project outcomes
				Workshop/Training/Meeting	Events	6	1,000.00	6,000.00				3,000.00	3,000.00			6,000.00	BD	Community consultations - 2 per island
				Translation to local language costs	W/Day	30	400.00	12,000.00				3,000.00	3,000.00	3,000.00	3,000.00	12,000.00	BE	Local translators assisting with events and meetings
Total Outcome Budget										**8,421,200.00**	**1,962,080.00**	**4,453,520.00**	**1,540,300.00**	**367,900.00**	**97,400.00**			
Programme Management Unit (PMU) placed with the Executing Entity				Project Manager	Month	60	4,500.00	270,000.00			54,000.00	54,000.00	54,000.00	54,000.00	54,000.00	270,000.00	BF	Project Manager for 60 months
				Project Officer - Administration, logistics	Month	60	2,500.00	150,000.00	Actual amount and % of PEC requested:	Maximum PEC that can be requested:	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00	150,000.00	BG	Project Officer for 60 months (Administration & Logistics)
				Project Officer - Finance & Procurement	Month	60	2,500.00	150,000.00			30,000.00	30,000.00	30,000.00	30,000.00	30,000.00	150,000.00	BH	Project Officer for 60 months (Finance & Procurement)
				Consultant/Firm - Communications	Package	1	63,000.00	63,000.00			12,600.00	12,600.00	12,600.00	12,600.00	12,600.00	63,000.00	BI	For developing communication products on the outcomes and progress for project visibility
				Consultant/ Firm - Monitoring and Evalua	Package	1	40,000.00	40,000.00			20,000.00		10,000.00		10,000.00	40,000.00		technical assistance for project monitoring and evaluation
				Office equipment, supplies, furniture, etc	Year	5	2,500.00	12,500.00			10,000.00	1,000.00	500.00	500.00	500.00	12,500.00	BJ	PMU laptops and equipment for day to day work
				Communication /internet costs/Utilities	Year	5	2,000.00	10,000.00	**800,000.00**	**800,014.00**	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	10,000.00	BK	Contribution to internet and utility feeds
				Travel	Year	5	9,000.00	45,000.00			9,000.00	9,000.00	9,000.00	9,000.00	9,000.00	45,000.00	BL	PMU travel for project related training and activities
				Financial Audits	Year	5	4,500.00	22,500.00			4,500.00	4,500.00	4,500.00	4,500.00	4,500.00	22,500.00	BM	Annual audit budget
				Inception meeting	Package	1	20,000.00	20,000.00			20,000.00					20,000.00	BN	Inception Meeting
				Workshop/Training/Meeting	Year	5	3,400.00	17,000.00			3,400.00	3,400.00	3,400.00	3,400.00	3,400.00	17,000.00	BO	Project Steering Committee Meetings
																-	BP	Contribution to office space and facilities costs
									9.50%	**9.50%**	-							
Total PMC Budget								800,000.00			**195,500.00**	**146,500.00**	**156,000.00**	**146,000.00**	**156,000.00**			

Totals	*2,157,580.00*	*4,600,020.00*	*1,696,300.00*	*513,900.00*	*253,400.00*	*9,221,200.00*	
Disbursement 1	2,157,580.00						
Disbursement 2		4,600,020.00					
Disbursement 3			1,696,300.00				
Disbursement 4				513,900.00			
Disbursement 5					253,400.00		

			9,221,200.00
Total Outcome Budget			**8,421,200.00**
Project Management Unit	9.5% requested		**800,000.00**
Sub-Total			**9,221,200.00**
IE Management Fee - Up to 8.5% of the Sub-Total			**778,800.00**
Total Project Budget (requested from the Adaptation Fund)		**$**	**10,000,000.00**
			$ -

8.45

Implementing Entity Fees	Project Implementation & Supervision	400,000.00	Finalise project implementation arrangements, task manager, supervisory missions, monitoring and reporting, financial management, mid-term review, technical assistance
	Project completion, evaluation and closure	78,800.00	Oversee the preoparation of project completion, independent terminal evaluation including mission costs, project and financial closure.
	IA Programme Support Costs	160,000.00	Finance, Legal, IT, Communications, Knowledge Management,
	Project Development	140,000.00	Develop, new AF project proposal (including mission travel, project planning workshop)
Total IE fee budget		**778,800.00**	8.45% of the Project Outcome Budget + Executity Entity Budget

A	2 Local consultants to assist EE in the rapid assessments@ daily rate USD400/pax for 20 days (can combine with Budget note H)
	see Budget Note P
	see Budget Note T
B	2 consultants & 1 PMU & 1 Govt @ USD 500/pax/return airfare 2 trips per island, 3 islands
C	2 consultants & 1 PMU & 1 Govt @ USD 200 DSA for 30 days
D	3 consultations in the 3 islands @ USD 1000 /island for refreshments/lunchs for 25 people @ USD 40/pax
E	package = 3 islands @ USD 125,000 for the company/firm includes provision of all materials & tools for the repairs of existing water infrastructure
0	package = 3 islands @ USD 50000 each
F	Transportation /shipping to the 3 islands at USD 50,000 per island to transport the materials and tools.
G	Budget estimate for local labour to assist the company/firm on the repair works at USD 30,000 per island.
H	2 Local consultants to assist EE in the assessments@ daily rate USD400/pax for 20 days (can combine with Budget note A)
I	see Budget Note P
J	3 consultations in the 3 islands @ USD 1000 /island for refreshments/lunchs for 25 people @ USD 40/pax
K	2 consultants & 1 PMU & 1 Govt @ USD 500/pax/return airfare 2 trips per island, 3 islands
L	2 consultants & 1 PMU & 1 Govt @ USD 200 DSA for 30 days
M	Treatment systems for the 3 islands at USD 50,000 per island.
N	included in output 1.1.2 - see row 12
O	on-ground travel costs, cultural customs
P	2 International consultants @ USD800/day/pax for 200 each days over 18 months Provision of support and advice for activities under Component 2 (e.g. Water Resource Assessments for Aranuka & Tab South, update for Makin, long term sustainability plans); Component 1 (assessments and water testing/monitoring), Component 3 (water management plans) and Component 4 (infrastructure works). Provision of training.
Q	Technicians to work with WSED
R	3 return airfares for the 2 consultants international, airfares USD 3500/pax, DSA 200/pax for 21 days per trip
S	2 international & 2 local consultants 2 EE personnel @ return airfare Usd 500/pax, USD 200 DSA per pax for 10 days each trip
T	Workshops and training for WSED
U	GIS package or other relevant as recommended by technical specialist
V	Upgrade hardware e.g. laptops, printers and software for WSED / MISE
W	Technical assistance for environmental, social, socio-economic assessments on options and development of long-term sustainability plans. ESS expert, gender expert, economist / socio-economic analyst
X	Return airfares USD 3500/pax; DSA at USD200 10 days per trip
Y	on-ground support for environmental, social, socio economic assessments
Z	Return airfares USD 500/pax for (1 international consultant, 1 local consultant, 3 Govt = 5 pax) @ DSA 200 & 5 days per trip
AA	consultations and workshops in Tarawa and three islands on development of longterm plans

AB	printing and publishing of plans and materials for stakeholders
AC	on-ground travel costs, cultural customs
AD	To draft National Water strategy and Water and Sanitiation Act and inititate consultations in Tarawa and three islands
AE	Return airfares USD 3500/pax; DSA at USD200 10 days per trip
AF	on-ground support for environmental, social, gender, socio economic assessments
AG	Return airfares USD 500/pax for (1 international consultant, 1 local consultant, 3 Govt = 5 pax) @ DSA 200 & 5 days per trip
AH	consultations and workshops in Tarawa and three islands on development of Water and Sanitation Strategy and Act
AI	Editing, desktop publishing and printing of drafts and materials for stakeholder consultations
AJ	on-ground travel costs, cultural customs
AL	Partnership Facilitator - 90 days (4.5 months) will ensure the communication and feedback pathways, and relationships are established and maintained between the project team and the outer islandsfor on-ground development and establishment of island coordination mechanisms to sustainably manage water resources.
AE	3 x island coordinators 30 months each over duration of the project - assist in the implementation of activities in the islands through logistical support, stakeholder engagement, communication and feedback of project information and outputs, ensuring the water quality testing and monitoring is continued to be undertaken, and reporting on actions undertaken on island
AF	Return airfares USD 3500/pax; DSA at USD200 7 days per trip
AG	Return airfares USD 500/pax for (1 international consultant, 1 local consultant, 1 Govt 1 PMU = 4 pax) @ DSA 200 & 5 days per trip
AH	Stakeholder engagements - consultations, workshops, training for developing plans
AI	Translation costs, Editing, desktop publishing and printing of plans for communities
AJ	included in 3.1.1
AK	included in 3.1.1
AL	included in 3.1.1
AM	included in 3.1.1
AN	stakeholder consultations, 2 events per island for 3 islands @ USD 1000 per event
AO	included in 3.1.1
AP	Supply all required materials for installation of new water insfrastructure on 3 islands, as determined from plans under output 2.1.2 which may include household rainwater harvesting
AQ	package = 3 islands @ USD 120,000 each
AR	Transportation /shipping to the 3 islands of materials and tools.
AS	Training on trouble shooting, maintenance - 2 per island
AT	Return airfares for 10 pax @ USD 500/pax; DSA USD200/pax/day for 10 days per trip
AU	Supply & installation of water treatment systems at the 3 islands - includes repaired water infrastrures and new water infrastructures.
AV	package = 3 islands @ USD 50000 each
AW	Transportation /shipping to the 3 islands of materials and tools.
AX	Development and provision of WASH activity and communication products (implementing local practice and raising awareness in communities) complementary to existing UNICEF program; including development of guidebook

AY	Return airfares for 10 pax @ USD 500/pax; DSA USD200/pax/day for 10 days per trip
AZ	Return airfares for 10 pax @ USD 500/pax; DSA USD200/pax/day for 10 days per trip
BA	Development, Editing, translation, desktop publishing and printing of Knowledge products for islands and WSED
BB	0
BC	Local consultants/firm - to develop at least 6 casestudies demonstrating project outcomes
BD	Community consultations - 2 per island
BE	Local translators assisting with events and meetings
BF	Project Manager for 60 months
BG	Project Officer for 60 months (Administration & Logistics)
BH	Project Officer for 60 months (Finance & Procurement)
BI	For developing communication products on the outcomes and progress for project visibility
0	technical assistance for project monitoring and evaluation
BJ	PMU laptops and equipment for day to day work
BK	Contribution to internet and utility feeds
BL	PMU travel for project related training and activities
BM	Annual audit budget
BN	Inception Meeting
BO	Project Steering Committee Meetings
BP	Contribution to office space and facilities costs

Republic of Kiribati

Enhancing the Resilience of the Outer Islands of Kiribati

Environmental and Social Management Plan

Enhancing the Resilience of the Outer Islands of Kiribati

Environmental and Social Management Plan

Quality Information

Document	Environmental and Social Management Plan
Date	November 2021
Prepared by	SPREP

Revision History

Revision	Revision Date	Details
A	November 2021	Draft ESMP for Project Preparation
B	May 2024	Updated to align with revised project proposal

Glossary

AF	Adaptation Fun
AP	Affected Persons
CFD	Climate Finance Division
DPO	Disabled Person's Organisation
EE	Executing Entity
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Safeguards
GoK	Government of Kiribati
GRM	Grievance Redress Mechanism
IC	Island Council
IE	Implementing Entity
ILO	International Labour Organisation
KIRIWATSAN	Kiribati Water and Sanitation Project
KMS	Kiribati Meteorological Society
MELAD	Ministry of Environment, Land and Agriculture Development
MFED	Ministry of Finance and Economic Development
MCIA	Ministry of Culture and Internal Affairs
MISE	Ministry of Infrastructure and Sustainable Energy
MoH	Ministry of Health
MWYSA	Ministry of Women, Youth and Social Affairs
NGO	Non-Governmental Organisation
OHS	Occupational Health and Safety
PMU	Project Management Unit
SCT	Self-Composting Toilets
SECP	Stakeholder Engagement and Consultation Plan
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of Pacific Regional Environmental Program
TOR	Terms of Reference
UNICEF	United Nations Children's Fund
USAID	United States Aid Program
WASH	Water, Sanitation and Hygiene
WHSS	Water Harvesting Storage System
WIW	Women's Island Worker
WSE	Water and Sanitation Engineering Unit

Contents

1 Introduction

1.1 Project Overview

The Republic of Kiribati is located in the Central Pacific and is one of the smallest, most remote, geographically dispersed and climate vulnerable Least Developed Countries (LDC). Comprised of 33 atolls in three groups (Gilbert Islands, Line Islands and the Phoenix Islands), these far-flung atolls are mostly less than two meters above sea level, lack surface water and soil, have fragile groundwater systems and limited terrestrial biodiversity, and are vulnerable to the impacts of climate change.

Water supply issues in Kiribati are amongst the most complex in the world, and feature among the key priorities in the Government's Kiribati Vision 2020 (KV20). Water resources in Kiribati are very vulnerable, limited and scattered and have to be protected and utilized carefully. Households in the outer islands rely on groundwater and rainwater harvesting to provide for their daily water needs including drinking, cooking and washing. However, groundwater resources and rainwater water supply are critically dependent on weather conditions, climate variability and even seawater inundation during extreme sea level events arising from a combination of high tides, storm waves and elevated regional sea levels, affecting water quality and having an increasingly negative impact on health.

The Adaptation Fund's 'Enhancing the Resilience of the Outer Islands Kiribati' project (the Project) responds directly to the Government of Kiribati's KV20 vision for all Kiribati households to have access to potable water and sanitation facilities by 2036. In contribution towards this broad vision, the Project has two core objectives that: (i) people in targeted villages in the outer islands have equitable access to water facilities; and, (ii) people in the targeted villages are using the facilities and train in their maintenance. These objectives will be achieved through four complimentary end-of-project outcomes and six intermediate project outcomes:

End of Project Outcomes:

Component	End of Project Outcomes
Component 1: Rapid response for existing damaged and unused water supply systems in the targeted villages	**Outcome 1.1:** The selected three island communities have repaired and/or replaced water supplies and safe drinking water and clean freshwater for other water uses. **Outcome 1.2:** Incidence of water borne diseases on the three islands continues to decline
Component 2 Strengthening Government of Kiribati's capacity and capability in sustainable water resource management	**Outcome 2.1:** Strengthened WSED (MISE/GoK) capacity and capability to provide comprehensive water assessments, analyses, and reports at regional and international standards. **Outcome 2.2:** Strengthened planning process for developing sustainable supplies of safe drinking water, clean freshwater for other water uses, and effective, affordable maintenance arrangements. Outcome 2.3: Commenced strengthening of policy and legal framework for sustainable management of water resources & capacity development
Component 3	**Outcome 3.1:** Equitable access to safe drinking water and clean freshwater for other water uses is in place in the selected island communities

Strengthening coordination mechanisms and community participation for water resource management	
Component 4 Construction and repair of infrastructure to adapt to future climate impacts	**Outcome 4.1:** Availability of long-term sustainable supplies of safe drinking water, clean freshwater for other water uses, and effective, affordable maintenance arrangements are in place in the three targeted island communities
Component 5 Education, awareness raising and knowledge management	**Outcome 5.1:** Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water

This project focuses on three outer islands as endorsed by the Government of Kiribati Cabinet in November 2021:

MAKIN: Makin is the second smallest inhabited island in the Gilbert Group, situated 190 kilometers north of Tarawa. Makin's land area is 7.89 square kilometers with a width varying from 50m to 2km, consisting of five main islets - the largest two of which, namely Makin and Kiebu, are inhabited. The islet of Makin has the largest land area of 6.7km^2. Like other coral islands and atolls Makin has sandy and porous soils and is on average two meters above sea-level. The 2020 census noted the population was 1,914 people or 1.6 percent of the Kiribati population total.

ARANUKA: Aranuka is a lagoonal atoll located just north of the equator in the Central Gilbert Islands, with a land area of 11.6 square kilometers. It consists of four villages on the island and one village on the islet of Takaeang. Aranuka is one of the less populous islands in Kiribati with a population of 1,221 people or one percent of Kiribati's total population.

TABITEUEA SOUTH: Tabiteuea is separated into two islands with Tabiteuea South (Tab South) starts from Aiwa in the centre of Tabiteuea island and, heading south, includes Tewai, Taungaeaka, Buariki, Nikutoru, Katabanga and the islet of Takuu as the southernmost village. The total population on Tabiteuea South is 1,356 people.

1.2 Purpose of ESMP

This Environmental and Social Management Plan (ESMP) has been prepared to document the environmental and social risks and impacts presented by the Project and sets out the associated mitigation and management measures that will be implemented as part of project delivery.

Project screening based on field investigations, stakeholder meetings and a desktop study of similar projects in the region as well as a review of potential options confirms an assessment of Category B for the Project. It finds that potential impacts are less than significant, site specific, mostly reversible and that a range of potential measures for mitigation can be readily designed in most cases. In accordance with the SPREP's and Adaptation Funds (AF) Environmental and Social Safeguard (ESS) policy, an environmental assessment was required to adequately screen and assess potential environmental and social impacts, and to prepare an ESMP.

Therefore, this ESMP has been produced to ensure the integration of environmental and social stewardship into the Project as required by the Adaptation Fund for funding approval and SPREP's Environmental and Social Management System (ESMS) Policy. The ESMP can also assist to meet the Republic of Kiribati's relevant environmental and social safeguard laws and regulations.

At this stage of project preparation, there are still some unknowns such as the design of the specific water security interventions and their specific locations therefore this ESMP serves as environmental and social framework and provides guidance for screening of potential environmental and social risks, identify mitigation and management measures for environmental and social risks identified.

This ESMP will be updated or revised to the appropriate safeguard instrument once the scope, design and the specific activities and sub-projects are final.

1.3 Integration of ESMP

It is the responsibility of SPREP as the Implementing Entity (IE) and the Ministry of Infrastructure and Sustainable Energy (MISE) as Executing Entity (EE) to ensure that the ESMP is fully integrated into the Project. It is the IE's responsibility that proper processes and monitoring are in place to ensure the Project is delivered with no significant negative environmental or social impact.

SPREP and MISE will:

- Ensure that all relevant government employees and contractors are sensitized on aspects of the plan and received appropriate training to fulfil their individual environmental and social responsibilities.
- Ensure that the necessary resources and skills are retained to successfully carry out all mitigation measures.
- Formally monitor and report on the environmental and social performances of all activities.
- Require that contract services manage their environmental and social performance in line with this ESMP.

MISE will also coordinate the Project Management Unit (PMU) to:

- Continually monitor and report as needed issues related to social and environmental risk.
- Raise awareness amongst target communities on the Environmental and Social Policy of the AF and this ESMP.

The ESMP shall form part of any bid documentation or Terms of Reference (TOR), and it shall be the IE's responsibility to ensure that ALL procurement documents and contractual specifications are subject to review against this ESMP to ensure that all appropriate safeguard measures are captured at the bid stage and in all contracts.

It is further the responsibility of the IE to ensure that this ESMP is considered in review of any TOR for Technical Assistance developed for the Project. The safeguard requirements for any design or supervision of the Project will be fully integrated into TOR to ensure that all safeguard responsibilities allocated within the ESMP are realized at the tender stage.

In this way, the ESMP will be fully integrated within the Project so that the required measures will be fully appreciated by all responsible parties and successful implementation will be achieved.

2 Policy, Legal and Regulatory Framework

2.1 Adaptation Fund Safeguard Requirements

The Adaptation Fund Environmental and Social Safeguard Policy requires that all projects be screened for their environmental and social impacts, that those impacts be identified, and that the proposed project be categorised according to its potential environmental and social impacts. Regardless in which category a project is screened, all environmental and social risks shall be adequately identified and assessed by the IE in an open and transparent manner with appropriate consultation.

The scope of the environmental and social assessment shall be commensurate with the scope and severity of potential risks. The assessment should assess all potential environmental and social risks and include a proposed risk management plan, or in this case an Environmental and Social Management Plan.

All projects supported by the AF shall be designed and implemented to meet the ESS Policy principles, although it is recognised that depending on the nature and scale of a project not all principles will be relevant to every project.

2.2 SPREP Environmental and Social Management System Policy

SPREP also implements all projects according to their own Environmental and Social Management System (ESMP) through a series of 'Environmental and Social Standards'. SPREPs ESMS set the policy and minimum sustainability requirements for SPREP and its implementing and executing partners and enables SPREP to anticipate and manage emerging environmental and social issues.

The SPREP ESMS responds directly to the Adaptation Funds ESP and sets the provisions which are to be used on all AF projects where SPREP is the IE.

Therefore, the ESMP was prepared in accordance with the SPREP ESMS policy and requirements which also satisfied the Adaptation Funds ESP. The table below highlights the SPREP standards in relation to the AF principles.

Adaptation Fund Principle	Relevant SPREP ESMS Standard
AF Principle 1: Compliance with the Law	SPREP Environmental and Social Policy (Clause 3)
AF Principle 2: Access and Equity	SPREP Principle 1: Human Rights
AF Principle 3: Marginalized and Vulnerable Groups	SPREP Principle 1: Human Rights; and SPREP Safeguard 1: Assessment and Management of Environmental and Social Risks and Impacts (requirement 3)
AF Principle 4: Human Rights	SPREP Principle 1: Human Rights
AF Principle 5: Gender Equality and Women's Empowerment	SPREP Principle 2: Gender Equality
AF Principle 6: Core Labour Rights	SPREP Safeguard 4: Labour and Working Conditions
AF Principle 7: Indigenous Peoples	SPREP Safeguard 9: Indigenous Peoples
AF Principle 8: Involuntary Resettlement	SPREP Safeguard 7: Land Acquisition and Involuntary Resettlement
AF Principle 9: Protection of Natural Habitats	SPREP Safeguard 8: Biodiversity Conservation and Sustainable Management of Living Natural Resources
AF Principle 10: Conservation of Biological Diversity	SPREP Safeguard 8: Biodiversity Conservation and Sustainable Management of Living Natural Resources SPREP Principle 5: Biodiversity and Ecosystem Services
AF Principle 11: Climate Change	SPREP Principle 4: Climate Change
AF Principle 12: Pollution Prevention and Resource Efficiency	SPREP Safeguard 5: Resource Efficiency and Pollution Prevention SPREP Principle 6: Waste Management
AF Principle 13: Public Health	SPREP Safeguard 6: Community Health, Safety and Security
AF Principle 14: Physical and Cultural Heritage	SPREP Safeguard 10: Cultural Heritage
AF Principle 15: Lands and Soil Conservation	SPREP Safeguard 8: Biodiversity Conservation and Sustainable Management of Living Natural Resources

2.3 Kiribati Environment Act 2021

The Environment Act 2021 is the primary environmental legislation that provides for the protection, improvement and conservation of the environment in the Republic of Kiribati. The Act is supported by the Environmental (General) Regulations 2017. Under Part IV of the *Environment Act 2021* an Environment Licence is required for all activities that are deemed environmentally significant, as listed under the Schedule of the Regulation and the requirements for the Environmental Management Plan (EMP)

The 1999 Principal Act established the Environment and Conservation Division (ECD) within the Ministry of Environment, Land and Agricultural Development (MELAD) as the line Division with the mandate for environmental protection, resource conservation and sustainable development. The ECD must respond to all environmental safeguard issues arising in Kiribati. This includes advising project proponents on environment licence requirements including need for the environmental management plan, environmental impact assessment (EIA), inspecting environmental violations and compliance issues and providing enforcement to correct non-compliance. The ECD must also deliver environmental communication, education and public awareness on Kiribati's environment protection and management and protection requirements at the local, national, regional and international level.

The Environment Act 2021 provides for the protection, restoration and enhancement of Kiribati's natural, social and cultural environment through the following thematic areas and programs.

- Waste management, litter and pollution prevention.
- Protection, conservation, management, and sustainability of biodiversity
- Climate Change
- Environmental Licensing and EIA system
- Enforcement and Compliance
- Data management, awareness and outreach

2.4 Kiribati State Lands Act 2001

Empowers the State, as the owner of land, to make land available for development purposes including for the permanent settlement of citizens and their families. The State is equally empowered to reverse the transfer of land back to the State, or to another party.

Government Approved Compensation Rate for Trees, Crops and Buildings sets out the current compensation rates for all trees, crops and building structures approved by Cabinet. The rates will apply in settings where coconut tree(s) need to be removed. No other trees of values were sighted at any of the proposed sites. The compensation rates provide three different values for coconut trees: AUD $80 for fruit bearing, $40 for non-fruit bearing with trunk and $2 for non-fruit bearing without trunk top.

3 Disclosure

As part of the requirements of national laws and AF ESS policy, the ESMP is to be publicly disclosed by MISE who will ensure the ESMP is disclosed in hard copy and online, in a manner that can be easily downloaded with existing network bandwidth and the accessibility that people currently have to the internet. A public flyer and/or radio advert will alert the public to the disclosure of the instruments. Likewise, MISE will ensure that several copies of all prepared safeguard instruments are available locally at the relevant outer island offices and easily accessible to affected groups and local non-governmental Organizations (NGOs).

The ESMP will be reviewed, updated, and approved if necessary. For each approved updated version of this ESMP, MISE will be responsible for disclosure through the above channel

4 Stakeholder Engagement

Stakeholders will require engagement across the project, for physical investments, management planning, policy development and other aspects.

4.1 Stakeholder Identification

A stakeholder is defined as a person or group who has an interest in a particular decision or activity relating to the project, either as an individual or as a representative of a group. This includes people who can influence a decision, or can influence actions, as well as those affected by it.

For this project, stakeholder groups will vary across the project activities, islands, and sites. Stakeholders have been and will continue to be identified on an ongoing basis by:

- Identifying the various categories of parties who may be affected by or interested in the project; and
- Identifying specific individuals or organizations within each of these categories considering:
    - The expected impact area of the project is the geographic area over which it may cause impacts (both positive and negative) over its lifetime, and therefore the localities within which people and businesses could be affected.
    - The nature of the impacts that could arise and therefore the types of government bodies, NGOs, academic and research institutes, and other bodies who may have an interest in these issues.

4.2 Stakeholder Groups

Stakeholder groups applicable to the project are listed and described below.

Category	Group	Relevance
National Government	Ministry of Finance and Economic Development / Climate Finance Division	Responsible for coordinating the development of climate adaptation projects proposed for the Republic of Kiribati. Responsible for engaging with the IE and the Government of Kiribati throughout the planning phase through to project approval.
	Ministry of Infrastructure and Sustainable Energy	The Executing Entity for the proposed project and the Ministry in charge of the management and distribution of water resources with a Water Technical present on each outer island.
	Ministry of Women, Youth and Social Affairs	Coordinates efforts to engage and empower women and youth with representatives in each of the outer islands.
	Ministry of Health	Responsible for public heath related water quality monitoring on outer islands.
	Ministry of Culture Internal Affairs / Local Government Division	Coordinates local government representation and consultations on outer islands through Island Councils.
	Ministry of Environment, Land and Agricultural Development / Lands Department	Responsible for implementing and enforcing the national environment safeguards requirements, the management of land leasing processes, land surveying and payment of land leases to landowners.
Island Representatives	Island Council	The Islands Councils carry out the work of the local government on the islands including management of water resources at the island level.
	Mayor	The elected leader of the Island Council

Category	Group	Relevance
	Island Council Clerk	Often the main point of contact on the islands for project teams to facilitate site visits and coordinate meetings on island. Also, a key player in the communication chain in relation to reporting.
	Old Men's Group	The elders who play a critical role in guiding the communities towards decision making and are a key support to the Island Council in implementing any activities at the community level. The support of the Old Men's Group is necessary for successful project implementation. This group are also holders of traditional and historical knowledge on the islands.
	Women's Interest Workers	Each island has a Women's Interest Worker (WIW) from the MWYSA and they coordinate activities which empower women into decision making and support income development
	Youth Affair's Representatives	Each island has a youth's representative from the MWYSA, and they coordinate activities which integrate the youth into the decision making and knowledge sharing space in the Island Council. A key stakeholder given the level of reliance on the islands for the physical manpower of the youth.
	Water Technician	A skilled paid employee of the MISE responsible for the maintenance and installation of water extraction infrastructure on each of the islands.
	Social Affairs Representatives	Each island has a female social affairs representative from the MWYSA, and they coordinate activities which empower women and support social development.
Local Groups and NGOs	UNICEF	Based in Tarawa with extensive and ongoing activities in the outer islands related to WASH programs. Many of the UNICEF activities align with the proposed activities of this project and therefore close consultation will help to maximise results, incorporate lesson learnt and reduce duplication across shared activities.
	Disabled Persons Organisations	Te Toa Matoa is a DPO based on Tarawa but represents disabled people on the outer islands of Kiribati and are a key stakeholder when considering equitable access to water resources for people with mobility issues.
	Women's Groups	These groups are often associated with their churches and are an important representative of women at the community level.
	Island Church Groups	Important representatives of the communities, and often have a role in play in hosting and managing distribution of some communal water harvesting systems.
Project Affected Communities and Individuals	Local Communities	The construction phase is likely to have minor short-term impacts on the communities in and around the project sites (works, ancillary and haulage routes). The operational phase of the project is likely to have long term positive impacts on the community. Consultation for both phases will be critical.
	Landowners	Owners of sites selected for water infrastructure upgrade/installation under this project are critical stakeholders are their (and their heirs) cooperation during the land leasing process is a key determiner for project success.

4.3 Stakeholder Engagement and Consultation Plan (SECP)

The SECP needs to be implemented, updated and refined throughout the lifecycle of the Project. During this process the focus and scope of the SECP will change to reflect the varying stages of project implementation and to encompass any changes to project design. The implementation plan is included in Table 1Table 1.

The mode of consultation will vary according to the participants, but in all cases will promote participation by ensuring that the venue is culturally appropriate and accessible for all groups, the timing convenient and the manner of conduct of the consultation socially and culturally appropriate. It shall be necessary to ensure that key consultations are held outside of the Maneaba system to encourage meaningful participation from those not traditionally able to talk in a Maneaba system. Consultations will be announced to give sufficient notice for participants to prepare and provide input to project design.

Minutes will be recorded for all consultation meetings. Consultations undertaken prior to finalisation of the ESMP have been addressed and incorporated into project design and/or management measures where appropriate throughout the ESMP. For subsequent consultations, the EE will be responsible for taking any comments forward to either the IE or the Contractor for incorporation. Minutes of consultations and actions taken based on those comments will be included in project reporting.

4.3.1 Implementation Plan

The Implementation Plan (Table 1) for the Project constitutes the following components:

Activity: the various operational consultation activities that will be undertaken as part of the SECP
Objective: the target that each activity needs to reach
Stakeholder: the various stakeholders to be targeted during implementation of the SECP activity; and
Medium: the method by which the engagement or consultation will be done

The EE PCU will be responsible for facilitating and undertaking consultations with representatives.

Table 1: Stakeholder Engagement and Consultation Implementation Plan

No	Project Activity	Timetable	Objective	Stakeholders	Medium
A: Water Security Interventions					
A1	Disclosure of the ESMP	On completion of ESMP	To disclose ESMP	All identified	Public flyer, radio announcement, Maneaba and Island Council meetings, hard copies on islands and website.

No	Project Activity	Timetable	Objective	Stakeholders	Medium
A2	Selection of 'low hanging fruit' activities	During first 6 months of project scoping	Engage with communities on the proposed site selection for installation or upgrades of 'low hanging fruit'	All identified.	Community meeting with refreshments (separate meetings each for women and youth) Structured local government group meeting with refreshments Informal household interviews
A2	Final selection of project water security and sanitation interventions	Once draft designs have been completed	Seek direction and/or approval from islands on the proposed solutions for the individual islands water supply systems. Seek direction and/or approval from the island communities on proposed sanitation piloting schemes including technology to be used and sites for installation.	All identified.	Community meetings with refreshments (separate meetings each for women and youth) Structured local government group meetings with refreshments. Informal household interviews
A3	Commencement of Works	Two weeks before commencement of any works.	To reconfirm ongoing consultation, feedback and GRM processes	Island Councils Women's Groups Youth Groups Community Landowners	Community Notice Boards Community Meeting
A4	During Works	Midway through construction per island	To identify any risks to successful implementation and ensure that communities are satisfied with the project	All identified	Community meeting with refreshments (separate meetings each for women and youth) Structured local government group meeting with refreshments Informal household interviews Technical capacity building sessions

4.3.2 Resources and Responsibilities

The implementation of the SECP will be the overall responsibility of the EE, with support from the Island Councils and Contractors as required. The EE Communications and Outreach Officer and Gender Officer will be responsible for arranging and facilitating the meetings as is appropriate and they will also be the focal points for all stakeholder queries and contacts in relation to the implementation of the SECP or the GRM.

It is also the responsibility of the Gender Officer to ensure that gender balance is achieved throughout the implementation of the SECP and should ensure culturally appropriate strategies are used to achieve this such as separate meetings for males and females or targeting female input through women's groups.

4.4 Consultation To Date

Consultations of key stakeholders at national, island and public levels and has been undertaken as part of the development of the detailed project plan. The following meetings were held during the September 2019 project planning site visit.

Island	**Community**	**Government**	**NGO / Projects**
South Tarawa	n/a	• Office of the President / Climate Change Unit • Ministry of Finance and Economic Development (MFED) • Climate Finance Division, MFED • Ministry of Infrastructure and Sustainable Energy • Ministry of Women, Youth and Social Affairs (MWYSA) • Ministry of Health (MoH) • Ministry of Environment • Ministry of Culture and Internal Affairs / Local Government Division (MCIA) • Ministry of Internal Affairs / Rural Planning Development • Kiribati Meteorological Services (KMS) • Ministry of Environment / Land and Agriculture Development, Environment & Conservation Division (MELAD)	UNICEF KIRIWATSAN Project (SPC)
Kuria	Island Council Mayor Island Council Clerk Old Men's Group Women's Groups	Water Technician	USAID Drought Management Project

	Youth representative Women Interest Workers (x 4) Social Welfare Group (ASWO)		
Abaiang	Island Council Mayor Island Council Clerk Old Men's Group Women's Groups Youth representative	Water Technician	n/a
Maiana	Island Council Mayor Island Council Clerk Old Men's Group Women's Groups Youth representative	Water Technician	n/a
Makin	Separate FGD for: Island Councils and Mayor Community Leaders Adults Youth Women's Group	Water Technician	n/a

Key recurring themes during the consultations are described below. The input of the communities has been incorporated into project design wherever feasible, otherwise they have been incorporated through the mitigation planning of this ESMP. Full minutes of the community and stakeholder consultations have been included in Appendix 1 and in the Project Proposal Document (for Makin Island).

Land

Almost all previous water investments are on private land. Several of the previous water infrastructure projects on the outer islands have not secured any formal agreements or leases between the private landowner and government for the installation sites. This means that there are many sites on the outer island where the water supply for communities or for several households are dependent on the landowner and his heirs abiding by this arrangement. This brings about an inherent vulnerability and risk to the long-term secure access to this water by the dependant households. It also means that the landowners can claim ownership of all infrastructure installed on the land.

It is critical that this uncertainty is avoided by this project by requiring all infrastructure installations only occur on land that has been formally secured by the processes described in the meeting notes with LNR.

The ESMP details the process to be followed to ensure secure land.

Community Engagement

It has become clear from the site visits and consultations that an important lesson to be learned from previous water security projects is that poor community engagement leads to poor implementation of the Project. Communities have become disengaged from previous water supply projects which has had a detrimental impact especially where significant elements of the projects have required voluntary community contributions through labour and aggregate material. A lack of adequate and considerate consultations which are well planned has also prevented women and youth being able to contribute to the project in any meaningful way. A further negative impact from inadequate consultations has been a general feeling among the communities consulted during this mission that the solutions delivered by previous projects have not met the actual needs of the people on those islands and have been unsuitably designed, located or installed.

Meaningful consultations will be an important part of this project throughout the entire project cycle and the ESMP will contain a Community Engagement Plan which will be implemented by trained a trained Communications Officer and a Gender Officer based in the PMU. The project budget ensures that the PMU can undertake the various consultations that will be required as part of the ESMP.

Equitable Access

One of the Adaptation Fund Safeguard Principles focuses on Equitable Access of project benefits to all, especially marginalised and vulnerable groups. In the context of this project, the benefits can be expected to be freshwater security, improved sanitation and capacity building. There are several areas in the Project design where equitable access could be at risk if not carefully designed. Some of the key risk areas are: no formal agreement between landowner and MISE for installation sites; assets being installed on land leased by other institutions such as churches, schools, clinics, etc; lack of involvement of women, youth and other vulnerable groups in the development of the design solutions or trainings; and, failure to provide a back-up system to any solar pumps installed.

4.5 GRM

Any parties wishing to raise grievances caused by or associated with the project will be able to do so. In the first instance grievances will be managed by the EE Project Management Unit.

A grievance redress mechanism (GRM) is presented below to uphold the project's social and environmental safeguards performance. The purpose of the GRM is to record and address any complaints that may arise during the implementation phase of the project and/or any future operational issues that have the potential to be designed out during implementation phase. It should address concerns and complaints promptly and transparently with no impacts (cost, discrimination) for any reports made by project affected people (APs). The GRM works within existing legal and cultural frameworks, providing an additional opportunity to resolve grievances at the local, project level.

The key objectives of the GRM are:

- Record, categorize and prioritize the grievances.
- Settle the grievances via consultation with all stakeholders (and inform those stakeholders of the solutions);
- Forward any unresolved cases to the relevant authority.

Community level grievances are most likely with the proposed project.

The following process will be used to address the issues and concerns that an affected party (AP) may have. The key point of contact for the AP will be the Island Council who will likely liaise directly with the Contractor, Supervisor or PCU directly. The party receiving the complaint will receive and document all matters and issues of concern from the local community and forward copies of all grievances to the Project Manager.

At all times it is the responsibility of the Project Manager to record, manage and close all grievances. Management of grievances may include issuing instructions to the relevant party to resolve the matter. If the Contractor receives the grievance and is able to effectively resolve the matter to the satisfaction of the AP, the Contractor will provide the Project Manager with the details who will then record the matter.

For concerns such as damage to non-land assets, etc., the AP will discuss this with the council, who will then raise the matter immediately with the offending party or their supervisors, if unresolved at the project site. If the concern can be addressed without delay, and the outcome is satisfactory to the AP, the matter is closed. The Contractor will provide a report to the Project Manager as soon as the complaint has been resolved.

For more extensive complaints such as damage to buildings or land issues such project/Contractor's encroachment on someone's land, the Project Manager will document and record the grievance and manage the response process. APs can submit these types of complaints through any number of channels including via the village council or other third party; directly to the Contractor or project team; in writing; anonymously; verbally; etc. The complaint must be acknowledged within 24 hours of it being lodged. The timing and manner in which it will be resolved will be conveyed to the AP within 48 hours. The delegated party will provide a corrective action report to the Project Manager as soon as the action has been taken.

Should the complainant remain unsatisfied with the response of the delegated party, the complaint will be referred by the Project Manager to the IE, SPREP.

All grievances received and handled will be reported by MISE to SPREP as the IE via periodic reporting. SPREP will review the handling of grievances to ensure they have been handled correctly.

The five-step grievance management process will be applied to the project by the following process:

Table 2: Grievance Redress process in tabulated form

Step	Application/How	Responsibility
Publicize the process	Develop a procedure which explains how the grievance mechanism will work on the specific project site	SPREP, MISE
	Present the grievance mechanism at a public meeting help with affected communities	MISE PCU
Receive and register	Identify locations to receive grievances and ensure accessibility to all affected stakeholders	Receiving authorities (Island Councils, Village Leaders, Construction Supervisors), MISE PCU
	Recognize that some grievances may be submitted in writing while others will be communicated verbally. All grievances are to be treated with the same level of seriousness and respect.	
	Log all complaints into a database	
Review and investigate grievances	Review and investigate grievances	MISE PCU
	Explain the process and the timeframe for the GRM process	
	Appoint an appropriate person to obtain information and investigate.	
Develop resolution options, response to grievances and closeout	Develop a proposed resolution process, involving communities where appropriate	MISE PCU
	Implement the agreed solution	MISE PCU and Receiving Authority
	Follow-up with complainant to ensure satisfaction	
	If unsatisfied: Discuss further options. Identify local partners who might be able to assist in finding solutions	
	If still unresolved, refer matter to third-party mediation or external review.	
Monitor and evaluate	Regularly monitor the number and type of grievances received, resolved and outstanding	MISE, SPREP
	Evaluate trends over time and stages of project development	
	Report all grievances to the SPREP via relevant periodic reporting	MISE

SPREP will also maintain an email-based grievance mechanism, so that the public can also lodge grievances directly to SPREP, should they wish to do so. Lodgment of grievances will follow the processes set out in the SPREP Fraud Manual (See website here: http://www.sprep.org/corporate-documents/sprep-fraud-manual).

5 Environmental and Social Screening

5.1 Introduction

During project planning, the proposed activities were screened against the 15 Environmental and Social Principles of the AF.

As part of their IE status SPREP's internal Environmental and Social Management System (ESMS) has been assessed by the AF and is used to implement all projects for which SPREP is the IE.

The SPREP ESMS screening tool consists of two sections and identifies which of the AF ESPs are triggered by the project, and if so, to undertake an assessment of the extent of risk associated with that Principle.

5.2 Screening Methodology

5.2.1 Part 1

This part is used to identify the potential risks and impacts related to the AF Principles using the SPREP ESMS. Project activities are screened for their inherent risks before applying mitigation and management measures to form a clear picture of potential inherent risks in the even that mitigation measures are not implemented or fail. Part 1 considers all Project activities with potential direct and indirect risks and impacts across the Project's Area of Influence. A Safeguard may be 'triggered' when a low, medium, or high risk is identified through the Part 1 questions. For low-risk activities, professional judgement is used to determine whether the safeguard is triggered, however in all cases a medium or high risk will trigger the Safeguard. Safeguards 1-3 are mandatory, but 4-10 are only triggered after consideration of each question below.

When determining the inherent risk, the risk framework described below is used:

	Likelihood				
Consequence	Not Likely	Slight	Moderately Likely	Highly Likely	Expected
Critical	**High Risk**				
Severe	**Medium Risk**				
Moderate	**Low Risk**				
Minor					
Negligible					

Consequence is determine using the definitions below.

Consequence	**Definition**
Critical	Significant adverse impacts on human populations and/or the environment. Adverse impacts high in magnitude and/or spatial extent (e.g. large geographic area; large number of people affected; transboundary impacts; cumulative impacts) and duration (e.g. long-term, permanent, and/or irreversible); areas impacted include areas of high value and sensitivity (e.g. priority ecosystems; critical habitats; critical cultural heritage sites; legally protected areas); adverse impacts to rights, land[1], resources and territories of Indigenous Peoples; involve significant displacement or resettlement; generates significant quantities of greenhouse gas emissions; impacts may give rise to social conflict.

[1] In connection with restrictions on use of land, "land" is taken to mean both terrestrial and aquatic resources (e.g. coastal fishing grounds).

Severe	Adverse impacts on people and/or environment of medium to large magnitude, spatial extent and duration more limited that critical (e.g. predictable, mostly temporary and reversible). The potential risk impacts of projects that may affect the human rights, lands, natural resources, territories, and traditional livelihoods of Indigenous Peoples at a minimum potentially severe.
Moderate	Impacts of low magnitude, limited in scale (site-specific) and duration (temporary) can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures.
Minor	Very limited impacts in terms of magnitude (e.g. small, affected area, very low number of people affected) and duration (short), may be easily avoided, managed or mitigated.

The full results of the Project Part 1 screening are reported below in Section 5.4

5.2.2 Part 2

This part categorizes the project and determines the type of environmental and social assessment required. Drawing on the responses to Part 1, Part 2 provides guidance to assist in determining the Category.

Results of the Part 2 categorization is reported below in Section 5.3.

5.3 Part 1: Screening Results

		Inherent Risks and Impacts		Risk Rating		
		Yes, No, n/a, TBD	*Where applicable describe potential issues, and specify activities causing this*	*Likelihood*	*Consequence*	*Risk Significance*
SPREP Principle 1 Human Rights						
1	Could the project lead to adverse impacts on enjoyment of the human rights of the affected population and particularly of marginalized groups?	N		Not likely	Negligible	
2	Is there a likelihood that the project would have inequitable or discriminatory adverse impacts on affected populations, particularly vulnerable or marginalized groups?	Y	Lessons learned from the community consultations identified that inappropriate site selection (schools, churches) for interventions could inadvertently lead to limited or lack of access to water supply systems for some groups or individuals.	Highly likely	Minor	
3	Is there a risk that potentially affected stakeholders might be prevented from participating fully in decisions that may affect them?	Y	Project activities are related to developing island levels assessment, strategies, and plans which, if developed without community involvement, may lead to outcomes which are not best suited for the communities needs and priorities.	Highly likely	Moderate	
4	Is there a risk from not having local communities or individuals, given the opportunity, raised concerns regarding the project during the stakeholder engagement process?	Y	Community engagement has not informed activity design and impact assessment to date.	Highly likely	Moderate	
5	Is there a risk that the project could exacerbate conflicts among and/or the risk of violence to projected affected communities or individuals?	N		Not likely	Negligible	
Triggered AF Equivalent Principles: **Principle 2: Access and Equity** **Principle 3: Marginalized and Vulnerable Groups**						
SPREP Principle 2: Gender Equality						
1	Is there a likelihood that the project would have adverse impacts on gender equality, and/or the situation of women and girls?	Y	If women are not meaningfully engaged during the activity design and implementation, project implementation may result in increased burden of women, lack of gender consideration in the design and will undermine the empowerment of women in	Slight	Minor	

			their island level decision making processes.			
2	Have women's groups/leaders raised gender equality concerns regarding the project during the stakeholder engagement process?	N	Community has not been informed activity design and impact assessment to date.	Highly likely	Minor	
3	Could the project potentially limit women's ability to access or used natural resources upon which they depend for a livelihood?	N		Not likely	Negligible	
Triggered AF Equivalent Principles: **Principle 5: Gender Equality and Women's Empowerment**						
SPREP Principle 3: Child Protection						
1	Is the project expected to require direct interaction with children?	N		Not likely	Negligible	
2	Is there a risk that security checks have not been conducted for the executing partner?	N		Not likely	Negligible	
SPREP Principle 4: Climate Change						
1	Could the project adversely contribute to climate change impacts, or ability to adapt to climate change, or be otherwise impacted by climate change?	N		Not likely	Negligible	
SPREP Principle 5: Biodiversity and Ecosystem Services						
1	Could the project lead to adverse impacts on biodiversity and priority ecosystem services?	Y	New sites for new installation may require land clearance and may remove terrestrial biodiversity.	Slight	Negligible	
SPREP Principle 6: Waste Management						
1	Could the project lead to adverse impacts associated with waste generation or disposal?	Y	Waste will be generated by project activities such as repair and installation of water supply systems.	Slight	Minor	
Triggered AF Equivalent Principles: **Principle 12: Pollution Prevention and Resource Efficiency**						
SPREP Safeguard 1: Assessment and Management of Environmental and Social Risks and Impacts **AF Equivalent: Environmental and Social Policy & Principle 1: Compliance with the Law**						
1	Is it likely that sufficient management and human and financial resources will not be available to the project on an ongoing basis to achieve effective and continuous environmental and social performance?	TBD	Ongoing maintenance costs will be required from MISE. Failure to budget for this could see the water supply systems failing and communities unable to access water in the intended manner.	Slight	Minor	
2	Are the relevant government agencies fully involved in assisting SPREP to assess the environmental and social risks and potential impacts?	Y				
Triggered AF Equivalent Principles: **Principle 2: Access and Equity**						
SPREP Safeguard 2: Public Participation and Information Disclosure						
1	Is there a risk that not all relevant stakeholders have been identified and given opportunities to contribute to project design and implementation arrangements?	Y	Not all targeted stakeholders turn up or participate in the consultation.	Moderately likely	Moderate	

2	Is relevant project documentation on environmental and social implications of the project not readily accessible in the project area?	N				
SPREP Safeguard 3: Accountability, Grievance and Conflict Resolution						
1	Has any potential source of environmental or social concern or conflict associated with the project been identified at this stage?	Y				
2	Has the national environment agency (or other relevant government agency) not been involved in determining the environmental and social risks at this stage?	N				
3	Is there a risk if the national government involved doesn't have an effective grievance mechanism and conflict resolution procedure already in place?	Y		Not likely	Minor	
4	Is there a risk if SPREP's corporate level grievance mechanism is not in place and operating effectively?	N				
SPREP Safeguard 4: Labour and Working Conditions						
1	Will the project potentially require migrant workers to construct or implement works?	N		Not likely	negligible	
2	Will the project be required to provide accommodation services for workers?	N		Not likely	negligible	
3	Is there a risk that the host country has not allowed union activity and permitted workers to bargain collectively?	N		Not likely	negligible	
4	Is there potential that the project could apply adverse discriminatory practices?	N		Not likely	negligible	
5	Will the project involve the employment of children?	N		Not likely	negligible	
6	Is there a risk of child exploitation or abuse linked to the project?	N		Not likely	negligible	
7	Is it likely that the project could present unsafe or unhealthy working conditions?	N		Not likely	negligible	
	Is the safeguard triggered?	*N*				
SPREP Safeguard 5: Resource Efficiency and Pollution Prevention **AF Equivalent: Principle 12 Pollution Prevention and Resource Efficiency**						
1	Is the project likely to release pollutants?	Y	Project activities could require small amounts of concrete production which would generate wastewater and caustic slurry.	Slight	Minor	
2	Could hazardous waste materials be generated by the project?	Y	Fuel, lubricants for the construction work machinery can potentially generate hazardous wastes	Slight	Minor	
3	Are chemical pesticides likely to be used by the project?	N		Not likely	negligible	
4	Is the project likely to source materials from sensitive areas such as coastline?	Y	Aggregates for construction material	Moderate likely	Minor	
	Is the safeguard/principle triggered?	*Y*				
Triggered AF Equivalent Principles: **Principle 12: Pollution Prevention and Resource Efficiency**						
SPREP Safeguard 6: Community Health, Safety and Security						

1	Will the project require the construction or rehabilitation or any structural components which could pose a risk to affected communities?	Y	Component 4 will require construction, however the scale, location and therefore likely impact will be determined during project implementation.	Expected	Minor	
2	Does the project involve the construction or rehabilitation of a dam or weir?	N		Not likely	Negligible	
3	Is the project likely to increase community exposure to disease (water borne, water based, water related and vector borne diseases as well as communicable diseases)?	Y	Poor land management around water supply and poor practices from community during water extraction could lead to pollution of ground water supply and/or contamination of water scoops/buckets.	Slightly	Minor	
4	If the project retains security workers, is there a risk that security personnel could be responsible for unlawful and abusive acts against affected communities?	n/a				
	Is the safeguard triggered?	*Y*				
Triggered AF Equivalent Principles: **Principle 13: Public Health**						
SPREP Safeguard 7: Involuntary Resettlement						
1	Could the project involve physical relocation of people?	N		Not likely	Negligible	
2	Could the project require expropriation to resettle people?	N		Not likely	Negligible	
3	Is it likely that the project will need to acquire land from individuals and households, causing them to experience economic displacement?	N		Not likely	Negligible	
4	Will the project restrict access to natural resources and areas used by affected communities resulting in economic displacement?	N		Not likely	Negligible	
	Is the safeguard triggered?	*Y*				
Triggered AF Equivalent Principles: **Principle 8: Involuntary Resettlement**						
SPREP Safeguard 8: Biodiversity Conservation and Sustainable Management of Living Natural Resources						
1	Is the project likely to affect biodiversity or ecosystem services?	Y	Land clearance for sites for water supply system	Slight	Minor	
2	Is the project expected to impact natural habitats but there are no plans in place to ensure no net loss of biodiversity?	N		Not likely	Negligible	
3	Is the project expected to affect critical habitat?	N		Not likely	Negligible	
4	Is the project located in a legally protected area or internationally recognised area?	N		Not likely	Negligible	
5	Is the project likely to introduce invasive alien species to the project area?	N		Not likely	Negligible	
6	Could the project impact on priority ecosystem services?	N		Not likely	Negligible	
	Is the safeguard triggered?	*Y*				
SPREP Safeguard 9: Indigenous Peoples						

1	Is the project likely to affect Indigenous Peoples?	N		Not likely	Negligible	
2	Is the project likely to: a) Be located on or commercially develop natural resources on lands traditionally owned by Indigenous Peoples, with adverse impacts anticipated? b) Require the relocation of Indigenous Peoples from lands and natural resources subject to traditional ownership or customary use? c) Significantly impact critical cultural heritage for indigenous peoples? d) Use such cultural heritage for commercial purposes?	N		Not likely	Negligible	
	Is the safeguard triggered?	*N*				
SPREP Safeguard 10: Cultural Heritage						
1	Is the project likely to affect cultural heritage?	Y	Sites including access to water supply system may encroach onto taboo sites.	Slight	Minor	
2	Is the project located in a legally protected cultural heritage area or is it likely to impact critical cultural heritage?	N		Not likely	Negligible	
	Is the safeguard triggered?	*Y*				

5.4 Part 2: Confirmation of Category

Name and location of the project:			Kiribati Water Security Project			
Brief summary:			Climate resilient water security project funded by AF			
Screening carried out by:			Environmental & Social Specialist for SPREP			
Result of screening: Category A / High		Category B / Medium		**X**	Category C / Low	
The overall project design, as well as the proposed activities at community level, have been screened using the SPREP ESMS screening tool. The screening tool indicates a medium degree of concern for inherent risks/impacts, i.e., Category B. There is a risk that some of the activities at community level could lead to minimal negative environmental or social impacts, but these can be avoided or minimized as per the measures in this Environmental and Social Management Plan.						

6 Identified potential environmental and social Impacts.

The screening tool indicates a medium degree of concern for inherent risks/impacts, i.e., Category B. There is a risk that some of the activities at island and community level could lead to minimal negative environmental or social impacts and only during design and construction stage only. These can be avoided or minimized as per the measures in the Environmental and Social Management Plan. In this section, based on the initial screening, the following potential environmental and social risks are identified along with mitigating measures.

6.1 Potential environmental risks

6.1.1 Impact on biodiversity and ecosystem system.

The new sites for water supply systems may require land clearance including the removal of vegetations. With the scope of the project, it is expected that there is no vegetation to be removed. In case of clearing, vegetations with highly significant values, threatened or endangered, must be identified and avoided.

6.1.2 Waste generation.

Solid waste is likely to be generated from the construction of the water supply systems. Packing materials for the equipment and the construction materials such as cardboard, Styrofoam, plastics would be generated. These materials should be well kept and contained on site for regular proper disposal at the appropriate sites.

Waste slurry water from concrete work for the water supply system installations is also likely to be generated. All wastewater discharge shall be directed away from sensitive areas such as the coastline, underground water well vicinity and crop plantations.

Overburdening of islands existing solid waste systems and pollution (from leachate into ground water or direct dumping of waste into marine environment) stemming from poor solid waste management practices.

Construction of water security investments will create opportunities for pollution of water and soils from concrete slurry.

With the installation of solar desalination systems, the generation and discharge of brine water from the system is another source of liquid waste. Brine water is the waste product of desalination systems which are high in temperature and saline content. Management of brine water should be integrated as part of the system's operational design.

6.1.3 Pollution

One potential source of pollution is noise and carbon emission from the operation of construction machinery for the water supply system. It is imperative that the construction machinery to be procured for the project construction components are new with low noise level. In addition, any construction work should be undertaken in the daytime only.

Ground contamination from the discharge of hydrocarbons including fuel and oil leak from construction machinery is another source of pollution. It is advisable that any fuel or oil required for the construction must be properly stored in a sheltered place with a concrete paved floor and construction materials (cement mixer etc.) be checked regularly for any leakages. All refueling must be done on a concrete paved area.

Some methods of collecting water from well heads have the potential to contaminate both the water collected and the water in the well. If the collecting scoop is stored on the ground around the well, it has the potential to collect pathogens or contaminates from the soil surrounding the well head. This then has the potential to transfer into ground water or into the water that has been collected creating a public health risk.

Solar or electrical pumps are often used to extract water from wells without having to 'touch' the water with a contaminated bucket or scoop. Pumps introduce a risk to the use of the well as they will inevitably break down and are often not able to be replaced or repaired in the Pacific Islands meaning communities will revert to the bucket or scoop.

Uncovered wells allow for manual bucket collection of water but increase the risk of well contamination from run off, mosquitos and contamination from debris and detritus.

6.1.4 Coastal erosion/land degradation

It is likely that the needed construction materials such as sand and gravel for the installation of water supply systems would be sourced locally. This may trigger sourcing these materials from the coastline/beach front or from land through mining or excavation. Mining of sand and aggregates from the beach front may exacerbate coastal erosion especially to already prone or sensitive coastal areas and mining from land can degrade the natural physical stage of certain locations. To mitigate the issues, it is imperative that a proper coastal assessment is undertaken to proposed mining sites for their suitability. Mining on land should not be encouraged.

6.2 Potential social risks.

6.2.1 Project Design

Is there a risk that not all relevant stakeholders including communities are consulted or given the opportunities to contribute to project design and implementation arrangements. This may cause disagreement by local communities with how the project is designed and operated.

6.2.2 Water Infrastructure Site Selection

Installation of any physical interventions on privately owned land carries the risk of limiting access if the landowner chooses to query or dispute the use of his land once the Project is completed.

In addition to this, any interventions which involve community access to improved ground water wells on private land carry with it the need for landowner to agree to long term management of the land surrounding the wells to avoid contamination of the water source. For example, placement of pig pens, waste collection pit latrines, etc., placed near the well head has the potential to introduce contaminated leachate into the water source.

The project may acquire land to store construction materials and for the equipment and machinery laydown area and for water system installations. This may restrict or limit the original use of the land by community members. Acquiring land for the project shall be dealt with under the relevant national legislation and any vegetation removed shall be compensated in accordance with the relevant national compensation policy.

6.2.3 Community Health and Safety

Project construction work such as digging and civil works for the water infrastructure could potentially pose safety risks to the community members including children passing by the construction sites. In the event where the project requires a foreign contractor or technical specialist for the duration of construction. There is potential for conflict in the form of physical violence between foreign workers and the local laborers/community and risks of transmissible diseases.

6.2.4 Workers Health and Safety

The construction of the water infrastructure will potentially involve health and safety risks to local contractors or local skilled laborers. Civil works may be associated with manual handling and operation of machinery and other safety hazards such as cut by sharp objects, hit by hard object, and falling into trenches.

6.2.5 Cultural Site

There is a potential that any new sites for the water system installation may encroach onto the cultural site. It is important that a survey for cultural heritage sites and assets is undertaken for any new sites.

7 Environmental and Social Management Plan

7.1 Introduction

Sections 7.2 below contains the required management plan for the Project. The management plan includes measures to satisfy both SPREP's and as well as the Adaption Fund safeguard policies. They describe the issues or impact identified, the proposed mitigation measures required, the applicable project phase, the responsible entity, and how SPREP and AF environmental and social standards and principles are addressed.

7.2 Environmental and Social Management Plan

Project phase	Impacts/issues identified	Mitigation measures	Risk level. (with mitigation)	Responsibility	SPREP Standards	AF Standards
Design	The project design is not accepted by local communities because they are not consulted or given the opportunities to contribute to project design.	• Communities of targeted villages on Makin, Aranuka and Tab-south must be all consulted on the final project design. • Schedule for village consultation must consider the availability of members of the community in terms of days and time.	Low-medium	MISE/SPREP	Principle 1 & 2 - Human Right and Gender Equality and Women's empowerment Safeguard 2: Stakeholder Engagement and Information Disclosure	Principle 4 – Human Rights Principle 5: Gender equality and women's empowerment.
Planning/ pre-construction	Land acquisition	• Any land to be acquired for the project must be dealt with under the relevant national legislation and policy. • Any trees to be removed must be compensated in accordance with the national compensation policy.	Low-medium	MISE	Safeguard 7: Land acquisition and involuntary resettlement.	Principle 8: Involuntary resettlement
	Source of aggregates/costal erosion	• The site for sourcing aggregates must be properly assessed for environmental and social risks and suitability.	Low-Medium.	MISE	Safeguard 5: Resource efficiency. Principle 4: Climate change	Principle 15: Land and soil conservation. Principle 11: Climate Change

		• Consult landowners/resource owners and compensate if necessary. • The environmental permit for sourcing aggregates must be obtained from the concerned national authorities.				
Construction	Impact on biodiversity and ecosystem system	• Vegetations with highly significant values, threatened or endangered, must be identified and avoided.	Low	Contractor	Safeguard 8: Biodiversity Conservation and sustainable management of living natural resources.	Principle 10: Conservation of biological diversity. Principle 9: Protection of Natural Habitats
	Waste generation.	• Packing materials for the equipment and the construction materials such as cardboard, Styrofoam, plastics must be well kept and contained on site for regular proper disposal at the appropriate sites. • All wastewater discharge shall be directed away from sensitive areas such as the coastline, underground water well	Low	Cardboard	Safeguard 5: Pollution prevention	Principle 12: Pollution Prevention and Resource Efficiency

		vicinity and crop plantations. • Management of brine water from any installed desalination system should be integrated as part of the system's operational design.				
	Pollution • Pollution from noise and carbon emission from the operation of construction machinery for the water supply system. • Ground contamination from the discharge of hydrocarbon including fuel and oil leak from construction machinery is another source of pollution	• Construction machinery for the project construction components must all be new with a low noise level. • Construction work should be undertaken during the daytime only. • Any fuel or oil required for the construction must be properly stored in a sheltered place with a concrete paved floor and construction machinery (cement mixer etc.) be regularly checked for any leakages. • All refueling must be done on a concrete paved area. • Make available of spill kits on site.	Low-moderate	Contractor	Safeguard 5: Pollution prevention	Principle 12: Pollution Prevention and Resource Efficiency

	Community Health and Safety • Project construction work such as digging and civil works for the water infrastructure could potentially pose safety risks to the community members including children passing by the construction sites. • There is potential for conflict in the form of physical violence between foreign workers and the local labors/community.	• Appoint someone to direct and manage the movement of pedestrians, and to erect and use appropriate walk safety signs, among other measures.	Low	Contractor	Safeguard 6: Community Health, Safety and Security	Principle 13: Public Health

	Workers Health and Safety • The civil works may be associated with manual handling and operation of machinery and other safety hazards such as cut by sharp objects, hit by hard object, and falling into trenches.	• Provide provisions of personal protection equipment (PPE) to local contractors or local skilled labors.	Low	Contractor	Safeguard 4: Labor and Working Conditions	Principle 13: Public Health
	Cultural Site • Disturbance to culturally sensitive places and properties in particular, Te *Bangota, Te Maneaba,* Churches, and graveyards.	• Contractor to pay attention to village/community meetings held at Maneabas to ensure that the project civil works are not disturbing or create noise. • Survey for cultural heritage sites and assets is undertaken for any new sites and avoid.	Low	Contractor	Safeguard 10: Cultural heritage	Principle 14: Physical and Cultural Heritage
Operation	Underground water quality	• The design and operation of the water supply system must consider the sustainable	Low-moderate	MISE	Safeguard 5: Pollution prevention.	

	• The use of desalination solar or electrical pumps can overdraw the water and make it brackish.	yield of the underground water. • Conduct regular water quality monitoring on salinity level.				

7.3 Site Selection for Water Security Interventions

Some guiding principles for the site selection for these activities are:

- Sites will be primarily selected based on evidence-based recommendations presented to the national and island governments by international experts.
- Any toilets should be sited so that they can be used safely by all members of the local community, including children, older people and pregnant women and so that eliminate threats to security of users especially women and girls, day and night.
- Sites should be selected to ensure fair and equitable access for all members of the community especially women.
- Ensure that all toilets have hand washing facilities.
- Women must be consulted on the design and location of water security interventions.

Another important thing to consider is contamination risk. Table 3 below provides some similar 'rules of thumb' for minimizing the risk of water contamination.

Table 3: Minimum distances from sources of pollution[2]

Feature	Minimum distance from water source
Community-level solid waste dump	100m
Storage (or dumps) of petroleum, fertilisers or pesticides	100m
Places where animals are slaughtered	50m
Cemetery	50m
Toilets / latrines (open pit)	30m
Household waste dump	30m
Animal pens	30m
Laundry place	20m
Large trees with extensive root system	20m

[2] Environmental assessment and risk screening for rural water supply. Consortium for Sustainable Water, Sanitation & Hygiene in Fragile Contexts, 2015.

Dwellings	10m

7.3.1 Land Lease Process

There are two methods for formally securing land. Either one of these methods (as follows) shall be used in all instances:

- Lease Agreements
  1. Consultations with correctly identified landowner to get agreement over leasing identified land. Identify correct landowner with the clerks on the outer islands.
  2. The landowner and the islands magistrate undertake boundary determination of the site together.
  3. The Court Clerk minutes the boundary determination and writes to the lands office on Tarawa to request a land survey.
  4. Lands survey team is sent from Tarawa to undertake a formal survey of the identified subdivision. This is normally paid for by the Island Council, but the process can be expedited if the project pays for the survey and travel costs. Survey fee is $33.75 per subdivision plus logistics.
  5. The survey data is passed to the cartographers at the central Lands Office to map and the lease is issued based on this map. The lease will be certified in the islands court and returned to the central Lands Office to be registered.
  6. The Lands Payment Clerk calculates the rate to pay and centralized payment from the Lands Office is made to the landowner each January.

- Voluntary Donation of Land
  1. Steps 1 to 4 is the same as for the Lease Agreement process above.
  2. The survey data is passed to the cartographers at the central Lands Office to map and a modified lease agreement is issued based on this map.
  3. The modified lease agreement is returned to the Island Court and registered by the Court Clerk on the island.

7.4 Management of ESS Risks for Undefined Activities

Some activities and direct interventions will be further defined through community-led planning once the project implementation has started. These activities will also be screened using the methodology described Section 5.2 of this report.

SPREP will be responsible for undertaking the ESS screening with support from an International Safeguards Specialist where required. In line with the Category B status of this Project, only medium or low impact activities will be accepted for implementation.

7.5 Technical Assistance and Policy Development

7.5.1 Policy, Regulations and Plan Development

Any development of policies or programs will follow this ESMP and the Gender Action Plan to ensure that all affected parties are engaged in the process of development and that broader impacts on gender, environment, etc. are considered.

7.5.1.1 Gender Mainstreaming

The design of the Project requires equal and active participation, however, there is a risk that gender may not be mainstreamed into long term water resources management plans developed under this project.

In order to ensure these activities fully incorporates the AF Gender Policy, the PMU Gender Officer supported by an international gender specialist should undertake a gender-sensitive review of any policy frameworks and plans. The specialist should refer to experiences and tools from previous Climate Change Adaptation and Disaster Risk Management projects in the Pacific Islands, e.g. PACC, GCCA, IWRM, Pacific Gender & Climate Change Toolkit as well as the Adaptation Fund's Gender Policy and Action Plan and the associated guidelines for this plan. The findings from the review will be used to inform and strengthen the final outputs of these activities.

7.5.2 Consultants

Consultants will be required for the technical water assessment and design elements of the Project. They may also be required for activities which depend on behavioral change strategies such as sanitation activities. TORs for any consultants will require the consultant to comply with the ESMP and the AF safeguards and gender policies.

For all technical assistance consultants this ESMP will be included in the TOR and final contract.

7.5.3 Capacity Building and Materials Development

Awareness materials will be developed and awareness raising activities will be undertaken under the Project aimed at the general public for raising awareness on climate change. Gender balance shall be considered during the activities to ensure that women are equally represented.

7.6 Environmental and Social Monitoring Repot.

Routine monitoring on the implementation of the ESMP shall be undertaken by the EE on a 6-monthly basis and reported through an agreed monitoring and reporting template. Reports are submitted to the national government and the implementing entity.

SPREP as an IE may engage its own internal environmental auditing team or external auditors to conduct routine and/or extraordinary environmental audits of the project ESMP performance.

Annexes

Annex 1: Minutes of Consultations

PROJECT PLANNING MEETING 10/0919

- Confirmation of final submission in December 2019.
- Office of President looking for a form of accountability system included in the outputs. Communities need some level of accountability for the upkeep of the infrastructure once it is handed over.
- MIF interested to know if there a way of having standardised method of managing water across all islands. MISE does have some standardisations in design and specs for hand pumps, solar pumps and desalination plants. MISE would like this project to use the same pumps, pipe systems, etc to make it easier for maintenance and procurement, etc. Previous projects haven't procured according to the MISE specs which has caused problems with construction and maintenance.
- MISE helps with or leads the water assessments. Construction works can either be contracted out or done with a MOA with the community for them to contribute the labour. MISE really wants to supervise the work through their outer island water technicians.
- (NB: No talk during the meeting of building in redundancy into the solar pump systems with a manual pump for time of solar pump outage)
- MIF is aware that GoK needs the ability to forecast rainfall, but we need to be mindful that this is a water project, so the balance needs to reflect that.
- MoH: Environmental services within MoH is mandated to undertake water quality monitoring and has recently been expanded to include chemicals. Outer island monitoring is already undertaken on the KIRIWATSAT sites. They also have baseline data for the islands. Budget is severely limited for outer island visiting and there is no scope on the island for the MoH rep to undertake e-coli testing or to take samples and send back to the lab on Tarawa.
- Sea level rise and climate data is already collected but improved methodology from this project could benefit other departments.
- Water technicians on outer islands collect salinity once a month and report back to MISE. Good potential to link up with MoH but the challenge is bringing the water back to the lab on Tarawa. Need to look up whether there is a simple and affordable field test kit – low tech.
- MoE do water quality testing but mostly around landfills. Then they link up with MISE and MoH monitoring for coastal water quality for poor sanitation, but this is hampered by budget.
- MISE has trailed field test kits and they are good, but they can be expensive. MISE would like to explore this, and it is on their horizon. The mandates for different monitoring parameters of water quality is spread across different ministries. Need to be mindful of stepping on toes.
- Office of President sees the value in coordinating these efforts. Possibility that a subcommittee can be formed, and OP is trying to set up water quality subcommittee. This would then feed into a central database which is already in existence.
- MIF would like to see this integration of water quality monitoring trialled on this project as a basis for upscaling.
- **Accountability:** On the completion of the Project, the infrastructure is handed over to the community who take ownership of the system. On handover it belongs to the community. There is currently no reporting or monitoring requirements back by the community once project is completed. There is a signed agreement between government and communities but there isn't a follow up. Links into sustainability of

the Project. OP thinks there might be value in looking at some sort of performance ranking of communities to feed back into GoK decision making criteria when assessing which communities to provide future funding opportunities.

- **Maintenance:** Currently the community must source funds to maintain the equipment under the MOA. It is difficult to ascertain if this works. They need trainings in keeping their commitments. The current system in place is inadequate. Maintenance relies heavily on financial support. MISE is trying to move away from that. Desal project on Tarawa is proposing to pay to collect water but it is difficult on the outer islands – different scale of cash economies. Pay per use is putting equitable access at risk. An innovative system which can be trailed is the idea to barter/trade with fish or copra bought to Tarawa for sale to fund maintenance.
- **Behavioural Change:** UNICEF are doing behavioural change for WASH but just in schools on the outer island. KIRWATSAN didn't do this very well. Needs a strong strategy. Implement little games, jingles, slogans, etc. Link in with UNICEF and women and youth ministry which had a program in the past but ran out of resources. UNICEF might have a handle on what is needed, where their gaps are. Min of Women are in perfect place to provide linkage).

ABAIANG ISLAND STAKEHOLDER MEETING 11/09/09

- KIRIWATSAN II always had delayed implementation. Big delay between getting the materials from Tarawa to the island. Delays were also from the community side related to motivation of community to provide free labour which takes them away from their work and other priorities at home.
- 50% of KIRWATSAN II projects are not yet started due to the lack of labour so now that the project has finished, the materials have been left with the communities.
- An MOU was signed by the chairperson of the village agreeing to the free labour, but implementation was difficult to do as there was resistance from the workers. (perhaps no buy in from the youth during consultation – the old men make the decision and expect the youth to do the work).
- No villages have any completed water extraction under KIRWATSAN II.
- Another reason for lack of motivation was using ground water from a village with a good lens to supply a village with a poor lens means that the work had to be undertaken in the village with the good lens and those workers weren't as motivated as the recipient village as they didn't have an urgent need and there was no pay.
- Materials stored very poorly on Tarawa, so cement had hardened, and some materials were missing.
- The KIRIWATSAN II supervision structure was poorly designed with one supervisor for the whole island and they weren't based on the island. They would come, give instructions and go. Often when they came back the work hadn't been done properly and so they would have to demolish and start again. Supervisor didn't provide correct training. There was no upskilling of the community through this project.
- The community would like the workers on this project to be paid.
- There is a need to find a way to supervise from within the community.
- Digging wells in areas of hard rock is difficult and creates injury which is another factor in lack of motivation for this unpaid work.
- Community would like to have a mechanical tool to help them, maybe a petrol driven jack hammer?

- Compost toilets have been installed in one out of 6 planned villages. They were built and completed but are not used. They have been built in a very public location between the road and the maneaba, so it is very visible when someone must go to the toilet which is not culturally appropriate.
- Suggestion from the floor is for there to be multiple supervisors which can work in several villages at the same time – this will create a competitive atmosphere to push forward completion. This worked on an outer island clinic building project in the past.
- The Committee for Sanitation also don't want to handle the compost materials to transfer it to the secondary container. Not culturally appropriate to handle other people's waste material.
- 2015 USAID water project on Abaiang was very successfully completed – it was a pilot project in 4 sites, just on this island. It was installation of water tanks with their own catchment and installation of Tamana pumps along with covering the wells. No solar pumps were installed. This project is a good success. A drought management plan for Abaiang was also written for this project (USAID and SPREP)
- For water infrastructure, maintenance requests come to the Island Council and delegates it to the water technician for repairs.
- KIRICAN installed rainwater catchments for 3 villages which are used for drinking and cooking.
- Mosquitos do get into water tanks and people either boil or filter larvae out of the water.
- No separate consultations were held for women or youth under KIRIWATSAN II. They need to hold consultations outside the maneaba system.
- Men fish, women glean, women cook, both genders collect water.
- Fishing generates income by sales on island or sales to the CBBL (central sales fisheries project)
- Women can co-share land, but men have decision making roles over the land as per their traditions
- Women tend to let men lead but they can raise their voices if they feel they need to. Traditional roles are starting to shift, and women are now starting to be able to go and represent their husbands (or their families if there is no husband) at meetings.
- There is a tradition and water policy which has a stated 30m set back area from wells (land use management). Water technician and health rep advise on the placement of the well and land use around it. There is no follow up monitoring on the land use management.
- Villagers boil well water, but they don't boil rainwater.
- For privately owned wells, there are informal arrangements which allow those without water to access it. No formal arrangements in place, just these agreements. If there are problems down the line, then the community can see the need for a lease.
- Formal agreement should be in place prior to any installation.
- Some of the KIRIWATSAN II installations were on private land where the informal agreement was with the land's caretaker rather than the landowner so after the project finished the landowner was going to take ownership of the well. KIRIWATSAN wouldn't let the community select a different site to avoid the conflict. Critical to work with the landowner rather than a caretaker.
- Schools and churches have communal tanks which are used in times of drought. In 2018 one village ran out of drinking water – this lens is thin. The villages over thick lens only had a small saline impact and is still drinkable. There are 3 villages in the vulnerable thin lens zone.
- Emergency water is transported in buckets on bikes, some people have trailer or truck transport. There are hand and motorbike trailers.
- Application is in for rainwater tanks for emergency use in all village schools and churches. Application is in with the president's office under the disaster fund.
- KIRICAN did free labour with the promise of a bonus on completion. Project completed but no bonus ever appeared.

- A good thing to try and pilot would be to bring in potential candidates for supervisors from future islands to join any training and upskill them before the GCF funding rolls out.
- The procurement for KIRIWATSAN was very disorganised.
- Chartering cargo vessels is a better option than relying on the government ferry to transport materials.
- Laydown sites for storage are the responsibility of each community.
- Cargo is transferred to shore by tender.
- Supervisors tend to be contracted rather than MISE staff.
- Community needs to be able to nominate the supervisor or foreman.
- Aggregates sometimes need transporting so advance notice is needed to coordinate trucks. There are around 20 trucks on the island. Aggregates are donated as a community contribution. Hand tools for extracting aggregates are in shortage and must be shared with other villages. Communities need: generators, hand tools, etc. KIRIWATSAN put a lot of emphasis on community contribution.
- Funds for maintenance works come from the community rather than having a budget allocation from the Island Council.
- If community can't raise funds, then they escalate to IC and if they can't help then they escalate to MISE.
- Community needs to be included at steering committee or national level. We need to capture their input.
- Island Council has taken on the role of overseeing the leftover KIRIWATSAN projects therefore IC need to be consulted throughout implementation. We must leave behind a strong capacity to build and supervise otherwise wasted opportunity and not sustainable.
- Leaves in the gutters contaminate water and people are getting sick so they boil that contaminated water. Cleaning the gutters is complicated and involves breaking guttering apart.
- Most wells on Abaiang have Tamana pumps and are covered so the water is good.
- Each house on the USAID project was given materials for Tamana pump and well covered. If the house didn't have a well then, they had to dig it first.
- Tamana pump can abstract from a good distance.
- Solar pump has problems because it keeps pumping regardless of water lens conditions. Tamana pump can be more easily managed.
- Manual vs solar: Community would prefer hand pumps to overhead tanks and then gravity fed.
- 'Abaiang' pump can be used as a backup if the solar pump is broken.
- MISE has the designs for Tamana and 'Abaiang' pump.
- Prioritise wards within villages which have weaker lenses (some villages are split over a varying lens)
- Previous projects allocated solutions which were not the expectation of the communities e.g. people with good freshwater given tanks when another village with bad lens didn't get tanks.

MAIANA 12/9/19 ISLAND STAKEHOLDER MEETING

- 10 community members, 9 of them women

- Maiana has 1 main village with 12 wards.
- KIRIWATSAN I undertook water assessments and installed some rainwater tanks. 10 were planned and only 2 haven't been completed.
- Under KIRIWATSAT II 9 wards were targeted and only 5 have been completed.
- There is one construction supervisor, but he is not based on the island and this has slowed down the construction progress.
- There has also been a problem with some materials being taken from the islands stockpile site and being used for other things. It has taken time to get the missing items back so that has also contributed to the delays.
- 10 villages were identified for composting toilets, but most have not been completed as they are still working on the water systems as the priority.
- There needs to be more foremen on the island, there is only one.
- There were consultations during the design phase. The expectation was for more foremen to be recruited. Mostly consultations were about the community donations but not on other aspects of the project or the designs.
- As a priority they would like ground water in places of good water lens and rainwater catchment installed in places with poor ground water resources.
- Ideally the island community would prefer a desalination plant.
- Hand pumps are preferable to solar pumps for the community members
- There is a solar pump that was installed by MISE and it was working well.
- KIRIWATSAN II also installed a solar pump but it different brand and specs to the one that MISE installed so there is no institutional knowledge over how this pump will perform.
- 3 wards were not covered by KIRWATSAN II. 2 of these 3 wards currently get water from a bush well but this is on another wards land, so they share resources. This is working OK now but, in the future, there is no guarantee that they landowners or their children may be looking for this to be leased as there will be increased pressure on water resources. There is no long-term security over access to the water.
- For repairs to the hand pumps, this is easy and cheap to do and is the responsibility of the community. The solar pump comes under the remit of the water technician and MISE arranges and funds the repair of that.
- The cash economy on Maiana is fish, copra and handicrafts.
- The mayor of the island is female. She can make decisions for the island council and then they then send these decisions to the old men organisation for discussion and 'approval' and then the maneaba issues the instructions to the community to follow these decisions. The mayor cannot make decisions in the maneaba but can influence them.
- There wouldn't be a problem with women being foremen/supervisors on this island.
- For the project and any consultations, it is important to follow the correct protocol which is first the Island Council and then the communities (including old men) and have separate consultations for women and for youth.
- LDS church have also installed a rainwater catchment system on the island in 3 wards in 2016. It is a community water source with its own catchment system. Community assisted with the construction.
- They have had outbreaks of diarrhea in July this year, eye infections after heavy rains and skin diseased – all linked to water borne disease.
- There is an Island Project Officer engaged by the mayor and paid for by MCIA. Possibly train women to undertake safeguards monitoring and coordinate through the IPO and mayor for reporting.
- Manual labour is suitable for men, and other types of non-physical work for women.

- In terms of sanitation, a septic tank system is preferred and is based on the information they got from KIRWATSAN I UNICEF sanitation work.
- SCT have been completed in some wards but are never used.
- The 30m well head buffer is well known about and used to be adhered to but not so much anymore.
- UNICEF WASH project was carried out in schools but was not extended into villages so good sanitation practices are not followed up at home.
- Areas of good ground water lens have their own wells per household, areas with poorer resources share wells between a few houses. They would like to have the project consider interventions at the household level rather than just the community level. They would like each house to have their own tap access to water (preferably a covered well and hand pump).
- During times of drought the wards have the option to go to the furthest ward which has a very good lens and take their water from there. They haven't yet reached the stage where they have needed to do that.
- KIRIWATSAN did install new wells on private lands with no formal agreement with the landowner in place.
- The KIRWATSAN project installed a solar pump system on a new well – concrete cast well with gallery system. The well is uncovered. No hand pump back up on the solar pump in case the pump fails. The tank is on a tower so there is no way to tell what the water level on the tank is, but a float switch has been installed so the tank won't overflow. The pump is different to what is normally used so it is untested in this context. The tank has enough pressure to feed 7 taps. Land issue isn't dealt with, system is on private land and there is no agreement in place with the landowner over permanent access.
- The KIRIWATSAN rainwater catchment designs are very poor quality and isn't properly done.
- Complaints from the community about being expected to provide unpaid labour when they have their own income generating work to do.
- Maiana has a much more traditional system of leadership compared to Abaiang therefore it is easy to neglect the communities' input. More difficult to get them to speak confidently as there is a greater influence of the maneaba.

KURIA 13/9/14 – INTRODUCTORY MEETING

- KIRIWATSAN I installed 6 x 10,000l rainwater harvesting systems on the island, one per ward. These systems are working well.
- The island is currently in a 2.5-month long drought, the coastal edge of the lens has become saline but the lens in the centre of the island is still good.
- People have started relocating to their land in the centre of the island to live close to the secure water resource. People can only move inland if they have land there.
- There are several ponds in the middle of the island, some large but most are small. The large pond is brackish and was created from aggregate extraction for the runway. The smaller ponds are old plantations, but they are brackish now.
- Fishing and Copra are the main cash generators.
- The community's preference is to have ground water distributed from the centre of the island out to the coastal wards.
- There is a more progressive governance system like Abaiang than Manaia.

- The Sodis project outreach is a joint awareness project between MISE and MoH

KURIA 14/9/19 – ISLAND STAKEHOLDER MEETING

- One island/village with 6 wards.
- Currently in the community's rainwater is the primary source of water and ground water is secondary.
- The fresh ground water is in the middle of the island, but most people live in the coastal area.
- KIRICAN designed a system on the island which is extracting water from one well in the middle of the island, pumping it to a header tank and distributing it to houses via gravity. So far this is connected to 4 homes but there are about 40 houses in the ward. There is no back up hand pump built into the system. No training was provided to the community. The materials arrived onto Kuria, but the project team didn't come so after several months the community mobilised to build and install the system themselves, with no training.
- KIRICAN didn't develop the project through MISE or the water technician.
- Community are waiting on the arrival of more materials before they can connect more houses to the tank but there haven't been any calculations done on how may houses the tank can feed with the pressure it generates.
- MISE has an improved standardised version of this header tank system which used multiple header tanks to move water to the coastal areas and gravity to move the water between the tanks. Good way to transport water across distances and only relies on one pump at the well.
- Only a few houses in Kuria have roofs suitable for catchment. KIRIWATSAN I installed one tank per village which isn't enough.
- If the rainwater gets contaminated from leaves, or other matter then the rainwater is emptied, and the tank cleared. Waste of very valuable water.
- Other villages drink 'dirty' rainwater and don't get sick so maybe they have some 'immunity'.
- In the past a well set back from 300m the village used to provide good water during dry spells. About 4 years ago that well became brackish and now the community needs to walk an addition 200m to good ground water lens.
- Previous water projects have come and put tanks on churches, but this has led to control measures imposed by the church over when the water can be accessed and by whom. No equitable access if you use the churches.
- The KIRICAN solar system has an informal involuntary agreement with landowner. There was a plan for a formal agreement to be signed however as the project managers didn't come to Kuria to install the system, after waiting 5-6 months the community went ahead and constructed without KIRICAN and therefore without the agreement in place.
- One ward does have a communal area on which they built a maneaba but that seems to be in on the island for communal areas.
- Other projects have installed water tanks etc on government leased land such as schools, but this usually comes with obligations (e.g. pay for water to raise money for school) so it isn't equitable access.
- Men fish and women/children collect water but if the men aren't fishing then they collect water too.

- There is the potential to empower women through activities like safeguard monitoring, but the more technical/maintenance roles are more traditionally male.
- If there is a husband in the family, then he will represent the house but a woman without a husband has a voice.
- Woman have a role is collecting and cutting copra. The price of copra has been doubled by the government, so it become a significant industry in the outer islands.
- Training: there is a demand for training on how communities can effectively manage their water from the source through to storage at home linked into hygiene and water safety.
- Tamana pump training is also desirable: building, installing, fixing, and covering well training for both men and women. The water technician has this knowledge already so we can come and train to build capacity and then the water technician can supervise the implementation at ward and household level.
- Ole men and youth work well together.
- Women and old men training to share water knowledge and training. The old men don't hoard knowledge.
- KAPIII installed a Tamana pump in one ward for 20 houses but it from the coastal wells not from the inland. Some of these wells are good for drinking, some just good for laundry.
- The community mostly practice open defecation, but they are aware of the potential contamination and are interested in exploring options.
- There is one composting toilet built at a school, but it is not used as there was no training. It is understood that the compost can eventually be used but this is culturally taboo, so it isn't appropriate. Burying it seems to be acceptable to the community. It is also potentially acceptable for moving the materials from the chamber to the secondary unit. The community are willing to explore the options of composting toilets. Location of toilet can't be in the community areas.
- UNICEF KIRIWATSAN II introduced the concept of dry pit toilets using ash. At least one family built one under their own motivation and it was working well. There was no smell. They stopped using it when they got a flush toilet.
- UNICEF WASH primary school program is planning on rolling out on Kuria in the future.
- Q: There is an interest in learning more about the composting toilets, but they have concern about placement as they are often put in inappropriate places. A: community have full say in selecting final options and sites. Project team provide options based on science and community makes final selection.
- Youth representative requested that there is no limitation placed on numbers of participants for trainings as when this happens, it is always the youth who miss out on the places and people in the trainings often don't share the knowledge they have learned.
- To Kuria, the success of the project would be that everyone has access to clean water leading to a reduction in the instances of water borne diseases and a good system in place for the maintenance to ensure sustainability. Improving the health of kids in school and the community.

SOUTH TARAWA DEPARTMENT OF LANDS AND NATURAL RESOURCES 17/9/19

- GoK land rates are set and reviewed every 3 years.
- Process for getting lease is:
    1. Identification of correct landowner with the Island Councils Court Clerk
    2. Consultations with landowner.
    3. Landowner works with the islands magistrate to determine the boundary of the land to be leased.
    4. Court Clerk minute the boundary determination and Island Council writes to LNR to request a land survey.
    5. Land surveyors sent to the island to do the survey on the identified subdivision (AUD$34 per landowner parcel). The survey is normally paid for by the landowner but MISE or the project can expedite the survey process by paying for the survey team travel and daily allowance (pre-determined rate set by LNR) and the survey itself.
    6. Land surveyors also record all food bearing trees on the subdivision which might be removed as part of the construction. LNR has the set rate for the different species.
    7. Survey team pass the coordinates to the cartography to produce map.
    8. Lease is issued for signing and needs to be sent to the Island Council to be certified and returned to LNR to be lodged.
    9. Land payment clerks calculate lease rate and enter into automated system for annual payment to the landowner.
- Once the survey team returns to LNR, it normally takes 2-3 weeks to process but it is best for the project to allocate around 4 months from the time the survey team arrives on the island for the whole process, just to be sure.
- The same lease process applies to MISE if they want to establish a water reserve.
- Best to maximise efficiency by getting the survey team out when all required boundaries have been defined so the survey team can do all of them in one go.
- Island councils can also lease lands. Island Councils can enter into lease agreements for public spaces such as sports fields. Use the same process as described above but the lease holder is the Island Council and they pay the rates.
- Retrospective leases that were discussed in parliament for water security leases are the responsibility of MISE to process and must go through the same process.
- Voluntary donation has been done formally for water security before through KAPIII in North Tarawa. Same process as above but at the 'lease issued' stage, there is a modified agreement (maybe like an easement?) signed instead. It would still need to be formally signed and lodged, maybe with the Island Council Court Clerk. Check with the WB KAPIII project to see the actual template they used for the voluntary donation agreement.
- The water reserve in South Tarawa is a paid lease system rather than voluntary donation.

UNICEF KIRIBATI AND UNICEF NZ 19/9/19

- UNICEF led the sanitation elements of KIRIWATSAT I which we have hear good things about in the outer islands during this mission.

- The main approach they adopted was to create triggers within the community and with individuals so that the community can identify their own problem areas that need solutions.
- Triggering was done by mapping areas of open defecation that families use in relation to their household to demonstrate that people were using a very large area to defecate. They also used walking transects on the beach to record human faeces.
- These are very important and very visual tools for helping to open people's eyes to the reality of the extent of the problem.
- After seeing the extent of the problem and being triggered to solve it, UNICEF sat with the community to come up with action plans.
- Liked the mapping and transects to food and water contamination through some very emotive experiments that triggered disgust at the current situation which is critical to starting to achieve behavioural change.
- UNICEF then provided the communities with chainsaws and local engineers made their own designs for toilets.
- They gave the communities the tools and the knowledge to create their own toilets.
- Community action plan also includes hand washing basin in the toilet areas
- After 3 to 4 months of use by extended family, the pit latrines start to fill up, so they need to dig another one. After a year or two, without continual support and follow up from the project, they slipped back into their old habits.
- Colour coding and environmental parameter tools were provided to help the communities select the appropriate solution for them.
- Some villages realised that composting toilets were the only option for them, but this brings about a lot of questions and potential failures.
- There is a preference for pit toilets with a pour flush system.
- For this project there was a suite of tools produced: toilet risk management tools, rainwater harvesting, etc.
- Engagement was undertaken on all these manuals – they didn't realise that they rainwater harvesting system was a 'living' system.
- Some communities started to develop their own rainwater committees. This led to them starting to make rules about management of rainwater during times of drought – e.g. no bucket collection, only teapots.
- UNICEF were also involved with KIRIWATSAN II in training. Lesson learned from that project is continuous training and engagement is critical. Follow up is needed and must be continual.
- Training for SCT on Xmas island but after 10 years only one of those toilets is still in use. No person was mandated to follow up on them. Behaviour change must be continually followed up on.
- Lesson is that they weren't there to support the community throughout implementation.
- Sanitation change needs someone to have this role and responsibility on each island.
- Using leaves as the bulking agent on some islands.
- New project is branching out to other support systems and is using a 3 start criteria rating, one of which is no open defecation and WASH governance run through the Island Council. Trying to establish focal point on the islands to fill that gap in responsibility.
- There is a Pacific WASH Resilience Guidelines which have just been launched in Suva. Water Safety Plan tool
- MoH/GEF on Kiribati have a joint project which has seen 3 porta-labs purchased to support Public Health
- UNICEF have a small component about bringing various ministries water quality monitoring together.
- UNICEF are doing some retraining with MoH.
- UNICEF are also setting up a steering committee with many of the same members as ours would have.
- There are online tools that we can access for this project: Community Led Total Sanitation and Water & Faeces Tools

Gender and Social Inclusion Strategy and Action Plan

ENHANCING THE RESILIENCE OF THE OUTER ISLANDS IN KIRIBATI

Photo: Kate Walker

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LIST OF ABBREVIATIONS

ADB	Asia Development Bank
AF	Adaptation Fund
CEDAW	Commission on Elimination of Discrimination Against Women
EE	Executing Entities
IE	Implementing Entities
IPPC	Intergovernmental Panel on Climate Change (IPCC)
GAP	Gender Action Plan
KJIP	Kiribati Joint Implementation Plan
KV20	Kiribati 20 Years Development Vision
KIEP	Kiribati Integrated Environment Policy
MELAD	Ministry of Environment, Lands and Agriculture Development
MIA	Ministry of Internal Affairs
MWYSA	Ministry of Women Youth and Social Affairs
MFED	Ministry of Finance and Economic Development
NAP	National Adaptation Plan
NAPA	National Adaptation Program of Action
OB	Office TeBeretitenti (Office of the President) PPG
	Operating plans guidelines
PWD	People with Disabilities
KNAP	Kiribati National Adaptation Plan
SPC	Secretariat of the Pacific Community
SDG	Sustainable Development Goals
UNDP	United Nations Development Program
UNICEF	United Nations Emergency Fund
WASH	Water, Sanitation and Health

1. INTRODUCTION

This proposed Adaptation Fund (AF) project which targets strengthening the resilience of the target outer island communities in Makin, Aranuka and Tab South, to the threats of climate change and natural hazards include a Gender Assessment and a Gender Mainstreaming Strategy and Action Plan. The goal of the project is that the selected island communities (Makin, Tab South, and Aranuka) have continuous, equitable, and sustainable access to safe drinking water under all expected climate change outcomes, so that water borne diseases are kept to a minimum.

The proposal focuses on (i) repairing and replacing existing water systems; (ii) building long-term options for water resource management and use; (iii) constructing new water infrastructure to adapt to future climate impacts; (iv) strengthening coordination mechanisms and community participation; between the outer islands and the national government; and (v) undertaking outreach, capacity building and knowledge management. The gender assessment conducted has identified gender information and gaps in the various sectors in Kiribati with focus on existing gender relations, the barriers, the cultural and social biases and positive platforms that can be maximized to progress gender inclusion in the project. This Gender Strategy and Action Plan outlines entry points for interventions and gender responsive activities that will ensure the strategic and practical involvement of women, men, youths taking into account an intersectional approach which include other vulnerable groups in the target outer island communities.

Women and men are differently affected by climate change and water access in Kiribati, thus the importance of inclusion of women and other vulnerable groups on any discussions on planned project interventions, training, implementation and monitoring. Interventions that target water access and sanitation in the outer atolls will be preceded by gender inclusive stakeholder collaboration and community consultations. This is to ensure that interventions are supported by all sectors of the community, that people have ownership of interventions implemented and there is accountability by communities, especially women and other vulnerable groups on the implementation, monitoring and sustainability of intervention and activities undertaken. This Strategy takes into account the findings from the Gender Assessment conducted in the 3 target outer islands Makin, Tab South and Aranuka and secondary data from previous fieldwork and consultations with the different stakeholders at government, non-government and community level and findings from gender reports and statistical information from data available from government and other researches and reports.

With reference to the 1992 Rio Declaration on Environment and Development -Principle 20 on women's "vital role in environmental management and development" and Chapter 24 of Agenda 21 which focus on women's considerable knowledge and experience in managing and conserving natural resources, this project acknowledges the wealth of knowledge of women and experience in using and managing water resources in the outer islands of Kiribati. Women play a key role in the provision, management and use of water for basic household needs, know where to source water from in times of droughts and natural hazards and thus have knowledge of water use that is important to be part of any development plans on water security and access.

1.1 Gender Mainstreaming

The project targets gender equality in access to water and sanitation amenities and improved water and sanitation also mean improved health and living conditions and welfare for all members of the communities (women, men, youth, elders, single mothers and other vulnerable people in targeted outer islands. Improvement of water and proper sanitation facilities will build the health and resilience of the community including women and other vulnerable groups taking into account intersectional relations, the elderly, those not from the islands, women single parents households, teenage mothers.

The Adaptation Fund's principles-based Gender Policy (GP) and its accompanying Gender Action Plan (GAP), reviewed in 2021[1], aim at mainstreaming gender and ensuring that projects and programs supported by the Fund provide women and men with an equal opportunity to build resilience, address their differentiated vulnerabilities and increase their capability to adapt to climate change impacts. The Gender Strategy and Action Plan systematically integrates key principles in the AF ESP including access and equity, marginalized and vulnerable groups, and human rights & expends the principle 5 of gender equality and women's empowerment. The Gender Strategy and Action Plan is part of the Social safeguards for the project that ensures long term sustainability and accountability and ensures long term resilience for the people.

The Gender Mainstreaming Strategy and Gender Action Plan

The Gender Mainstreaming Strategy builds on the existing gender policies and actions plans of other climate funds. The Key strategies for promoting gender equity through the project will be through collection of sex-disaggregated data, baseline information collection, capacity building, training, empowering women to have a voice in decision making forums, institutional development, inclusion of gender responsive activities, addressing cultural and social discrimination, intersectional gender relations are acknowledged and there is inclusive gender participation at all project cycle phases.

1.2 BACKGROUND

Legal Enabling mechanisms

This project meets the requirement the Government of Kiribati (GOK) singed under the Beijing Declaration and Platform for Action from the Fourth World Conference on Women which called for the active involvement of women in environmental decision making at all levels and the integration of gender concerns and perspectives in policies and programmes for sustainable development. Under CEDAW, the GoK has committed to women participating in and benefitting from rural development; (ii) participate in development planning at all levels; (iii) obtain training, education, and extension services. Under the Commission on the Status of Women, governments are to provide adequate resources to ensure women's full and equal participation in decision-making at all levels on environmental issues, in particular on strategies related to climate change and the lives of women and girls and under the SDGs,

[1] AF. 2022. Updated Gender Guidance Document for Implementing Entities on Compliance with the adaptation Fund Gender Policy. AF

this project will help achieve the targets of achieving gender equality and empowerment of all women and girls in Kiribati[2].
At the national level, enabling legal mechanisms to ensure gender integration into the project is already in existence with gender integrated into the National Adaptation Program of Action (NAPA) with specific gender inclusive approaches identified, and the Plan on Climate Change and Disaster Risk Management (KJIP) in 2014 which had identified gender inclusion as a key principle that should be integrated into all strategies and actions of the plan. The National Gender Policy basically sets the platform for gender inclusive work in all Government Sectors.

2.APPROACH AND METHODOLOGY

The Gender Strategy and Gender Action Plan have been developed through literature review, a gender assessment that was undertaken, fieldwork and community consultations in the three outer islands and working on identified people priorities, needs to develop strategic interventions where women and other vulnerable members of communities can be assisted.

2.1 Gender Tools and Approaches to be used

The Project will employ participatory engagement tools that will ensure the full participation of all sectors of the community and will ensure that women, youth and vulnerable members of society will be included. There will be explicit targeting of women heads of households and excluded populations, e.g. PWDs; children (boys & girls) and unemployed youth. Consultations with male and female beneficiaries/stakeholders will be done separately and in mixed groups. In addition, there will be consultations with groups of men and women respectively by other social identities such as age or island origin in order to get gender responsive feedback. In addition, the team doing fieldwork will also include women facilitators to ensure gender responsive interactions.

Literature Review

The desk review was conducted as part of the Gender Assessment of this project and included looking at reports on projects already undertaken on water and sanitation in the Outer Islands of Kiribati. A team of local consultants conducted the fieldwork in the three targeted outer islands and previous fieldwork by the project to three different islands that were initially chosen included the use of different gender sensitive approaches and tools. These field visits and stakeholder consultations helped in identifying gender responsive interventions included in this Gen der Strategy and Action Plan.

2.2 FIELDWORK

[2] UNDP,2015. Strengthening gender considerations in adaptation planning and implementation in the least developed countries, UNDP.

PARTICIPATORY TOOLS

Participatory tools like time use surveys that can identify productive hours of men and women, social and resource mapping were used in initial fieldwork undertaken in the three outer islands, and will be used in future work to identify areas of work focus and the different gender roles. Tools such as finding the root causes of problems will be used. Hindrances to women full inclusion in proposed project interventions will be identified and ways to address these barriers used. For example,

- A gender approach will be used in all training modules and capacity building, skills training sessions.
- Inclusion of a gender approach in every adaptation plan implemented at community level, which are incorporated into district level development plans
- There is an overarching target to increase capacity to manage climate risks into 50% of women headed households
- Increased participation of women, youth and other vulnerable people through targeted training of project staff in different gender mainstreaming areas.

Participatory approaches, are used to ensure gender inclusive participation of communities. Participatory engagement defined the composition of meetings where women and men equally participated, and how groups were organized for mixed groups or separate gender groups discussions. The protocols that enabled work in the outer islands were followed and in addition, the arrangements for community consultations during implementation, will include finding the best times and most suitable places for women, youths and other vulnerable members of the communities to have meetings. This is to ensure meetings are held where women and young people and other vulnerable members of communities could speak freely and can contribute meaningfully to any discussion or consultations.

Institutional arrangements and protocols to be followed at outer island level were identified. How these institutional arrangements functioned was part of the preparation work done so that institutions responsible for different parts of the project and possible collaboration work could be determined early on in the project. It was important to find out how women affairs were handled in outer islands and which institutions and NGOs women worked with to enable their participation.

A **Stakeholder Mapping and Analysis** exercise was conducted and this was to identify all stakeholders at national, outer Islands and community level. Through this process Women NGOs, CSOs that deal with women and youths and FBOs and especially women's faith based groups were included at community level. The Stakeholder Engagement plan was also developed during fieldwork and will be developed further during project implementation to ensure that all beneficiaries of the project are involved, and how women, men, youths and other diversities are part of any consultations undertaken.

3. INSTITUTIONAL ARRANGEMENTS

The Implementing Agency is SPREP (PCU), and the Executing Agencies are MISA, SPC, Oxfam, UNICEF.
The Project Management Unit will include the Project Manager, Coordinating/Deputy PM, Technical staff (water resources, water quality, engineering), Social safeguards staff (gender, social inclusion), Accountant/Finance Manager (project finances), Island Coordinators (3). The PMU team will be gender inclusive with women to be members of technical staff and in the management team. This will be the same for the Steering Committee where women will be part of the committee as representatives from the various entities which include the Association of Mayors, MISA, MIA, MELAD, UNICEF, Ministry of Public Health, KILGA, KNEG, Kiribati Met Service, SPREP, Climate Finance Division of Ministry of Finance. Island level institutional arrangement will include the Mayors/Deputy Mayors, Island Action Group, Women's Group, Youth Group, Island Council, Old Men's Group(unimawne), Water Technicians. Apart from representation through the Women's group women will also be represented under land owning units, as farmers, caregivers and other community representation.
Listed below are the institutions that the project will work with. There will be a clear institutional plan or process in place for the timely implementation of these actions and procedures.

MINISTRTY OF WOMEN, YOUTH AND SOCIAL AFFAIRS

The MWYSA Department of Women, has responsibility for the implementation of the **Gender Equality and Women Development Policy** and is responsible for developing, implementing and monitoring gender policies thus is a key agency that the project will work closely with to ensure gender mainstreaming.

The MWYSA have officers in all atolls in Kiribati and they work in Island issues with local women associations, women groups and NGOs. These officers can be all training carried out at community level and this will be in line with one of the responsibility of the IE to "provide technical support and capacity building on gender to executing entities and local communities and stakeholders as needed" (GAP, para. 7).

The Ministry of Internal Affairs (MIA) looks after Rural Development which includes any form of development in outer islands and looks after the Local Governments or the Councils in the 20 outer islands. The project will work the MIA on the planned development in the targeted outer islands and will be in touch with the Island Councils to prepare for this work.
Rural development and climate change adaptation work in outer islands is also through the Ministry of Internal Affairs and the different ministries involved in adaptation work include the MELAD, Ministry of Water, Health Ministry, Climate Finance Unit and Ministry of Infrastructure. Coordination between these ministries is vital for development work in outer islands.

Decision making on Project Implementation is led by the MIA in collaboration with the mentioned Ministries, and as recently acknowledged under the Paris Agreement, Parties in its preamble, in Art.7 (5) where all climate actions, is guided by respect for human rights,

gender equality, empowerment, and stressed the importance of following "a country-driven, gender-responsive, participatory and fully transparent approach" for adaptation action.[3]

The Kiribati Climate Change and Disaster Risk Finance Assessment pointed out key areas for gender integration and inclusion in government work and these include the incorporation of the recommendations from the 2017 Global NAP Network[4] report on strengthening gender considerations, development of Gender Social Inclusion plans, the MWYSA to establish gender focal points in each ministry and that GSI training be provided for staff in MWYSA, OB, MFED, MELAD and the wider KNEG.[5] Thus gender training work planned for this project is in line with line with Government gender inclusion work in the different sectors.

4.STAKEHOLDER MAPPING AND ENGAGEMENT

A Stakeholder Mapping Exercise was conducted to identify institutions, groups, CSOs at community level to work with.
Stakeholders identified through the Mapping Exercise can be found at Annex 1.

4.1 Community Consultations

As part of the initial consultations for this project, part of the assessment, was a stakeholder consultation process carried out with a gender perspective that included representatives from ministries of women, gender focal points of relevant national sector ministries or local governments, or non-governmental and grassroots groups focused on promoting women's rights and gender equality.

The consultations and processes differed in the three islands and composition of the community groups and dynamics involved in the meetings were also different. This highlighted the existence of cultural diversity that determined the gender responses, participation and especially the inclusion of women in public meetings. Differences in views on water resource and needs by men and women were evident during discussions. Research into these cultural diversity and nuances will provide insights into changes and entry points into adaptation work.

Culture continued to be mentioned as a root cause of the inability of women, youth and other members of communities to be part of decision making and to be included in development discussions, as meeting places (maneaba) were for elderly men only. Gender strategic needs will be met through specific training of women leaders, the Council of elders and vulnerable members of the community to be active players in water supply assessment, maintenance, management and monitoring.

[3] UNFCCC, Adoption of the Paris Agreement;
http://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf.
[4] Global NAP Network. 2019. How Integrated Vulnerability Assessments Support NAP Processes in the Pacific Region. Global NAP Network.
[5] Deutsche Gesellschaft für Internationale Zusammenarbeit, the Pacific Community, Pacific Islands Forum Secretariat and the Asian Development Bank, 2020. Climate Change and Disaster Risk Finance Assessment,

All attempts were made to have community consultations away from the Maneaba, the traditional meeting house as women, youth and other vulnerable groups will not speak freely in these settings. Training to be at times suitable for women when they are free from household chores so there is more gender equal participation. Meetings in communities will target at least 50% participation by women and youth and have women facilitators for women only groups discussions.

FOCUS GROUP DISCUSSIONS

Participants in the focus group discussions included men, women, youths, leaders/influential in the community/resource people such as members of village or island groups (including faith groups), unimwane[6], government extension workers, teachers, village resource people leaders, elected community representatives which also included government workers and representatives of the Island Council and women groups.

Total of interviewees from the focus group discussions held in Makin and Tab South were 27 youths, 30 adults, 32 village resource people and leaders, and 14 representatives from the Island Councils and 2 representatives from the Women Organizations, totaling 105 and this included 48 women and 57 men. Targeted participants from Aranuka included in this summary would have been about 30 with 16 men and 14 women given its smaller population. One of the lessons from the focus discussions was the need for improved communication that can reach youths and women early and so people are aware of scheduled meetings or training.

The time and location of consultation meetings were planned for when women and other vulnerable groups were free to attend. The location for meetings were away from Maneabas to ensure women and young people meaningful participation because culturally women and young people are not allowed to speak in the maneaba, in front of the island elders.

4.2 BENEFICIARIES

The Gender Equity and Social Inclusion Action Plan (GAP) addresses potential gender inequality risks and promotes women and youths as project beneficiaries through provision of targets for their participation in community discussions/consultations on the design and implementation of water supply improvements; women and youth participation in any project related awareness, training and capacity building activities, employment of women, youth and other vulnerable members of communities on project related infrastructure, training on GAP implementation and gender awareness for all Project Management Unit (PMU), Project Implementation Consultants and selected MISE/Water and Sanitation Engineering Department Staff.

Initial community consultation/information sessions funded and implemented under the GAP will present all engineering, social and environmental design features of the proposed Project components, including the installation of taps and water meters. Widely advertised community meetings will be held with presentations made by project engineers using maps, modelling and other explanatory diagrams etc. where required.

Direct beneficiaries include the total population on Tabiteuea South is 1,357 (2020 census report) of which 674 are males and 683 are female and a total of 274 households The population of Makin in the 2020 census was 1914, and 347 households in Makin. Aranuka has 1223 people (2020 census) with 267 households. These direct beneficiaries are men, women, and youth and intersectional will be engaged with the activities to improve the water supply, use and sustainability of the water resource. Island protocols will be adhered to with coordination of the project activities to be operated through the Island Councils and *unimwane / unaine* (men and women elders). In addition, groups such as churches, schools and health clinics will be active participants in both water infrastructure and educational and awareness programs.

At the national level, indirect beneficiaries are Government Ministries engaged in the project, the Island Councils and other outer islands, as lessons learnt from this project will help strengthen future water accessibility projects. Repairing of tanks and water facilities will benefit women, youths and other diverse groups from all 3 target outer islands. Benefits will be in access to safe clean water, the repair of existing water facilities and the improvement of health in all the islands (Component 1&2).

Churches: Churches on the outer islands play an important role in water resource management as many of the churches are used as rainwater harvesting areas and therefore the custodians of island water supply. Church members are direct beneficiaries of the project. Church leaders will therefore be engaged in the decision-making processes to determine (a) the prioritization of the rapid response assessment to undertake repairs or replacement of existing water infrastructure and (b) for new technology options (Component 1 and 4); participation in discussions involving access to water and water safety particularly for those facilities which are located on church grounds, and; are important conduits in the education and training in water safety and water usage (Component 3 and 5). Men, women, young members of churches also are beneficiaries through provision if clean and safe water.

Schools: The project will work with male and female teachers, and boys and girls through Component 3 and 5, in participating in educational trainings associated with the promotion of water safety and hygiene. This will be undertaken through the UNICEF WASH programs, and will include activities such as sports activities, roadshows, competitions and awards to help promote the messages.

Health Clinics: Health clinics on the three targeted outer islands play an important role in monitoring and recording health data linked to water borne diseases, and in promoting health and hygiene messages. Health workers, care givers who are mostly women and people that are sick from contaminated water are also direct beneficiaries of the project. Health workers will engage with the health clinics for the provision of health data to support Outcome 1.2 on the monitoring of water borne diseases (Component 1), and Outcome 5.1 in activities on hygiene and health messaging (Component 5).

5.GENDER ASSESSMENT: KEY FINDINGS

Summary Recommendations from the Gender Assessment are as follows;

Kiribati ratified CEDAW- the Convention on Elimination on Discrimination Against Women in March, in 2004 and Kiribati has put in place legislations and policies to meet and monitor the implementation and reporting of its obligations under ratified international conventions, including the 1948 Universal Declaration of Human Rights the Convention on the Rights of the Child (CRC), the Convention on the Rights of Persons with Disabilities (CRPD), the Revised Pacific Platform for Action on the Advancement of Women and Gender Equality (2005–2015), and the Pacific Leaders Gender Equality Declaration (2012).

The Kiribati 20-Year Vision 2016-2036[7] acknowledges the importance of gender, youth, vulnerable groups, disability, equity and partnership as crosscutting principles and Governance under Section 3, clearly outlines a strong commitment to addressing gender inequality. The Gender Equality and Women Development Policy (2019-2022)[8] ensured equal opportunities, equal human rights, and equal access to services so that everyone can reach their potential in economic, political, cultural and social life Thus enabling legal mechanisms and policies to support gender mainstreaming already exist.

The MWYSA Department of Women is responsible for developing, implementing and monitoring gender policies, has officers in all outer islands in Kiribati and they work in Island issues with local women associations, women groups and NGOs and could be trained to "provide technical support and capacity building on gender" to local communities and stakeholders as needed.

Kiribati society is still predominantly patriarchal with defined gender roles, thus, there exist distinct cultural norms and beliefs which influence women's roles, their time use when compared to men, their involvement in development projects.

Based on power imbalances in traditional settings, i-Kiribati women have limited roles in community decision-making forums, such as those traditionally held in community meeting houses or the maneabas. At the local level, only seven out of 142 Island Councilors are women (5% of Island Councilors). [9] Men still dominate island councils, which are local government institutions elected every four years. In 2015, only 5 per cent of councillors were women[10]. The Council of Elders focusses on the decision making by elderly men and this also leaves out the inclusion of other men and youths.

Kiribati society is generally patriarchal, and women perform the vast majority of unpaid reproductive and domestic work, and are primarily responsible for the care of children, the ill

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[7] KV20. 2016. Kiribati 20-year vision 2016–2036. Consultation draft. http://www.mfed.gov.ki/sites/default/files/KV20%20 VISION.pdf

[8] Government of Kiribati (2019). National Policy on Gender Equality and Women's Development 2019-22 (GEWD). Available at https://pacificwomen.org/wp-content/uploads/2019/07/Kiribati-GEWD-Policy.pdf

[9] Kiribati National Statistics Office. 2017, ibid

[10] KNSO (2018). Kiribati Gender Statistics Abstract 2017. Kiribati National Statistics Office, Ministry of Finance and Economic Development. Bairiki, Tarawa

and the elderly[11]. Division of labor although complimentary in many ways disadvantage women mostly as they have to shoulder domestic chores plus other food gathering activities and community engagement and obligations.

Kiribati women play significant roles in the country's economic and development processes. The formal labour force participation rate for women is below that for men and unemployment among women is also higher.[12]. Of the 7,029 workers reported in the Agriculture, forestry and fishing industry in 2020, 85 percent were males and the average (mean) age was one of the youngest of all industries at 36 years old[13]

In Volume 2 of the 2015 Census Report, women represented 59.6% of the rate of labor force participation and unpaid work, caring for children, elders and household chores[14] , 47% of older women are unemployed while 73% of young women are unemployed. Women have a lower rate of labor force participation and a higher unemployment rate, and are segregated into informal activities to a greater extent than men[15]. With most women unemployed, especially in outer islands, and with an increasing number of women headed households, women are more vulnerable to challenges of climate change and the need for basic water and food sources.
Nationally just under one in five households is headed by a female' and women make up 49% of those falling below the poverty line[16]. This is contributing to increased hardship in the community and inability to meet higher health service costs, which are borne by women. Poverty was slightly higher in South Tarawa (24 per cent) than the national average and got as high as 36 per cent in the Southern Gilbert islands, which are among the most remote and mostly smallest islands in Kiribati[17]

Kiribati faces a double burden of disease, with high mortality and morbidity from both communicable and non-communicable diseases (NCDs). NCDs, in particular heart disease, hypertension, diabetes and cancer are becoming more prevalent. Kiribati's under-five mortality rate is among the highest in the Pacific at 61 per 1,000 live births, more than double the rate in most Pacific island countries. A broad range of reproductive health services are

[11] GREEN CLIMATE FUNDS, 2019. Gender Assessment. FP091: South Tarawa Water Supply Project, GCF.
[12] World Bank, 2020. Republic of Kiribati, In support of the Statistical Innovation and Capacity Building in Pacific Islands Program. Kiribati Project, January 21, 2020. World Bank

[13] Pacific Community, 2022.
[14] National Statistics Office, Ministry of Finance. (2016). *2015 Population and Housing Census. Volume 1: Management report and basic tables.* Bairiki, Tarawa. Retrieved from http://www.mfed.gov.ki/statistics/documents/2015_Population_Census_Report_Volume_1final_211016.pdf

[15] UNCTAD, 2020. Women producers of Kiribati and their participation in Inter island and international trade
[16] National Statistics Office, Ministry of Finance. (2016). *2015 Population and Housing Census. Volume 1: Management report and basic tables.* Bairiki, Tarawa. Retrieved from http://www.mfed.gov.ki/statistics/documents/2015_Population_Census_Report_Volume_1final_211016.pdf
[17] AusAid. (2012). Kiribati country case study: AusAid Pacific social protection series, Commonwealth of Australia.
Canberra.

available but culture, tradition and religious views are a major barrier of women's access, particularly in outer islands[18].

The most frequently reported issues raised in the FGDs related to water scarcity (quality and quantity), reduced agricultural activity, disease, and increased burden to fetch water, especially for women. They also were the most vulnerable who have to carry baskets and containers for long distances or look for transportation from other people to go to uncontaminated wells. Increasing hardship, droughts and lack of access to safe and dependable water supply, overburden women, who are responsible for household water needs and management. Major cause of water borne diseases on the 3 islands is contaminated water- and with women handling most of household water consumption, they are more at risk to catch these water borne disease.

Lack of access to safe and clean water, and a broad range of health and reproductive health services are available but culture, tradition and religious views are a major barrier of women's access, particularly in outer islands[19].

Land on the three outer islands are owned and inherited by family, or leased from government. Women have access to land, however, decision making under traditional institutions largely rests on men, especially the elderly men.

Because of existing social norms and cultural expectations, climate change has differing impacts on men and women and their ability to adapt Systematic sex disaggregated data collection on gender participation in climate related projects, or specific mitigation or adaptation interventions is needed to ensure that these inequalities are addressed through projects to be implemented [20].

There is need for sex-disaggregated data and this will be collected and used to monitor GAP implementation and impact, and reported during quarterly and mid-term reviews using the ADB GAP reporting template.

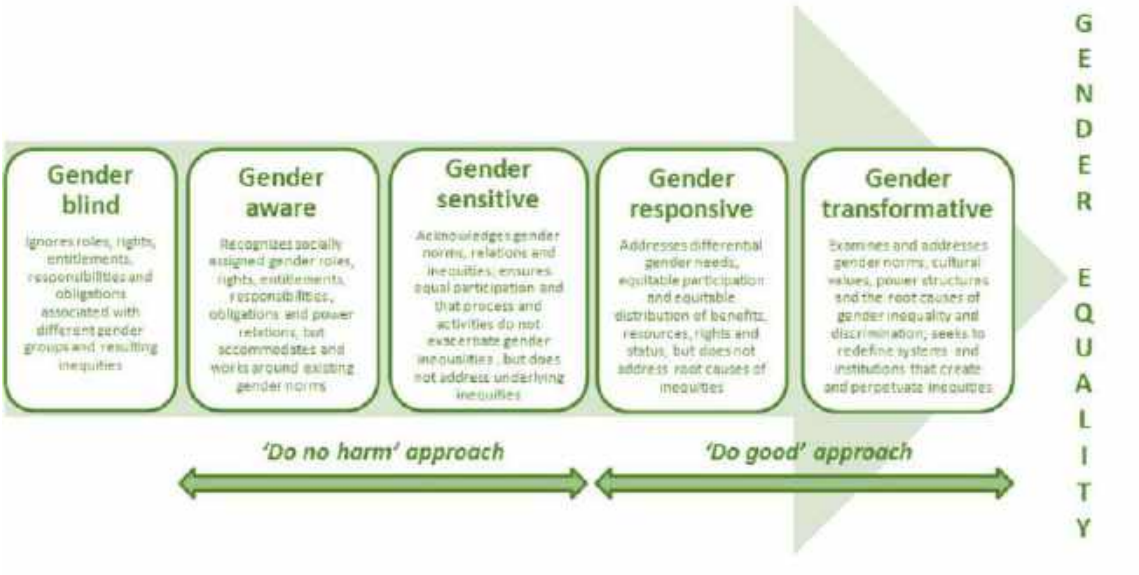
Current stage of Progress in Gender work in Kiribati- on the AF Continuum

[18] GCF,2019. FP091: South Tarawa Water Supply Project, GCF.

[19] . Secretariat of the Pacific Community, 2022. Island Diagnostic Analysis Report for Kiribati. GEF International Waters Ridge to Reef Program. Secretariat of the Pacific Community U.N.Women. 2018. More Coordinated Services for Women and Girl Survivors of Domestic violence. U.N Women

[20] DEKENS, j.2017. *Strengthening Gender Considerations in Kiribati's National Adaptation Plan (NAP) Process.* Nap Global Network. Government of Kiribati.

Table 1: Adaptation Fund- The Gender Continuum



Source: Adaptation Fund, 2021.

On the Gender Continuum, most work undertaken in the gender space in Kiribati have moved from the gender aware to the gender sensitive stage. There is increased awareness of gender and human rights, and there is higher acknowledgement of the numerous cultural and social stereotypes that inhibit women's progress. In the outer islands where traditional norms and practices are still strongly influential, gender progress has moved away from the gender blind stage, the gender aware stage to the gender sensitive stage. This project will work at the gender responsive interventions and will include responsive and interactive interventions that build the capacity of women, youth and other vulnerable groups at community and other levels of engagement.

6. GENDER MAINSTREAMING STRATEGY AND ACTION PLAN

6.1 Purpose and Scope of the Gender Mainstreaming Strategy

The purpose of this strategy is to guide gender mainstreaming work into all phases of the project cycle on the provision of water access and improved sanitation to Makin, Aranuka and Tab South in Kiribati. The scope of the work will cover the planning and development, implementation, monitoring and evaluation stage. At the outer islands level, the work will include gender inclusion in Implementing agencies, Island councils and NGOs, CSOs and community groups where men, women, youths and the most vulnerable. The Unimawne (Council of Elders and other traditional groups will also be included in their different capacities. Other stakeholders like the church and church groups, the Women's groups, Youth

Groups all play different roles that will be key to creating pathways into working in communities.

The Gender Mainstreaming Strategy sets out entry points for gender mainstreaming initiatives, key steps to ensure gender responsive interventions, identification of key outputs and outcomes and proposed indicators for success. A part of the proposed strategies will be the management of potential risks and the promotion of gender equality and the empowerment of women.

Gender Mainstreaming Strategy Objectives:

- Ensuring that women and men's voices are heard in decision making forums at community level.
- Ensuring that the needs and priorities of women, men, youths and other vulnerable groups in communities are equally addressed in all interventions.
- To ensure that the different ways climate change impact on water access and availability and the different impacts on women, youth, children are taken into account.
- That there is sex-disaggregated data to inform planning on the impact of water scarcity on the health of communities and that "transactional differences are taken into account.
- Capacity building and training on the project ensure practical and meaningful inclusion of women and other vulnerable groups.
- Ensures a strategic gender inclusive approach to project planning and implementation, which systematically measures and monitors progress through the use of gender indicators.
- Lessons learnt from the three targeted outer islands can be used to expand the projects to other outer islands and to inform gender mainstreaming work in the outer islands of Kiribati.

Gender mainstreaming is a strategic priority of the Adaptation Fund and all projects and implementing partners shall strive to uphold women's rights as universal human rights and to attain the goal of gender equality and equal treatment of women and men, including equal opportunities for access to Fund resources and services, in all Fund operations through a gender mainstreaming approach. The Project has developed a Gender Action Plan which will be applied in conjunction with this ESMP throughout project design and implementation.

Approach to gender mainstreaming: Given the unique cultural and governance context of the 3 targeted outer islands, the Project will adopt an inclusive approach focusing on all community groups – women, men, youth and other vulnerable groups – to ensure the whole of community benefits from the project's interventions. The gender mainstreaming strategy will rely on a strong community engagement and be assessed bi-annually to further support gender and social inclusion across the project's activities.

Table 3: Project components

Project Components	
Component 1	Repair and replacement to existing water supply systems in the targeted villages
Component 2	Building long-term options for water resource management and use
Component 3	Strengthening coordination mechanisms and community participation for water resource management
Component 4	Construction of new water infrastructure to adapt to future climate impacts
Component 5	Education, awareness raising and knowledge management

6.2 Project Components and Strategies

COMPONENT 1: Repair and replacement to existing water supply systems in the targeted villages.

This component looks at rapid assessment and community prioritization for the repair and replacement of existing water supply systems in the targeted villages. Repair and replacement of existing water supply systems in the targeted villages based on community prioritization.

Output 1.1.
Rapid assessment and response of existing water supply systems in the targeted villages on the three islands

Strategic Entry Points:

- Assessments will address gender differentiated vulnerability to climate change and water needs in an intersectional manner.
- The results from the assessment will be discussed with the island councils, community and the executing entity. Women groups to be part of the discussion on the roll-out of the repair work as to whether to conduct the work across all three islands at the same time (with three separate response teams) or to conduct the work sequentially over a period of approximately one year.
- Rapid assessment of existing water supply systems include consideration for women/youth inclusion.
- Awareness work is gender responsive- considering the priorities and needs of women, youths and marginalized groups.

Output 1.2 Implementation of water treatment systems to existing water supply systems
Intended Outcome: Incidence of water borne diseases on the three islands continues to decline

Strategic Entry points

- Selection of the most suitable of water treatment options done by all sectors of communities including women.

- Water quality monitoring undertaken in the target communities in partnership with Government ministries and island communities which include women, youth and other vulnerable groups.
- Work through existing institutions, ensuring the support for sociocultural and institutional changes among stakeholders to support and sustain gender mainstreaming in the long term.

COMPONENT 2: Building long-term options for water resource management and use

Output 2.1 Building long-term options for water resource management and use

Strategic Entry Points

- Work on mapping of groundwater quantity/quality is gender inclusive
- Projected impact of climate change scenarios on water availability and quality on the islands' groundwater resources and potential coastal inundation to include gender considerations.
- Ensure equity in presentation of men, women, youths on the Steering Committee of the projects in the different islands
- Building the gender capacity of MISE in water resource assessments and climate modelling for decision-making

Output 2.1.2 Long-term sustainability plans for water resources on the three islands and climate change adaptation

Strategic Entry Points

- Technical, social, environmental, and economic assessments of multiple options to ensure provision of sustained access to safe drinking water for all communities on the three islands- are inclusive of gender considerations.
- Promote gender equality and the empowerment of women and girls, youths through training in assessment work.

COMPONENT 3: Strengthening coordination mechanisms and community participation for water resource management

Output 3.1 Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water- with gender and social inclusion included in all practices.

Strategic Entry Points

- Long-term sustainable management plans developed for the islands' water supplies gender and social considerations into account.
- Women, youth and vulnerable groups participate in the development of island water supply sustainability plans.
- Agreement with the national government on future funding arrangements- to take into account gender mainstreaming and equitable use of resources.

Output 3.1.2: Equitable and efficient coordination arrangements for water supply at all levels, from the household to the national government levels

Strategic Entry Points

- **Increase women's and youth's voices in joint decision-making with government at the community level**. Working in complementarity with the island cultural norms, the project will endeavour to increase the participation of women and youth in the decision-making related to water infrastructure and treatment, water usage and conservation and water safety and drought management plans.
- Coordination arrangements to set quotas for women engagement in water supply planning from households/communities.

COMPONENT 4: Construction of new water infrastructure to adapt to future climate impacts

Output 4.1: Completion of new infrastructure and water treatment systems designed to fill in the current supply gaps, are gender inclusive and assessment of potential new technologies takes into account gender priorities.

Strategic Entry Points

- Design and costing of preferred options to fill in gaps in the current water supply systems takes into account gendered priorities and needs.
- Construction of new water supply infrastructure and water treatment systems takes into account gender needs.
- Supply and safe storage of spare parts and maintenance equipment and tools, and training of local technicians in basic water supply repairs is gender responsive ensuring women and youth participation in training.

COMPONENT 5: Education, awareness raising and knowledge management enables gender equality and social inclusion.

Strategic Entry Points

- Implementing approaches aimed at inducing long-term changes to behaviours and practices in water, sanitation, and hygiene, ensuring that all the needs and concerns of women, youth and other vulnerable groups are addressed.
- Awareness raising and education on the importance of water conservation under drought conditions, safe sanitation practices and protection of fragile water sources on the three islands enables gender equality and social inclusion.

6.3 RISKS AND MANAGEMENT

The Gender Action Plan outlines strategies and activities plus timelines, deliverables, partners to work with and indicators. There are however, risks that have to be expected and below are a list of risks and possible management strategies. The project identifies actions and procedures that ensure that projects/programs are gender responsive, including the management of potential risks to the promotion of gender equality and the empowerment of women;

The Project will mitigate against potential project/program risks for women and girls, men and boys and other gender sub-groups in relation to concrete adaptation actions financed by the Fund (GP, para. 11(b)), the mandate to "do no harm approach.

Table 2: RISK AND MANAGEMENT

The need for change in attitude –behaviour change takes time- acceptance of gender inequity as normal.	**Gender socialisation and awareness work on gendered roles to be part of trainings and empowerment work in communities. NGOs can assist in this work. Behaviour change evident in gender relationships at community level.**
Women dominant roles as care givers and engagement in unpaid work in communities, take up women's time and little time for engagement in training, workshops, etc.	Trainings and meetings will be at times when women are free to attend.
Gender stereotypes continue to undermine gender mainstreaming work.	Gender awareness training and capacity building to be part of all skills and health training undertaken.
The implementation of gender responsive interventions challenged by little support from men and other groups in communities.	Have specific gender activities that will ensure gender responsive interventions.
Lack of data to support work to be done.	Sex disaggregated data to be collected as a core part of interventions.
Social cultural norms that can undermine long term sustainability of the work to be done.	Use within positive cultural norms and practices.
Number of households reached with sustainable water use and safe sanitation messages	Gender-specific safe water use and sanitation messages are understood and heeded by most households.
Community and leadership preparedness and willingness to engage	Leaders to be part of any training undertaken in communities to ensure awareness and support for project implementation.
Traditional practices of water use and lack of sanitary knowledge could result in the minimal evidence of decline in water borne diseases.	Sex-disaggregated data collection will continue throughout the project cycle and changes in water use, decline in sick people reported will be part of the monitoring work of the project.
Existing stereotypes could prohibit women being part of the repairs and maintenance team for existing water facilities	Inclusion of women at the planning and development stages of the work, and participation in training and capacity building will ensure women participation and addressing of existing stereotypes.
The IE may not have the necessary gender expertise to conduct training for other partners or to conduct the gender work as stated in the proposal.	IE gender focal point to be assessed (and gaps in knowledge addressed through preparatory workshops/training sessions

7. THE GENDER ACTION PLAN

The Gender Action Plan will specify interventions, gender inclusive outcomes and gendered indicators in the monitoring stage. The Gender Action Plan will identify gender inclusion in proposed interventions, outputs, outcomes and have gender indicators that will guide the progress of gender interventions gender inclusion in the monitoring of projects implemented. The GMS and the GAP will be aligned to the AF s policy ensuring that;

i. Women and men are provided with an equal opportunity to build resilience, address their differentiated vulnerabilities, and increase their capacity to adapt to climate change impacts; recognizing the need for targeted efforts in order to ensure women's participation;
ii. Potential project/program risks for women and men in relation to concrete actions financed by the AF will be addressed and mitigated against.
iii. Knowledge and data gaps on gender-related vulnerabilities will be addressed and learning about effective gender-equal adaptation measures and strategies accelerated.
iv. To consult with affected women and men actively, considering their experiences, capabilities and knowledge of resources and their communities.

Objectives

Attain the goal of gender equality, social inclusion and achieving of strategic and practical needs of women and the equal treatment of women and men, including through targeted efforts to ensure participation of both women and men in planned projects. The Gender Action Plan also ensures that there is accountability to gender inclusion through the monitoring of gender activities

Component 1. Repair and replacement to existing water supply systems in the targeted villages					
Project Outcome	**GEDSI Responsive Output/ Activity**	**Timeline**	**Indicator**	**Baseline**	**Target**
Outcome 1.1 The selected three island communities have repaired and/or replaced water supplies and safe drinking water taking gender priorities into account, and clean freshwater for other water uses-including	**Output 1.1.1** Rapid assessment and response of existing water supply systems in the targeted villages on the three islands include women/youth participation. **Activity 1.1.1.1** Women and youths participate in Rapid assessment and community prioritization for the repair and replacement of existing water supply systems in the targeted villages. **Activity 1.1.1.2** Repair and replacement of existing water supply systems in the targeted villages based on community needs and prioritization of gender needs.	Year 1	Women, men, other diverse groups make up 50% of those targeted in all capacity building, skills training undertaken. Number of women and youth from the 3 outer islands trained, upskilled actively involved in community prioritization for repair and replacement of existing water supply systems Percentage of repairs and replacement that include women/children/ disabled friendly features/prioritization.	Assessment carried out identify gender priorities Prioritization by women, youths on number of existing water supply systems that need repair and replacement completed and available. Women/youths, disabled, children prioritized needs Identified.	Sufficient repaired and/or replaced water supplies for the three communities- have included gender considerations and priorities., All community/gender prioritization met. Repairs and replacement of existing water supply systems are gender inclusive

Output 1.2 Incidence of water borne diseases on men, women, children and other community members in the three islands continue to decline.	**Output 1.2.1 I**mplementation of water treatment systems to existing water supply systems take into account the different needs of women, men, the disabled. Monitoring of water borne diseases include collection of sex-disaggregated data. **Activity 1.2.1.1** Selection of the most suitable water treatment options include gender considerations **Activity 1.2.1.2** Water quality monitoring undertaken in the target communities in partnership with Government ministries and island communities is gender inclusive with specific gender indicators.	Year of the project-Year 2	50% of participants for gender inclusion, awareness raising and education on the importance of safe sanitation practices and protection of water sources on the three islands are women, youths and other vulnerable groups. Sex-disaggregated data collected for monitoring of water borne diseases. Meeting spaces, tools used, and times set for trainings on water treatment systems take into account gender inequalities and specifically include gender considerations. Water quality improvement in communities' target women, youths and other vulnerable groups – and this equate to 50% decline in prevalence of water borne diseases in women, youths and the most vulnerable.	Sex-disaggregated numbers of those affected by water borne diseases available for all villages targeted. Most suitable water treatment options are Identified and gender inclusive. Women, youths and all vulnerable members of communities have access to good water quality.	Evident decline in incidenc of water borne diseases o women, men, youth, th disabled in the three targe sites. Incidence of water born diseases on the three island well below nationa standards; Women, men and all sector of communities have acces to clean, safe water. Increas in water quality equate t decline in prevalence o water borne diseases fo women and other vulnerabl groups.

COMPONENT 2: Building long-term options for water resource management and use

Project Outcome	GEDSI Responsive Output/ Activity	Timeline	Indicator	Baseline	Target
Outcome 2.1 Government of Kiribati and the island communities are mainstreaming the use of evidence to inform water security policies and practical solutions to enhance resilience under future climate in the target islands. All resilience targets are gender inclusive.	**Output 2.1.1:** Comprehensive assessment of safe drinking water sources are gender and socially inclusive, and agreed supply options to fill gaps in supply for all water uses, under a range of climate change scenarios		50% of all assessment teams are women and youths and other vulnerable groups	Assessments conducted have taken gender considerations into account	Communities, inclusive of women, youths, the disabled are mainstreaming the use of evidence to inform water security policies
	Activity 2.1.1.1 Mapping of groundwater resource quantity and quality on the three islands is gender segregated with participation of different men and women groups.		50% of representation on the Steering Committee of the mapping projects in the different islands are women youths and other vulnerable groups.	Mapping of groundwater resource quality and quantity is gender segregated.	Gender equal representation in the steering committees. Mapping conducted with gender segregated information included.
	Activity 2.1.1.2 Projected impact of climate change scenarios on water availability and quality on the islands' groundwater resources and potential coastal inundation take into account different gendered impacts.		Gendered impacts of climate change on water availability and quality is identified and documented. Gender focal point in	Gender segregated impacts of climate change on water availability and quality is available.	Gendered mitigation measures to address climate change impacts on water availability/quality Is developed.

	Activity 2.1.1.3 Building the capacity of MISE in water resource assessments and climate modelling for decision-making in future water security planning takes into account capacity building of women staff.		MISE actively participate in water resource assessments and climate modeling for decision making.	Gender focal point in MISE part of the capacity building work done.	MISE has gender focal points that are skilled and trained in conducting assessments and modeling work.
Outcome 2.2 Long-term sustainable supplies of safe drinking water, clean freshwater for other water uses-is gender inclusive.	**Output 2.1.2:** Long-term sustainability plans for water resources on the three islands and climate change adaptation under future scenarios-takes gender considerations into account. **Activity 2.1.2.1** Technical, social, environmental, and economic assessment of multiple options to ensure provision of sustained access to safe drinking water for all communities on the three islands, considers gender differentiated needs.		Number of women/youths included in specific trainings and awareness sessions on long term plans for safe drinking water. Number of women included in technical, social and economic assessment of options to ensure sustained access to safe drinking water to all communities targeted.	Gender inclusive sustainability plans for water resources developed. Assessments of options available to ensure provision of sustained access to safe drinking water is gender and socially inclusive.	Equitable and gender responsive access to safe drinking water in all three communities, including under drought conditionS Gender responsive options to ensure sustained access to safe drinking water is completed.

COMPONENT 3: Strengthening coordination mechanisms and community participation for water resource management					
Project Outcome	**GEDSI Responsive Output/ Activity**	**Timeline**	**Indicator**	**Baseline**	**Targets**
Outcome 3.1 There is gender equitable access to safe drinking water and clean freshwater for other water uses is in place in the selected island communities	**Output 3.1.1:** Practices of the target outer island communities, are gender responsive and are consistent with the protection and sustainable and equitable use of water	Year 2-3	50% of women, youths and other vulnerable groups have equal access to educational and awareness programs and are part of committees responsible for equitable access to safe drinking water.	There is gender equitable access to drinking water for all 3 target islands.	Equitable and efficient coordination arrangements for water supply at all levels, from the household to the national government levels is gender inclusive.
	Activity 3.1.1.1 Development of long-term sustainable management plans for the islands' water supplies is gender inclusive.		50% of the steering committees in the target sites are women/youths and vulnerable groups.	Gender equitable and accessible water management plans available.	Women are part of decision making forums/committees for sustainable water supply.
	Activity 3.1.1.2 Development of island water supply sustainability plans including water safety plans and drought response plans are gender and socially inclusive.		Quotas set out for women/youth participation in coordination arrangements for water supply at all levels, from the household to the national government levels.	Gender inclusive water safety plans and drought response plans are in place.	Specific omen/youth quotas in coordination arrangements on drought response plans and water safety plans.

	Activity 3.1.1.3 Agreement with the national government on future funding arrangements for the sustainable management plans- include specific gender targets.		Sustainable water management plans at all levels have gender specific interventions and targets.	Gender responsive sustainable water management plans developed.	Sustainable water management plans developed at all levels have specific gender interventions and targets.
	Output 3.1.2: Equitable and efficient coordination arrangements for water supply at all levels, from the household to the national government levels take into account all sectors of the community including women, youth and other vulnerable members of community.		Coordination arrangements at all levels include women, youth and other vulnerable members of communities.	All coordination arrangements are gender inclusive with gender interventions and gender targets.	Gender equitable and socially inclusive coordination arrangements for water supply at all levels.
	Activity 3.1.2.1 Empowering community and government in joint decision-making		Community and gender empowerment training in joint decision making conducted at all levels in all three outer islands.	Gender inclusive e trainings and capacity building on joint decision making held in the target outer islands	Joint decision making processes which include women, youth and other vulnerable members of the communities are in place.

COMPONENT 4: Construction of new water infrastructure to adapt to future climate impacts

Outcomes	GEDSI Responsive Outputs &Activities	Baseline	Indicator	Baseline	Target
Outcome 4.1 There is gender and social inclusion into all aspects of availability of long-term sustainable supplies of safe drinking water, clean freshwater for other water uses, and effective, affordable maintenance arrangements are in place in the three targeted island communities	**Output 4.1.1:** Completion of new infrastructure and water treatment systems include new infrastructure and water treatment systems that are climate resilient and have taken gender considerations into account. **Activity 4.1.1.1** Design and costing of preferred options to fill in gaps in the current water supply systems meet gender identified priorities. **Activity 4.1.1.2** Construction of new water supply infrastructure and water treatment systems take into account gender priorities and needs in future climate impacts. **Activity 4.1.1.3** Supply and safe storage of spare parts and		Equitable participation of women, youth and vulnerable groups in new water and sanitation infrastructure developments that adapt to climate change. Gender priorities included in all design and costings of preferred options. New infrastructure constructed include specific gendered priorities to meet future climate impacts needs for women, youths and other vulnerable members of communities. All training sessions of local technicians for supply and safe storage of spare parts and	New infrastructure systems introduced include gender targets and considerations. Design and costings of preferred options take into account specific gendered needs New water supply infrastructure constructed have specific gendered needs included. Gender inclusive trainings on supply and	There is gender and social inclusion into all aspects of new water infrastructure adopted to adapt to climate impacts. New water infrastructure design and costings meet gender specific needs All new water supply infrastructure constructed take into account gender needs and priorities.

	maintenance equipment and tools Training of local technicians, is gender inclusive.		maintenance equipment are gender inclusive.	safe storage of spare parts conducted	All training conducted to have participation of women, youths

COMPONENT 5: Education, awareness raising and knowledge management

Outcome	GEDSI inclusive Outputs &Activities	Timeline	Indicators	Baseline	Target
Outcome 5.1 Practices of the target outer island communities are consistent with the protection and sustainable and equitable use of water	**Output 5.1.1: The s**ustainable water use and safe sanitation practices knowledge disseminated to the three selected island communities include gender specific knowledge products.		50% of those included in Capacity building, knowledge sharing, and communication are women, youths and other vulnerable groups.	Gender inclusive knowledge management tools developed.	Enhance the capacity of stakeholders to develop gender-responsive strategies, capacity building and equitable access to information.

	Activity 5.1.1.1 Implementing approaches aimed at inducing long-term changes to behaviours and practices in water, sanitation, and hygiene for women, men, youths and all community members. **Activity 5.1.1.2** Gender responsive awareness raising and education on the importance of water conservation under drought conditions, safe sanitation practices and protection of fragile water sources on the three islands are carried out.		Approaches and communication strategies take into account differences in access and power by women and men. Capacity of stakeholders to develop gender-responsive strategies, capacity building and equitable access to information is enhanced.		A gender approach in all training modules & equitable access to awareness raising, knowledge management. Gender responsive awareness raising and training carried out in all, three outer islands,

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ANNEX 1: LIST OF STAKEHOLDERS

Stakeholder mapping and analysis

Organization	Role	Roles in Adaptation work
Aia Mwaea Ainen Kiribati (AMAK) was established as a non-government organization in 1982 to serve as an umbrella organization for the various church affiliated women's organizations.	Work with women organizations in Kiribati including Outer Islands	The Umbrella Organization for Women have membership from all outer islands and can be instrumental in mobilizing of women for training and for other activities.
Women's Church Groups	The two major church groups- have women associations in almost all atolls	The church groups can be platforms for women only discussions and information dissemination to community members.
Women Groups in outer islands	All atolls have women groups and associations and have their reach into all outer islands.	These women organizations provide the support to members and could be instrumental in spearheading interventions that are especially targeted to women.
Island Women Association		
MIA	Work in close association with all Island Councils	Have Island officers who work with community groups.
MWYSA	Women Interest Officer in outer islands	Can be the liaison person for all gender interventions, and can be part of gender trainings and monitoring, reporting.
Youth Associations	Most outer islands have youth groups and associations who are beneficiaries and will be relied on to implement some of the activities to be done.	Will be part of the Implementing of projects and should be part of training on maintenance, data collection, monitoring. Can be part of the cconstruction of the "gap filling" water supply infrastructure, providing local community labour
Island Councils- Local government.	The Councils are the Local Government in outer islands and Representatives of the National Government.	Will be responsible for most of the work to be done in the outer islands- working with community groups and external stakeholders. The island council in its role as an executive body on the island make by-laws for the island.

Unemane- Council of Elders	Decision making body in all outer islands.	Can be instrumental in supporting work that needs to be done at the community level. They will be key stakeholders for consultations and community agreement on long-term sustainable management plans for the islands' water supplies; The villages through meetings in the maneaba make village constitutions and regulations that only effective in that particular village. For example, restricting the use of small fishing nets to catch small and undersized fish. "Karaoaki taian oi-n-tua – kauntira".
Ministry of Health	Work on sanitation interventions	Technical expertise on sanitation and can be responsible for women and youth inclusion in training/awareness on sanitation. Awareness raising and education on the importance of safe sanitation practices and protection of water sources on the three islands will be in collaboration with the MoH.
Department of Environment MELAD	Monitoring oversight relating to chemical composition and bacteria and water quality respectively	Will have information and expertise in water quality work in Tarawa and outer islands.
Climate Finance Unit	Looks after all climate financed projects	Provide government contribution on project proposals and projects approved for implementation.
Office of the President	Climate Change Unit – that oversee Implementation of Climate related projects	Policies that support any work on climate change and political support for climate change work.
National Statistics Office	Data collection and statistical information	Could assist with data analysis and data management.
MISE	Monitoring water reserves	Staff mostly monitor water reserves thus have good knowledge of water resources

Enhancing Resilience in the Outer Islands

Report for Aranuka Island

Prepared for:	SPREP
Project monitor:	Ruth M. Cross
Report editor	Lodovika Tofinga
Date:	24 July 2022

Authors & Acknowledgements

Authors

Ruth Cross, KOM
Kiribati National Coordinator

Lodovika Tofinga
Report Editor

Tianeti Ioane
Consultant

Significant Contributions

We thank our field team members Mimitong Kirata (In-Country Coordinator), Kaiea Awira (GeoSpatial Mapping Expert), Tianeti Ioane (Technical Expert), Tokintekai Bakineti (Technical Expert) for their significant contributions in reviewing instruments, leading field work, providing input on results and technical expertise throughout the process.

Thank you to SPREP team, for their input and review.

Disclaimer

This report is based on a rapid analysis of field work data. Due to time constraints leading up to, and following fieldwork, the rapid analysis focused on identifying key themes and preliminary takeaways to support SPREP in the prioritization list provided.

This version of the report only focuses on findings from Aranuka.

Acronyms

CNC	Coastal Natural Capital	**PFM**	Public Financial Management
FGD	Focus Group Discussion	**RCA**	Root Cause Analysis
GSI	Gender and Social Inclusion	**ST**	South Tarawa
KII	Key Informant Interview	**VRS**	Village Resource Survey
N	Sample		

PHYSICAL FEATURES

There are two islands that make up Aranuka, while the two communities of Buariki and Baurua are located on the mainland. The other populated islet that is located 7.68 kilometers west of the mainland of Aranuka is Takaeang. The 10.77 km long, 1.31 km wide, and 0.1 km wide Aranuka mainland measures. The Aranuka Island Council, Junior Secondary School (JSS), Primary, and primary medical services are all located in the island's central village of Buariki. Locals claim that a fourth village, Kauake, which is connected to Buariki and included in the census as a single village with Buariki, exists. The lone road on the island runs beside the lagoon on the side where the villages are, and it is connected to other portions of the island via a network of feeder and access roads. In most cases, these sidewalks are broad enough for motorbikes and push bikes but not for large trucks. Each community is conveniently accessible by foot, motorbike, truck, and is situated on the lagoon side of the main road on both sides. While Aranuka contains a lagoon, it is not very abundant in shellfish. Boats can enter the lagoon through a passageway in the middle of the reef on the southwest side of the atoll during fair weather. The tunnel contains several hazardous spots where tidal streams can be very strong. It is also well recognized for having an old stand of mangroves called Rhyzophora stylosa, which have grown to be as tall as coconut trees and are now used as a site for bird breeding. On the mainland of Aranuka, these mangroves can be located towards the northernmost point. The island's main hamlet, Buariki, is where all government and island council events take place, has the most residents, houses the harbor, is closest to the airport, and has the greatest population. A stretch of mudflat on the lagoon side and a reef

flat on the ocean side separate Takaeang from the other communities. During low tide, you can get there on foot; during high tide, you can get there by boat and canoe. Takaeang is encircled by a wealth of marine resources.

PHYSICAL FEATURES

Aranuka is an atoll of Kiribati, located just north or the equator (0° 09° N; 173° 35° E) in the Central Gilbert Islands. It has an area of 11.6 square kilometres (4.5 square miles), a population of 1,221 in 2020 and has a population density of 97sq km. The island has a triangular shape, predominantly formed by two large islands, Aranuka which is the main land and Takaeang which is then islet. It has a total land mass of 13.228 km² (5.107 sq mi).

Aranuka is by tradition the island in the middle of Kiribati and the location for the formation and separation of all the islands of Kiribati which was first started by the God of our Ancestors, Nareau. That is why Aranuka was formerly named and known as *Ananuka* – the middle of it. Aranuka has white sandy beaches and blue waters.

Aranuka is also known for its old stand of *Rhizophora stylosa* mangroves that have grown as tall as coconut trees (15 m or 19 ft) and are now a breeding site for birds and the mud craps. These mangroves can be found towards the northern end of mainland Aranuka.The island had only four villages. There four villages on the main land, Buariki Meang, Buariki Maiaki, Kauake, Baurua one on the islet of Takaeang.

Figure.1

Figure. 2

Figure.3

There is only one road that runs around the island which started alongside the lagoon-side where villages are located and runs to the end of the island to the ocean side with a network of access and feeder roads running from the main road to other parts of the island. These pathways generally are wide enough to accommodate pushbikes and motorbikes but not big trucks. All villages are located on the lagoon side on both sides of the main road, easily accessed by walking, with bicycles, motorbikes and trucks.[2]

Aranuka has a lagoon, but this is not so rich in shellfish. There is a passage into the lagoon, available for the boats in moderate weather, through the middle of the reef on the southwestern side of the atoll. There are several dangerous points in the passage where tidal streams can be very strong

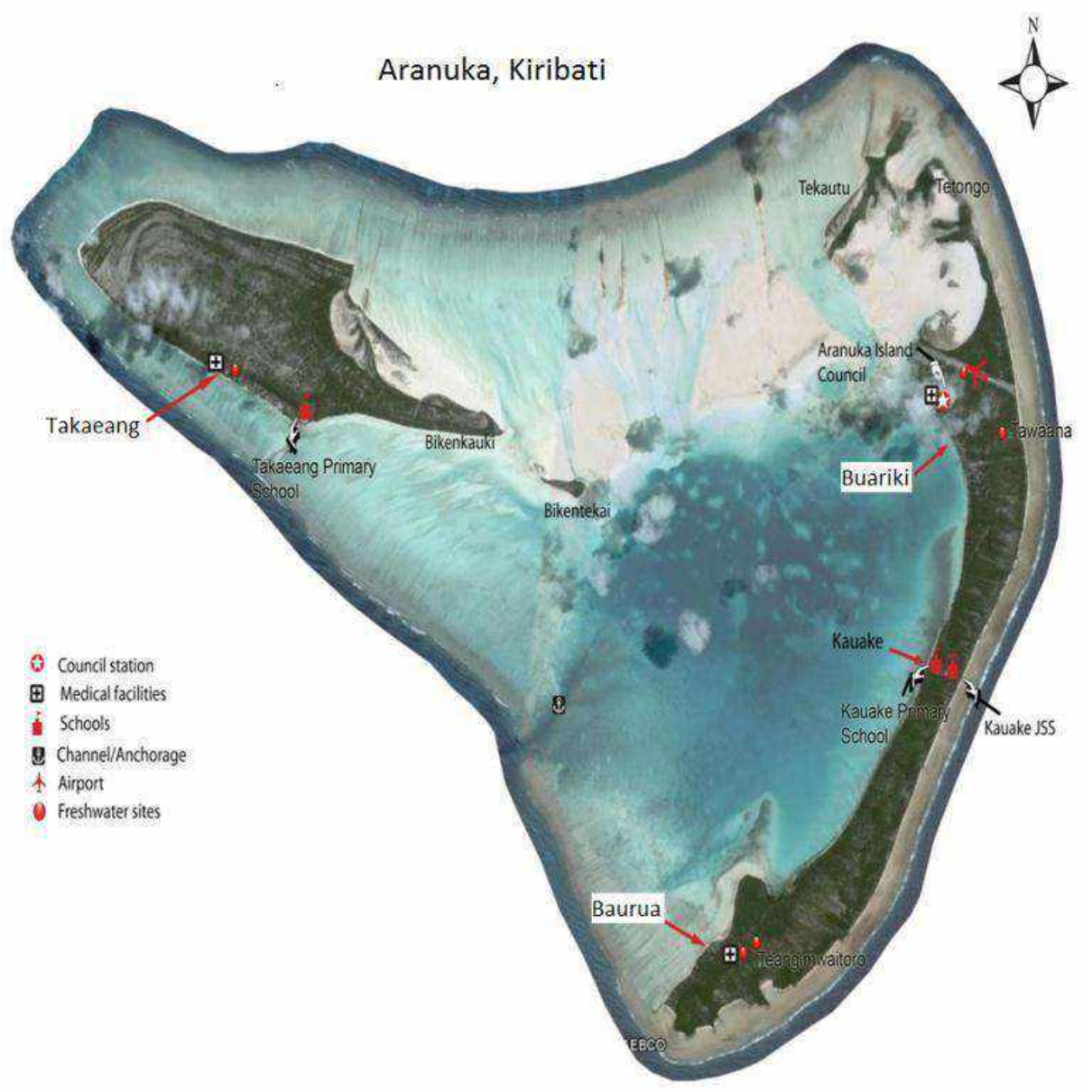
Aranuka, Kiribati
N
Tekautu
Tetongo
Aranuka Island Council
Takaeang
Takaeang Primary School
Bikenkauki
Bikentekai
Tawaana
Buariki
Kauake
Kauake Primary School
Kauake JSS
Baurua
Teangimwaitoro
Council station
Medical facilities
Schools
Channel/Anchorage
Airport
Freshwater sites

Figure 1. Map of Aranuka Island Kiribati (Refer to Aranuka Island Profile 2008 for problem areas and sites of significance) (Source: Republic of Kiribati Island Report series 2012)

POPULATION

Aranuka has 1057 people living there as of the 2010 census, or 1% of Kiribati's total population. The population looks to be falling when compared to the 1158 inhabitants in 2005, yet over the longer term, since 1985, the population of Aranuka has been steady at about 1,000 people.

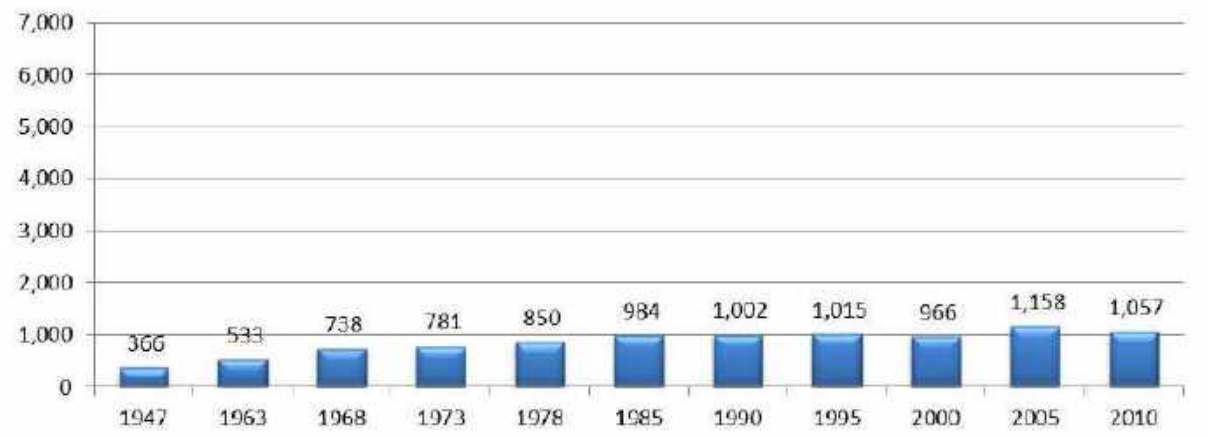

Figure 2: Aranuka Population 1947-2012 (Source: 2010 Census)

With a total land area of 11.61 square kilometers and a population of 1057 (as of 2010), Aranuka has a 91-person-per-square-kilometer population density. Aranuka is one of the less populous islands in Kiribati when compared to other islands. There are 214 households in Aranuka, and since there are 4.9 persons per home on average, Aranuka has smaller households than the majority of Kiribati's islands. The major village of Buariki is home to more over half of Aranuka's residents, with the remaining residents being distributed fairly evenly between the little islet of Takaeang and the settlement of Baurua.

Table 1. Aranuka population by village

Aranuka	Village	Population
	Takaeang	252
	Buariki	592
	Baurua	213
Aranuka total population		**1057**

40% of the people that live on the islands of Aranuka are under the age of 15. The largest age group within this, comprising 15% of the entire population, is between the ages of 10 and 14. There aren't many young people between the ages of 15 and 19, which is consistent with the fact that many of them will be studying on neighboring islands as the island doesn't have a secondary school.

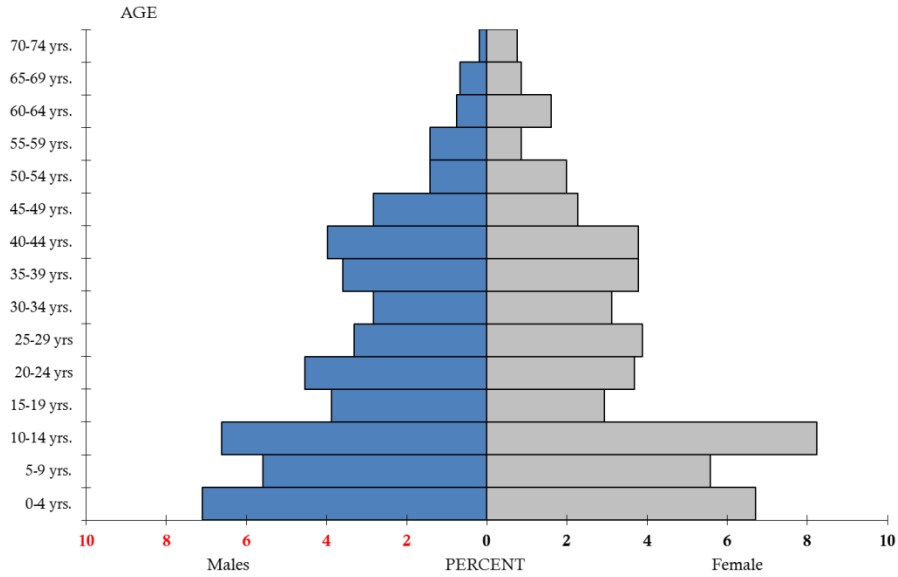

Figure 3: Age Sex Distribution, Aranuka (Source: 2010 Census)

WEATHER PATTERNS

Records show that the dry season starts in March and lasts through August, whereas the wet season lasts from September to February. This pattern has drastically altered. When El Nino conditions are present in the Pacific, droughts occur suddenly and rain falls.

LAND AND MARINE RESOURCES

LAND RESOURCES

The majority of households in Aranuka reside on their own private property, while a small percentage (5%) do so on government-leased land. There are significant limitations on Aranuka's ability to produce food. The number of agricultural crops that can be cultivated

is constrained by poor soil, and the land area that can be used for livestock or agricultural operations is constrained by existing physical features. The island's few fruit trees, primarily coconut, pandanus, and breadfruit, are its principal resources. The majority of households also grow bwabai (swamp taro), typically on private property away from the main communities. A pig is a staple in almost every household, and over half of all families also have chickens and dogs. Pigs and chickens are the only animals that can live and thrive in the atolls; however, they take time to grow and are retained for special events or family gatherings. The most prevalent animals on the island are insects, cats, birds, rodents, lizards, and crabs.

MARINE RESOURCES

Ocean and reef fish are the primary sources of protein for residents on atoll islands. Fish and other marine foods are easy to come by on Aranuka because of its vast lagoon and reef as well as its sparse population.

Table 2: Size of Reef/Lagoon Size, Aranuka

Island	Reef (square km)	Reef base (square km)	Lagoon (square km)	Land (square km)
Aranuka	22.25	15.5	35.86	11.6

Source: Ministry of Fisheries & Marine Resource Development

Despite the natural abundance of fish on Aranuka, fishing and the development of marine resources continue to face problems, such as the following:

a. Lack and cost of fishing equipment
b. Overfishing, and the absence of legally binding bylaws for use of marine resources by visiting ships/companies and the island community as a whole.

FISHERIES

As islanders, households have been taking advantage of the sea in one way or another, initially to meet their own subsistence needs, then to send salted fish (fish jerky) to relatives in other regions of Kiribati, primarily South Tarawa, and more recently to sell at home to people who are unable to fish, typically Council staff residing at the Council quarters in Buariki. 33 percent of households have a canoe that is in good operating shape, and 7 percent have a boat.

ISLAND ECONOMY

COPRA

On Aranuka, copra production is a significant economic activity. Prior to the development of seaweed farming, it served as the main source of income. Copra cutters on Aranuka have complained about the frequent problem of running out of copra cash.

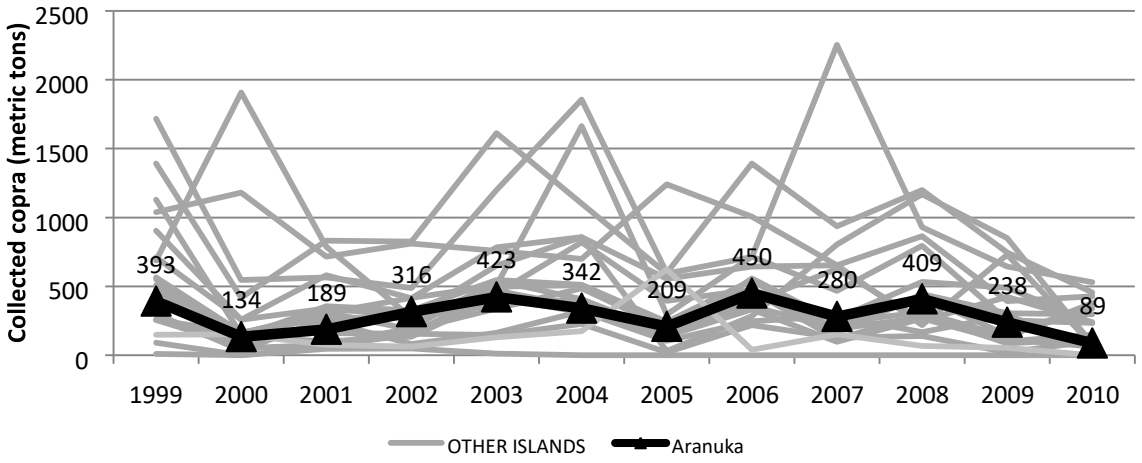

Figure 4: Copra production Aranuka 1999-2010 (Source: Kiribati National Statistics Office)

The island produced 450 metric tons of copra in 1992, earning $270,000, which was the best year for copra production. At the time, copra cost $0.60 per kilogram. The poorest year was 2010, when just 89 tons of copra from Aranuka were gathered, earning $62,300.00 despite copra prices reaching $0.70/kg by the year 2000. The main contributing reason was the 2010 drought, which had a devastating effect on fruit trees like coconut trees and other fruit trees.

AGRICULTURE

The primary agricultural activities include growing bwabwai and chopping toddy (swamp taro). Three out of four houses cut toddy, and the majority of households have their own bwabwai pit(s), which are often situated away from the house, either in the jungle or close to the hamlet. Planting of pandanus, breadfruit, bananas, pawpaw, and "te bero" also aids with subsistence living. Garden crops like sweet potatoes and cabbage are not commonly grown on Aranuka.

LIVESTOCK

Pigs and hens, both domestic and exotic breeds, are the only animals kept as livestock on the island. On the island, there are roughly 700 pigs and 700 hens. Even in comparison to other Kiribati islands, Aranuka has a lot of pigs; the majority of homes (62 percent) have three or more, and 92% of households have at least one indigenous pig. However, pig is not a staple in the native diet and is only consumed on feast days and other special occasions.

SUBSISTENCE ECONOMY

Fishing, toddy cutting, growing and harvesting food crops, primarily coconut, pandanus, breadfruit, and bwabwai, mat weaving, thatching, string rolling, getting water, gathering firewood, making fish traps and hooks, cleaning and washing, cooking, and building houses are examples of typical subsistence activities.

FORMAL EMPLOYMENT

With 30 employees, The Island Council is the community of Aranuka's largest employer (in 2010). The potential for paid employment for islanders is nonexistent save from the small number of jobs supplied by the Island Council in its restricted services and other Government roles on the island such as teachers, police, and nurses.

MARKET ORIENTED EMPLOYMENT

One in six adults, or about 100 people, make at least some money from market-oriented activities including selling fish, copra, agricultural products, handicrafts, or running a small business. On Aranuka, the majority of adults are more likely to identify as doing volunteer or subsistence labor than as being unemployed. This suggests that they are not actively looking for formal employment, most likely because there are so few openings.

Table 3. Summary of main socio economic indicators of Aranuka

	Aranuka		All other outer islands		South Tarawa including Betio		All Kiribati	
	2005	2010	2005	2010	2005	2010	2005	2010
Population (Census)	1,158 1.3% 11.61	1,057 1.0% 11.61	51,064	51,819	40,311 43.6% 15.76	50,182 48.7% 15.76	92,533	103,058
Percent of national	100	91	55.2%	50.3%	2,558	3,184	100%	100%

population																				
Land area, km²								698.97				698.97						726.34		726.34
Population density, people per km²								73				74								
	2005-10										**2005-10**				**2005-10**					**2005-10**
Population growth				-101 -1.8%							755			9,871 4.5%						10,525
Annual rate of growth of population, %											0.3%									2.2%
	<15 years	**15-30**	**30-45**	**45-60**	**over 60**	**<15 years**	**15-30**	**30-45**	**45-60**	**over 60**	**<15 years**	**15-30**	**30-45**	**45-60**	**over 60**	**<15 years**	**15-30**	**30-45**	**45-60**	**over 60**
Population by age group	421	235	223	114	64	40%	19,644	13,689	9,280	6,126	3,080	17,119	8,959	15,784	5,813	2,507	37,184	29,708	18,462	12,053	5,651
Population by age group, %	22%	21%	11%	6%			38%	26%	18%	12%	6%	34%	18%	31%	12%	5%	36%	29%	18%	12%	5%
	2005			**2010**			**2005**			**2010**		**2005**			**2010**			**2005**			**2010**
Number of private households		211		214				8,543		9,124			5,245		6,705			13,999		16,043
		1,158		1,057									39,186		49,250					
		5.5		4.9									7.5		7.3					
Number of persons in private households								48,300		49,653								88,644		99,960
Average household size								5.7		5.4								6.3		6.2
	Labor market activity, people 15+					**Labor market activity, people 15+**					**Labor market activity,**					**Labor market activity, people 15+**				

	Cash work formal -	Cash work market oriented -	Voluntary or subsistence work -	Unemployed	Cash work formal -	Cash work market oriented -	Voluntary or subsistence work -	Unemployed	Cash work formal -	Cash work market oriented -	peopl e 15+ Unemployed	Not in labour force	Cash work formal -	Cash work market oriented -	Voluntary or subsistence work -	Unemployed
Labor force status	104 12 37%	116 46 42% 17%	0 0%	4%	4,742	3,550	0	4,614	12,084	8,594 27% 0%	2,487 8%	0	6,826 22 %	13,545 43 %	13,440	6,153	0	11,452	25,675
Labor force status %					19%	14%	0%	18%	48%						24%	11%	0%	20%	45%
	Education attainment, people 15+				**Education attainment, people 15+**				**Education attainment, peo ople 15+**				**Education attainment, people 15+**				
	No school completed	Primary leaving certificate	Form 3 certificate	Senior secondary certificate	No school completed	Primary leaving certificate	Form 3 certificate	Senior secondary certificate	No school completed	Primary leaving certificate	Senior secondary certificate	Post secondary study or qualificatior	No school completed	Primary leaving certificate	Form 3 certificate	Senior secondary certificate	
Education attainment	55 36%	232 25%	160 28%	181 1% 8 9%	4,140	11,626	7,163	8,523	723	2,418 7% 23%	8,125 7,570 25%	13,626 41 %	1,324 4%	6613	19983	14893	22330	2055
Education attainment %					13%	36%	22%	26%	2%					10%	30%	23%	34%	3%
	2010							**2010**				**2010**					**2010**	
Literate in [te taetae ni] Kiribati %								90%									91%	

1

REMITTANCES

Many inhabitants on Aranuka rely heavily on remittances provided to them by relatives working in Tarawa or abroad because there are few economic opportunities and income-generating activities there.

ENVIRONMENT AND RESOURCES

WATER

The freshwater lens is the primary supply of water for drinking and cleaning. Despite the frequent rainfall, only 9% of households use rainwater as their primary supply of drinking water since the majority of homes have thatched roofs that are unsuitable for collecting rainwater. Because some open wells on Aranuka are close to pit latrines, well water there is frequently contaminated, hence it is recommended that residents boil their water before drinking it. Aranuka has profited from numerous water development initiatives in the form of poly tanks, rainwater catchments, hand pumps, and solar pumps, according to information from the Ministry of Sustainable Energy & Infrastructure. In addition to installing solar pumps and water tanks in the schools, churches, and neighborhood, hand pumps were also built in the homes. These initiatives aim to increase the population's access to clean drinking water and enhance water accessibility. On Kiebu, a rainwater collection system was set up to take rainwater from a church and distribute it to the whole community. The Canada Fund provided the project's funding. On Aranuka, where there is a large yearly rainfall, drinking water is rarely an issue until there is a severe drought.

The main source of water in Aranuka is both well and rainwater whose water security is very affected is Baurua. Not all wells in the village are suitable for drinking these makes it hard for people to have access to safe drinking water, furthermore, there is no pump to supply water to village from wells that are suitable for drinking. Another contributing factor to the poor water quality in the villages on Aranuka is that wells are open and not covered or protected.

In terms of infrastructure communities indicate that there is no backup water supply system from main supply during disaster. A lot of the households also do not have proper toilet in the house and during heavy rain wells get over flow and gets polluted. Majority of households and wells are near the coastline hence prone to overtopping, according the villagers of Baurua about 80% live near the coastline and well water in this area is getting more brackish. The three wells that served the total population of Baurua village located at both end of the village are sown below (Figure 2.a; b and c).


Figure 2a


Figure 2b


Figure 2 c

During drought potable water may be fetched from as far as a kilometer away. Aranuka being located in the central group suffers from drought periods. Supply and quality of water from the wells are dependent on the amount of rainfall and how the wells are protected; some households have protected (covered) wells for drinking but most do not. Boiling well water is common.

ARANUKA WATER FACILITIES

Figures 5 to 13 provide a resource map of all the available water supplies as well as all the water facilities on the Aranuka mainland.

BAURUA WATER FACILITIES

Figure 5. Baurua village (Aranuka) Map of water resource and facility (Source: Kaiea Awira)

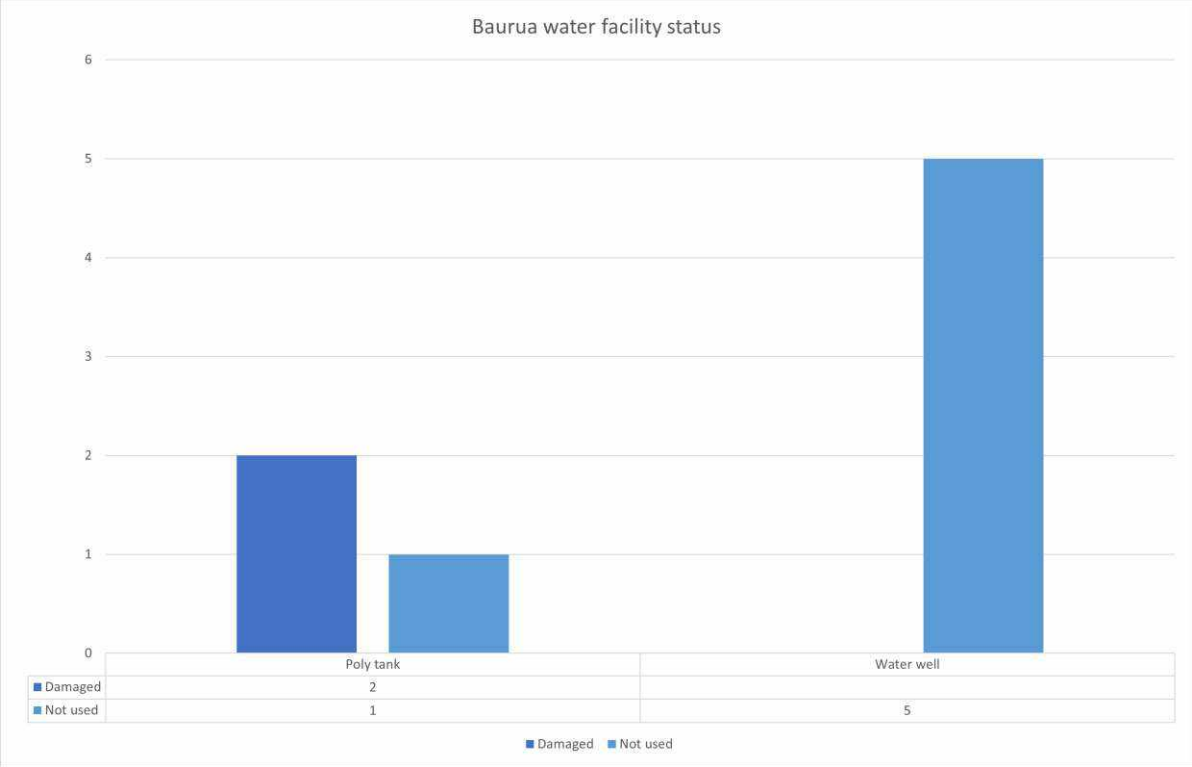

Figure 6. Baurua (Aranuka) Summary of water facilities (Source: Kaiea Awira)

Table 4. Buariki Meang, Maiaki and Baurua (Aranuka) Questionnaire for water facilities, environmental challenges and governance of natural capital and other resources

FGD Group	Buariki North (Meang), Buariki South (Maiaki), Baurua
Date	29. June. 2022
Time	11 to 12.30
Location	Island Guest Council
Facilitator	Tokintekai Bakineti
Note person	Tokintekai Bakineti
Gender roles, food water and livelihood security	
Interviewer/Facilitator Questions	Aranuka Local Interviewee person Answers
Note to facilitator: The objective of the question is we want to get a sense of the different areas of responsibility that men and women have, to ascertain where men exercise agency and where women	

exercise agency in their lives, and where they do not. Please tell the group that we are also interested in understanding more about your food, water, and livelihood security, and your ability to secure the most important things your household needs.	
1. *Please introduce yourself and tell us about yourself and your household*	-Wake up in the morning and sweep around the house, boil water for drinking and clean up eating utensils and then go to work -Do a bit of physical fitness exercise. My husband is responsible for maintaining house chores -I am responsible for boiling water for drinking, cooking and my kids are responsible for carting water from water sources -Sweeping around the house, cleaning eating utensils, boil water and collect coconut for cash earning -Cooking, each member of the house has specific tasks Help my sick husband, collect and cart water from the water source -Cook, collect water and boil water -Sort out my children's tasks, boil water for hygienic purpose
2. *What roles do men and women play in the collection of water*	- Men is responsible for collecting water from where the well is located which in most cases, wells are located away from the villages - Women are responsible for boiling water for drinking purposes and to ensure that boiled water are kept safe in containers - Parents are responsible to ensure that transport for carting water from a distance are made available

3. *Role of women in the islands in relation to (a) water resources; (b) decision-making*	- Women rationalize the amount of water each child in the family consumes - Women are normally responsible to ensure that water sources are always accessible in terms of water availability and fit for consumption. - Even though women are not normally taking part in the village formal meetings, their influence over their husbands is invariably reflected in the discussions raised for discussion the maneaba or in other formal settings where the women's presence is not favoured.
Note to facilitator: The purpose of this question is to determine the main source of drinking-water for members of the household (i.e., the water source that supplies most of the household drinking-water needs). The type of water source or technology specified by the household is used as an indicator for whether the drinking-water is of suitable quality. The water sources likely to be of suitable quality, or "improved", are: a piped water supply into the dwelling; piped water to a yard/plot; a public tap/standpipe; a tube well/borehole; a protected dug well; a protected spring; and rainwater. Water sources that are "unimproved" are: an unprotected dug well; an unprotected spring; a cart with a small tank/drum; a water tanker-truck; and surface water.	
Survey questions about drinking water	
4. *How would you describe access to fresh water in the village? Where do people get it? Is it harder to access in certain areas or during certain times of the year?*	-The quality of ground water depends entirely on rainfall therefore; the limited amount of rainfall receives on the island greatly impacting the fresh water quality in the wells -Based on the island setting, freshest water found on the island

	are found inland. However, there are some wells with fresh and less saline water found closer towards to the sea. In Baurua, one well with fresh and quality water was found very closer to the ocean side. This well is feeding the whole village with fresh water. -Toilet could also be possibly having negative impact on the quality of ground water -Pumps believed to have caused fast salinization of ground water. This is due to the understanding that the uncontrolled pumping out of water from the ground deplete fresh water table fast -People living away from the crowds are more accessed to fresh ground water that those living congested in a village
5. *What is the main source of drinking-water for members of your household?*	-From "tanrake" (ocean side land) away from houses -Practically from wells far from residential areas
6. *What is the main source of water used by your household for other purposes such as cooking and hand washing?*	-"Mwaniba" Mainly from the ground water wells
7. *How long does it take to go there, get water and come back?*	-Time taken invariably ranges between 5 to 20 minutes depending on the location and site of the water well
8. *Who usually goes to this source to fetch the water for the household?*	-Youth, women especially those whose husband is sick
9. *What prior or current water security projects have been undertaken on the island?*	1991 – overhead tank Small grant, Canada fund, NZ, AusAid, KELP, 2018 – KILGA 2006 – LDS 2021 – Chine aid 2001 KIRI-EU 2001 Tamana pump 2018 – FSPK

	MISE – provided tanks for Church JSS school tanks are leaked/broken. Maintenance equipment are not available. The schools rather than attempted to address the issue, reliant on the water technician for maintenance (i.e. glue or replacement parts, sealant for the tanks). Tanks set up at Clinics, schools, council office need repair and other maintenance work.
10. *Are there any traditional adaptation or mitigation measures in place on these islands re water?*	-People believed that the only way to save water to maintain and sustain fresh water availability is by regulating water use which should be kept for drinking purposes only. This means for example people keep freshwater for drinking only and saline or brackish water for washing and bathing. - "Kabonganakin te ran ake a mam bon ti ibukin te mooi"
11. *Do the islands have water safety plans, maintenance plans etc. in place?]*	-None is produced by villagers as far as the village is concerned
12. *What support is provided to the islands for water maintenance?*	- Refer to question 9 answers.
13. *What do communities do in times of drought or no access to water?*	-Collect water from distanced wells - People living in bush areas away from population have better ground water - "Aomata a maeka ibuakonikai ike e tamaroa riki ranna" -Some families relocated and built new homes away from the villages -Relocation to places where water quality is good
When you think about stresses in your community, are there any ways in which the water supply issues have increased stresses?]	- There is evidently an increased stress as water from ground is fast to get salinized

How clean is the fresh water available? Do people have to do anything extra to make water safe to drink or use for cooking? Why? a. *Prompt: Probe for any concerns about groundwater / well contamination, especially around salinity? "Kataia kakaea ibukin tabeaianga nte mwanibwa, te man n aoraki nte mwanibwa, moarara riki n te tarika"* b. *Probe: How is the rainwater treated?* c. *Probe: How is the well water maintained or protected?*	-Water extracted from most wells is obviously not fit for human consumption. This is evident from the water increased salinity level, the increased number of sick cases of patient having diarrhoea, scabies, -It was suggested that to improve quality of water from wells the following remedies should be applied; -Wells should be housed -Gravels broadcasted thickly around the well to stop soil run-off to drain back to wells -Water extraction from wells should only be through pipes -The water wells should be housed/sheltered and protected by cement or stone structures to keep freshwater clean from dirt and dust, the well could be lidded or buried protected and piped for collection. "Ena autinaki te mwaniba, ena kaitiakaki ao ena atamanaki bwa ena akea te bubu nako nanona, ena taunaki te mwaniba ao te pipe ena ti kona ni katika te ran mai iai"
If there are problems with access to clean water, what problems does this cause? *a. Prompt: "E roota te marurung? E bane riki te tai ibukin karekean te ran ae itiaki man taabo tabeua? E bane riki te korakora ao kabuekan te aia ibukin kaitiakan te ran?"*	-Health issues as more time is spent getting clean water from places further from village homes and more energy is spent to collect and/or boil water and more wood is used as required to burn in order to purify the water for consumption. -Foul water smell - "Mwaung te ran" -Skin disease, scabies etc, diarrhea etc. -Stagnant, contaminated or unhygienic ground or well water as a result of saltwater and dirt intrusion may be associated with women's health issues and cancer when women bath in it? -There is prolonged period of people being thirsty, dehydrated due to drinking brackish water from wells for maby depend on it for consumption. "Bwatakataka e aki kona n toki".

How do households cope with accessing water during droughts? b. *Prompt 1: If there are households with well water- are wells impacted during drought? If yes, how? "Ngkana iai am mwanibwa n am auti tera aron rotakina n tain te mwautakataka? E rootaki ni kanga?"* c. *Prompt 2: Kakaea: moarara riki taian tabeaianga ibukin tauraoin ao raoiroin te ran man te mwanibwa n tain te bwatakataka, n aron, tabeua rootaki ni irekereke ma aki bwabwakan te karau e na bita raoiroin ranin te mwanibwa, e na kamwaita riki te korakora ibukin bwamiakin te ran (te iti ke te bai?)* d. *Probe: especially around concerns for groundwater availability and reliability during dry periods, for example, possible drought related impacts could mean change in groundwater quality, more pump time- manual or electricity (?)*	
Environmental Challenges	
Bitakin te kibuntaeka: Ti rangi ni kan ongora ke ni karaoa ara kakaei iaon aron tararuan kaubwai man te aba. N ara atatai ao mwakoro/kaawa a moanna n rawawata ao nibitaki ibukin bitakin te otanibwanin ao	

kanoan te bong. Bwaai aika riki man te otabwanin a karaoa nab te bitaki, n te aro bwa aomata ana kona karekean maiuia iai. Iai nanora ni kan ongora riki iaon taian bitaki aikai, ao e kanga te mwakoro/kaawa ni kaitarai ke ni maeka ma bitaki aikai n akea ana kanganga nakon are ootam.	
What are the top two or three environmental challenges that your households and community are facing today? *Provide examples: less reliable rain water, saltier groundwater, contamination of groundwater, waste management, loss of sea resources, warmer oceans, reef health, land resources, etc.)* *Has it been more difficult to get the following natural resources than it was 10 years ago?* *Is there challenges we face in our food crops from blackish water? "Iai kanganga ni irekereke ma ara kain amwarake, ke kanganga iaon te waaki n unniki man aki raoiroin te ran/mwautakataka?"* *Are there differences between how men and women are affected by these challenges? If so, please explain.* *"Iai taiani kaokoro bwa a kanga mwaane ao aine n rootaki n taian kanganga aikai? Ngkana iai, taiaoka kabwarabwara"* *Are there shared resources in the village that you use for water collection purposes? If so, what are those resources and how accessible are they? "Iai taian kaubwai aika a bwainaki nte mwakoro/kaawa ae bwanin ae ko kabongnai ibukin te ran? Ngkana iai,*	**Prompt**: -Prolonged period of coconut dormant period, food crops died, fruit are sun-stroked. -No change has yet been realized of fishing and obtaining fish from beyond the reef. "Karekean iika man te marawa (itinanikun rakai)?" - Shell-fish are still in abundance, Karekean iika ake ake inanoaa (inanon te rakai imataniwi)? Ika ake akea ingiia (inanoan te rakai)? -Decline is realized in planting and harvesting or obtaining coconut copra, pandanus fruit, taro, breadfruit and other essential traditional crop food that are so essential for Aranuka people's lives, health and nutrition. "Karekean te takataka, te tou, taro, ao te mai (kaubwain riki te aba ake ko kainanoi)?" -Increased copra price accelerated rate in which coconut is being collected "Rakan boon te ben ea bon rotaki iai aron anakin te ben, kanga akea rotaki naba taian tou, taro etc." Te ran ae mam (ae nimaki, e tia n tuoaki)? -*Study on water quality has not yet been carried out.* "iai rotakin te ran n taai trabetai, Kauring naba: A kona ni kabane kain mwakoro/kaawa ni karekei kaubwai ake a reke mai iaon te ora (mataniwiin te aba)? Ngkana aki, antai ae e aki kona ao tera bukina?

baikara bwaai akanne ao e kanga aron rekeia iroum?" *Prompt: for accessible prompt if certain individuals are denying other usage, hard to get permission to access, hard to physically access-far. "Kauring: ibukin karekean kauring ngkana arona bwa te manna ma te manna e totokoa kee ni katinanikua aron kabonganana, e kanganga aron karekea te kariaia n roko* iai, kee n aki kona n roko rabwatam nako iai" *Have there been any conflicts in your village related specifically to shared water resources on land or shared community assets to access water? Discuss fresh water vs. well water. "Iai te itabarara n am kaawa ni irekereke ma bwaai ni ibuobuoki ae bwaibwai iai te kaawa, ni ikotaki ma ran ae itiaki?"* *Prompt: source of conflict (ie: misuse, cannot access, overused/exploited by some, rules breaking….) "Kauring: bukin te unraa (katoto: aki kabonganakina raoi, aki kona n roko iai, e a riao kabonganakina/kabonganaki buaka irouia tabeman, uruakaki te tua.)"* *Are there any desired approaches or techniques for adjusting to the environmental changes you described that are not currently used in your village yet?? What keeps the village from implementing these practices? "Iai riki anga aika ko tangiria ni kani karaoi aika a tuai kabonganaaki irouia mwakoro/kaawa ibukin kaitarakin kanganga man te otabwanin?? Tera ae tuukia kaawa man aki kabonganakin kawai/anga aikai?"* *Maybe prompt about technology vs governance vs consumption patterns?*	-Yes, there are. There is the issue of fruits which are sun-stroked and some trees are now observed to be bearing less fruit -yes differences, Men go out fishing far from the land Mwane a rotaki bwa a nako riki n akawa n taabo aika raroa -Heat from the sun is preventing women from performing their work. Collecting water is additional load -Aine ea rawata riki te mnwakuri bwa ea rawata riki te kainnano nte riringa ao te uraki ran **ea** karawata riki te mwakuri -Yes. There are tanks that were set up in the villages where people shared. These tanks were set up on private lands where permission were initially sought and agreed by landowners. "Taian tank akea a kateaki n taian kaawa" -There were cases where landowners demand for lease payment for the use of their private lands for setting up public properties. This has prompted some disagreement and conflict between individuals and the beneficiaries. "Tangiran ritinakion taabo ake a katikaki mai iai tain mwam" -Stop burning the bushes. Build solar pumps to extract and transfer water from sites where fresh water is thick "Ena toki te kauraura, solar pump ena kabatiaki ao man katikaki raan man taabo akea a matenten".

"Kauring: tao te kauring ibukin iango aika a boou ao aron te tautaeka ao ai aron tein te bobwai"	
Governance of Natural Capital and Other Resources	
Bitakin te iango kee te kibuntaeka: irarikin ara kan ongora iaon bwaai ake ko a tia n rinanona kee ootam ni kanganga man bibitakin te otabwanin, iai ara titiraki tabeua iaon aron te babaire nte kaawa ao e kanga aron bibitakin te otabwanin ni mwakuriaki irouia kain te kaawa.	
Transition statement: in addition to our interest in your experiences or understanding of environmental changes, we have some broad questions about decision making in the village and how environmental challenges are addressed by the community *Who do you liaise with to fix your broken Tamana pumps? "Ngkana e uruaki ami Tamana pump ke ami tangke ni karau antai te rabwata ae kam reitaki ma ngaia ibukin karaoakina?"* *Who are responsible to provide spare parts for water facilities? "Ngkana iai bwaina aika tangiraki (i.e spare parts) ami tangke ke ami pump, antai tabena karekeana?"*	-Onobwai ke kateimatoan raoiroin tangke ni karau/mwanibwa ibukin karekean te ran ae tamaroa. -Oin te kantaninga ibukin karekean te rongorongo bwa a kanga n kateimatoa raoiroin aia tangke ni karau/Tamana pump/ te mwanibwa. - N aron taari ana aki karekenakoaki taian kimbi, taian mange ana riai ni botaki teuana ao man kauraki. Te uniki tongo ibukin tauan te bike, kateaki te bono ibukin totokoan te kanaki
How are decisions or rules about using natural resources or about protecting the environment on your island and in your village made?]	-Kauring: iai taian bowi ibukin babaire aika a karaoaki, iai taian rabwata ibukin anne…. *[Prompt: Are there certain meetings where these decisions are made, are there certain institutions….]*

	- The island council in its role as an executive body on the island make by-laws for the island. The villages through meetings in the maneaba make village constitutions and regulations that only effective in that particular village. For example, restricting the use of small fishing nets to catch small and undersized fish. "Karaoaki taian oi-n-tua – kauntira". -Restricting people from collecting land crabs from mangroves during their spawning period "Matan te karaun nea tabuaki anakin ika aika uarereke. Ena katabuaki anakin te mwanai nte tongo n ana tai n oko".
Who are the decision makers in relation to environment protection?	-The island council which constitutes of elected and nominated reps from the villages is responsible to make bye-laws to safeguard the natural resources. "Kauntira ao rep man taian kaawa n taian botaki ake a tia n registered".
Are there any people who do not participate? Why? Probe: Are there individuals who are not permitted or for whom it is not socially acceptable to participate?	There are people who avoids the crowds and keep to themselves. These are the people who invariably refuse to attend meetings. There are also people who tried to maintain their superiority over others and care not to mingle and share ideas with others. "Iai, a rangin ianibata. Iai aika tataui inaomataia. Ngkana akea te sub ke sitting allowance". We haven't had any encounter with that issue. "Babaire ni kaineti ma rootakin ara ran ni mooi: Inanon tain te rongo, iai kainibaire aika tia ni karaoaki bwa ena ibuobuoki n n aron tibwatibwaan te ran nakoia kaain te kaawa. i.e teuana/uoua te bwaketi ni mooi nte ingabong nakon teuana te auti. E tuai n riki".
More broadly, are there any environmental issues that you think need to be monitored or managed better? What do you think could help make that happen?	-Obviously, there are tanks that are broken which need minor repair and maintenance. Some tanks lose their taps; some have some minor cracks on the side. These are

	some of the repair works that needs someone to attend and fixed. - The Island Council water technician lacks the spare parts to fixe these problems. Only if this mechanism is put in place which allows immediate attendance to the problem by water technician, these problems will continue to persist. - Water in the ground need village policies and island council by-law to enforce and safeguard its use. - Planting mangroves to safeguard marine resources and to build sanctuary and breeding grounds for marine resources is another option

BUARIKI WATER FACILITIES

Figure 7. Buariki village (Aranuka) Map of water resource and facility (Source: Kaiea Awira)

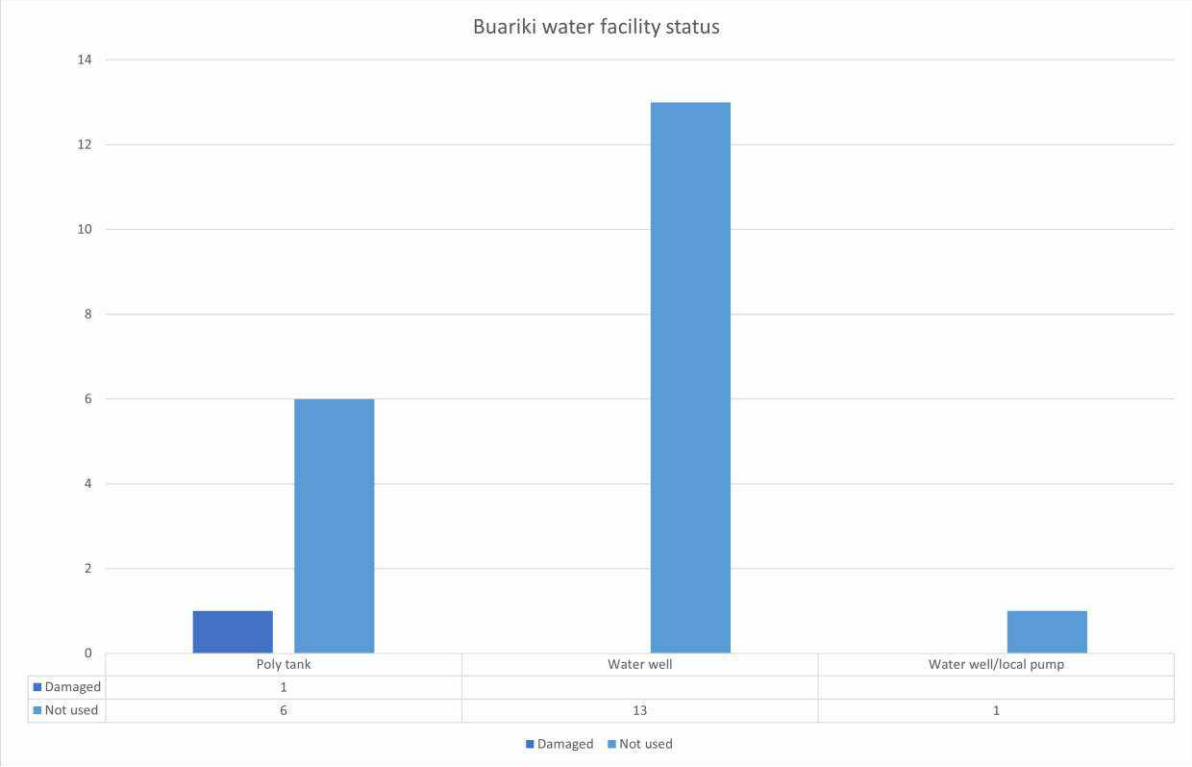

Figure 8. Buariki (Aranuka) Summary of water facilities (Source: Kaiea Awira)

KAUKEA WATER FACILITIES

Figure 9. Kaukea village (Aranuka) Map of water resource and facility (Source: Kaiea Awira)

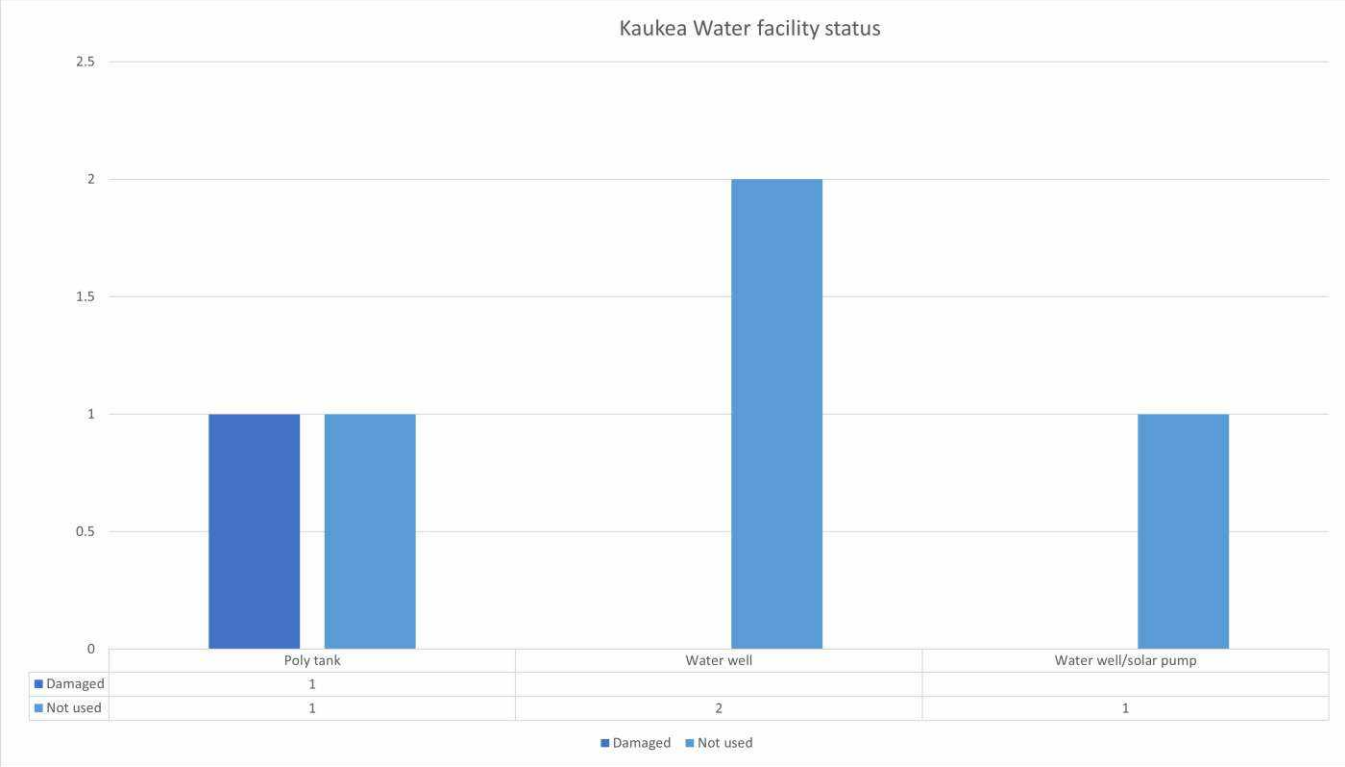

Figure 10. Kaukea (Aranuka) Summary of water facilities (Source: Kaiea Awira)

TAKAEANG WATER FACILITIES

Figure 11. Takaeang village (Aranuka) Map of water resource and facility (Source: Kaiea Awira)

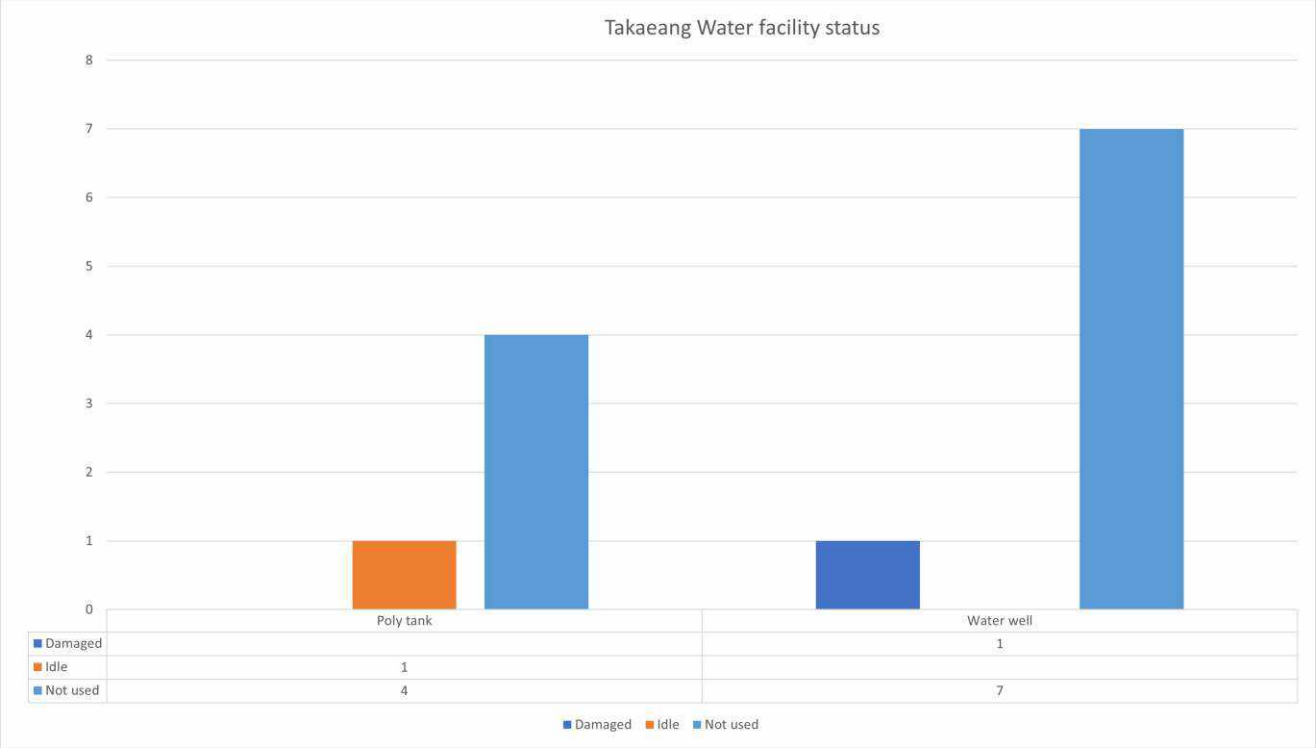

Figure 12. Takaeang (Aranuka) Summary of water facilities (Source: Kaiea Awira)

Table 5. Takaeang (Aranuka) Questionnaire for water facilities, environmental challenges and governance of natural capital and other resources

FGD Group	Women's group Takaeang village
Date	27. June. 2022
Time	12.00 noon
Location	Takaeang village
Facilitator	Ruth Cross
Note person	Tokintekai Bakineti
Gender roles, food water and livelihood security	
Interviewer/Facilitator Questions	Aranuka Local Interviewee person Answers
Note to facilitator: The objective of the question is we want to get a sense of the different areas of responsibility that men and women have, to ascertain where men exercise agency and where women exercise agency in their lives, and where	

they do not. Please tell the group that we are also interested in understanding more about your food, water, and livelihood security, and your ability to secure the most important things your household needs.	
Please introduce yourself and tell us about yourself and your household	-Tirubwebwe – only myself and husband in the house. I normally wake up in the morning and get myself ready for work. My husbands who stay at home cost of the time do all house chores. -Tawana – we are nine in my family. I normally take care of household chores and income generating activities such as collecting coconut for copra. I also consider integrating spiritual activities in our family chores to lead a spiritual life. -Ruta – Wake up and complete all my duties and responsibilities for the household. These including sweeping around the house, cleaning eating and cooking utensils and then cook for the family. -Etita – My husband looks after most of the house chores while myself focused on my work to earn our living.
What roles do men and women play in the collection of water	-Men are normally responsible for carting water from the well to bathrooms and washing purposes. --They are also responsible to provide family with water source such as well and building tank stand We have a well and we live very closer to the sea. ----Water from our well was used for washing purposes and bathing and we bring water from other wells for drinking purposes as water in our well is very saline. -Each family takes charge of their family water needs. -We have a hose that our village neighbors supplied us which we are using to cart water from neighboring wells with fresh water

	- "Iai ara mwaniba ao ara tabo e rangin kaan ma taari. Ara mwaniba ti kabongana ibukin te uaati ao ngkana ibukin te mooi ti katiki ran man te mwaniba teuana irarikira – aio te tabo irouia kaain te mwenga, bon te tabbeakina arona te aomata ibukin kainanoan te ran" - "Buokia kaain rarikin au auti bwa bon ti ngai n au auti" - "Before ngke akea ara hose, ao bon au husband ae tabena te uraki ran. Villagers supplied us pipes are tia katikiran nakon ara roki. Te clinic bon akea te ran iai. Aoraki auraki ran"
Role of women in the islands in relation to (a) water resources; (b) decision-making	- "Tararuakin te ran ao te maroro ma kaain te auti ibukin kawakinan te ran espe. Te ran are kaburoaki ena riai raoi ni kawakinaki. Mane bon ti taan babaire. Te babaire ibukin ana bwai te tabo tautaeka a bon babaire iai aine ngkana te aine te tia mwakuri n aron te clinic. Nte community ao aine ana karokoa aia bubuti nakoia taan babaire ake mwane" -Women are normally responsible to supervise the family to manage water properly. Hence, part of their responsibility is to boil water and ensure that it is properly kept in containers. Men are normally key decision makers however women take the lead in decision makings for government owned properties only when a woman is the head of the department e.g. clinics and so forth. In communities, it is a norm that women normally pass their request for anything that they want from the villagers through their husband who take up the issue in the village meeting. Women's perceptions are represented by their husbands in village local meetings
Survey questions about drinking water	
Note to facilitator: The purpose of this question is to determine the main source	

of drinking-water for members of the household (i.e., the water source that supplies most of the household drinking-water needs). The type of water source or technology specified by the household is used as an indicator for whether the drinking-water is of suitable quality. The water sources likely to be of suitable quality, or "improved", are: a piped water supply into the dwelling; piped water to a yard/plot; a public tap/standpipe; a tube well/borehole; a protected dug well; a protected spring; and rainwater. Water sources that are "unimproved" are: an unprotected dug well; an unprotected spring; a cart with a small tank/drum; a water tanker-truck; and surface water.	
How would you describe access to fresh water in the village? Where do people get it? Is it harder to access in certain areas or during certain times of the year?	- "Ti uraki ran nakon ara tabo bwa e aki man te ran iai. N tain te iara ao kanga e tamaroa **ara** ran teutana ma n tain te o-ni-ia ao ea bon taari. Ti uraki ran man taabo ake a mwam te **ran** iai. E buneinei ara mwanibwa" -We fetch water from other wells as water in our well is saline. During the spring tide, water in our well seem to be less saline but the salinity level increased especially during the king tide. Water in our well is smelly
What is the main source of drinking-water for members of your household?	-Mostly from wells
What is the main source of water used by your household for other purposes such as cooking and hand washing?	-Well water
How long does it take to go there, get water and come back?	-40 mins
Who usually goes to this source to fetch the water for the household?	- "Ataei-*n-mwane (roronrikirake)*". *The youths are always responsible to fetch water*
What prior or current water security projects have been undertaken on the island?	-Solar pump ibukin te reirei ma a uraki ngkai. Ma ti aki ataia raoi ba iai te tanks aika donated by Mormon church

	-There were solar pumps which were installed for the schools which are no longer functional. But not so sure where these tanks are coming from. May be some are donated by the Mormon church
Are there any traditional adaptation or mitigation measures in place on these islands re water?	-Tabeua auti a bon karaoi aia pump ma taian pressure ake a karaoaki man taian binobino. Aio te rabakau nio Kiribati -Some households made their own pumps using the Kiribati innovative pumps which uses pressures created locally from local materials
Do the islands have water safety plans, maintenance plans etc. in place?	-"Akea" No
What support is provided to the islands for water maintenance?	-A roroko mai iroun te Kauntira ma ti aki ataia bwa maia taian sources of fundings -Most are provided by the island council but we are not sure of who donors are
What do communities do in times of drought or no access to water?	-Katei autin mwaneaba ba ena kabebeteaki te kabuebue nakon te mwanibwa -We build shade for wells to minimize heat effect on the well
When you think about stresses in your community, are there any ways in which the water supply issues have increased stresses?	-E teimatoa n reke te ran ma ngkana ea bon ababaki aki bwabwakan te ran ao iai **namakinan** rotakin te ran -We continually access to fresh water supplies but we feel drought impact on water salinity level when there is a prolonged no-rain season
How clean is the fresh water available? Do people have to do anything extra to make water safe to drink or use for cooking? Why? *Prompt: Probe for any concerns about groundwater / well contamination, especially around salinity "Kataia kakaea ibukin tabeaianga nte mwanibwa, te man n aoraki nte mwanibwa, moarara riki n te tarika".* *Probe: How is the rainwater treated?*	- "Kaikaki ao rabunaki matan te mwanibwa" People clean wells by drawing dirty water out and then cover the well to prevent any foreign objects to fall inside the well -Te kinaka irouia ataei, aine aki koa kabongana te ran n te tebotebo ba ibukin **rotakin** rabataia. -Some people use chlorine to treat their water in their wells "Iai aika kabongana te white king ibukin kaitiakakin ranin aia mwanibwa". -Bekanako, mumuta, ngongo, kone, cancer, ngongo nte nano n ranga, binewawa

Probe: How is the well water maintained or protected? *If there are problems with access to clean water, what problems does this cause? Ngkana iai te kanganga ni karekean te ran ae itiaki/mam, baikara kanganga aika a riki man anne?* *Prompt: Health? More time spent getting clean water from somewhere else? More energy spent and wood burned purifying it? "E roota te marurung? E bane riki te tai ibukin karekean te ran ae itiaki man taabo tabeua? E bane riki te korakora ao kabuekan te aia ibukin kaitiakan te ran?".* *How do households cope with accessing water during droughts? "A kanga auti ni kaitara karekean te ran n tain te bwatakataka (aki bwabwakan te karau nte tai ae maan)?".* *Prompt 1: If there are households with well water- are wells impacted during drought? If yes, how? "Ngkana iai am mwanibwa n am auti tera aron rotakina n tain te mwautakataka? E rootaki ni kanga?".* *Prompt 2: Probe: especially around concerns for groundwater availability and reliability during dry periods, for example, possible drought related impacts could mean change in groundwater quality, more pump time- manual or electric (?) "Kakaea: moarara riki taian tabeaianga ibukin tauraoin ao raoiroin te ran man te mwanibwa n tain te bwatakataka, n aron, tabeua rootaki ni irekereke ma aki bwabwakan te karau e na bita raoiroin ranin te mwanibwa, e na kamwaita riki te korakora ibukin bwamiakin te ran (te iti ke te bai?)".*	-Most well water is impacted by drought where water turns brackish

Environmental Challenges	
What are the top two or three environmental challenges that your households and community are facing today? *Prompt: Provide examples: less reliable rain water, saltier groundwater, contamination of groundwater, waste management, loss of sea resources, warmer oceans, reef health, land resources, etc.). "Anga te katoto: e a uarereke te ran ae raoiroi ibukin te nimaki, e a tarika ranin te mwanibwa, e a man n aoraki te mwanibwa, tararuan te maange, buan kaubwaira mai taari, ea kabuebue riki te marawa, marurungin te rakai, kaubwain te aba, a bati riki".* *Has it been more difficult to get the following natural resources than it was 10 years ago?] "E a tia n rangi ni kanganga karekean kaubwai aikai ni kabotauaki ma 10 te ririki n nako?".* *Has testing and study been carried out on freshwater? "Te ran ae mam (ae nimaki, e tia n tuoaki)?".*	-Most fruits are deformed, plants are dying, and ultimately heat which affect our capacity to function to perform our daily chores. "E aki roko raoi aron uaan taian aroka, mate aroka, korakoran te riringa e bon rota naba te rabwata are ko aki kona iai ni mwakuri". -Not yet realized. "Karekean iika man te marawa (itinanikun rakai)? Kanga akea". -No problems. "Karekean iika ake ake inanoaa (inanon te rakai imataniwi)?". -Not a problem. "Akea te kanganga –Ika ake akea ingiia (inanoan te rakai)?". - "Akea naba Karekean te takataka, te tou, taro, ao te mai (kaubwain riki te aba ake ko kainanoi)?". -The increased copra price have a lot of impact on coconut. Other than that we haven't experienced any problems with other crops. "Rakan boon te ben ea bon rotaki iai aron anakin te ben, kanga akea rotaki naba taian tou, taro etc". -Sometimes water available is an issue. -Iai rotakin te ran n taai tabetai. -Kauring naba: A kona ni kabane kain mwakoro/kaawa ni karekei kaubwai ake a reke mai iaon te ora (mataniwiin te aba)? Ngkana aki, antai ae e aki kona ao tera bukina? There is no restriction on who should have access to such resources
Is there challenges we face in our food crops from blackish water?	-Already answered.
Are there differences between how men and women are affected by these challenges? If so, please explain	-Men and women are affected by climate change in different ways. -Men could not do most of their daily chores as they need to shade themselves from the heat -Women who do most of the household works could also not able to work outside as the heat is too much for them
Are there shared resources in the village that you use for water collection purposes? If so,	-The community tanks which were meant for sharing between community members

what are those resources and how accessible are they? *Kauring: Prompt: for accessible prompt if certain individuals are denying other usage, hard to get permission to access, hard to physically access-far. "Ibukin karekean kauring ngkana arona bwa te manna ma te manna e totokoa kee ni katinanikua aron kabonganana, e kanganga aron karekea te kariaia n roko iai, kee n aki kona n roko rabwatam nako iai".*	are not functional to serve their purpose. These tanks need repair for their broken part and people depend on the island council for repair and maintenance which is a slow process. This is where an issue of who among members of the community is responsible to provide the broken parts. Community members are not seriously responsible for repairing broken parts -Te open access are e aki controlled e karika te kanganga n aron are angin te tai aomata aki tuatua ma a bon kabonganai naba taian resources akanne n akea te titiraki.
Have there been any conflicts in your village related specifically to shared water resources on land or shared community assets to access water? Discuss fresh water vs. well water *Kauring: Prompt: source of conflict (ie: misuse, cannot access, overused/exploited by some, rules breaking. "Ibukin te unraa (katoto: aki kabonganakina raoi, aki kona n roko iai, e a riao kabonganakina/kabonganaki buaka irouia tabeman, uruakaki te tua.)".*	-Not that we know
Are there any desired approaches or techniques for adjusting to the environmental changes you described that are not currently used in your village yet?? What keeps the village from implementing these practices? *Kauring: maybe prompt about technology vs governance vs consumption patterns? "Tao te kauring ibukin iango aika a boou ao aron te tautaeka ao ai aron tein te bobwai".*	-In fact, there is no proper guidelines that will drive people towards achieving this result. It is obvious that someone has to drive the process

Governance of Natural Capital and Other Resources	
Transition statement: in addition to our interest in your experiences or understanding of environmental changes, we have some broad questions about decision making in the village and how environmental challenges are addressed by the community	
How are decisions or rules about using natural resources or about protecting the environment on your island and in your village made?] *Kauring: Prompt: Are there certain meetings where these decisions are made, are there certain institutions. "Iai taian bowi ibukin babaire aika a karaoaki, iai taian rabwata ibukin anne?"*	-The use and access to land resourced is fanmily-based. People could only be accessed to resources which are within the boundary of their ownership. This is different from accessing marine resources as free access is mainly exercised as sea falls under the public property domain. -For a public property, it is normal that old men are the decision makers where men bring up proposals seeking for their approval. Whatever is decided in this decision making for a becomes observed througho0ut the island -"Unimane ana bon karaoa moa iai kai ni baire are ea uotaki naba nakon te kaawa ibukin kabwatakina"
Who are the decision makers in relation to environment protection?	- Island Councils for island matter. "Kauntira, ao nte kaawa bon te unimane".
Are there any people who do not participate? Why? Probe: Are there individuals who are not permitted or for whom it is not socially acceptable to participate?]	- "Rorobuaka n ataei te roro are a tuai ni babaire inanon te maneaba" -Babaire ni kaineti ma rootakin ara ran ni mooi: -Inanon tain te rongo, iai kainibaire aika tia ni karaoaki bwa ena ibuobuoki n n aron tibwatibwaan te ran nakoia kaain te kaawa. i.e teuana/uoua te bwaketi ni mooi nte ingabong nakon teuana te auti. E tuai namakinaki te kanganga aio
More broadly, are there any environmental issues that you think need to be monitored or managed better? What do you think could help make that happen?	Katanan te anai ben ngkai ea bon noraki bwa te ben e aki kona n reke ngkai Onobwai ke kateimatoan raoiroin tangke ni karau/mwanibwa ibukin karekean te ran ae tamaroa.

	Oin te kantaninga ibukin karekean te rongorongo bwa a kanga n kateimatoa raoiroin aia tangke ni karau/Tamana pump/ te mwanibwa. -Ngkana e uruaki ami Tamana pump ke ami tangke ni karau antai te rabwata ae kam reitaki ma ngaia ibukin karaoakina? -Ngkana iai bwaina aika tangiraki (i.e spare parts) ami tangke ke ami pump, antai tabena karekeana

ARANUKA WATER FACILITIES

Waypoint	Facilities	Capacity	Source	Status	Ownership	Year
8	Poly tank	5000	GOK	Idle	School	0.1
9	Water well		Private	Not used	Private	1
10	Water well		GOK	Damaged	School	10+
11	Water well		RC	Not used	RC	10+
12	Poly tank	10000	Kiriwatsan	Not used	Village	5+
13	Poly tank	5000	EU	Not used	Village	5+
14	Poly tank	5000	EU	Not used	Clinic	10+
15	Water well		EU	Not used	Clinic	10+
16	Water well		KPC	Not used	KPC	5
17	Water well		Private	Not used	Private	1
18	Poly tank	5000	LDS	Not used	KUC	15+
19	Water well		KUC	Not used	KUC	20+
25	Poly tank	20000	NZ Grant	Not used	RC	5+
27	Poly tank	5000	LDS	Damaged	RC	10+
28	Poly tank	5000	EU	Damaged	Clinic	15+
29	Water well		EU	Not used	Clinic	10+
30	Water well		Private	Not used	Private	20+
31	Water well		Village	Not used	Village	5+
32	Water well		Private	Not used	Private	20+
33	Water well		Private	Not used	Private	5+
34	Water well		Private	Not used	Private	10+
35	Water well		GOK	Not used	School	5+
36	Poly tank	5000	GOK	Not used	School	5+
37	Solar pump		GOK	Not used	School	5+
38	Poly tank	5000	GOK	Damaged	School	20+
39	Water well		GOK	Not used	School	20+
40	Water well		Private	Not used	Private	4

41	Water well		Private	Not used	Private	4
42	Poly tank	10000	Kiriwatsan	Damaged	Village	5+
43	Water well		Private	Not used/brackish	Private	5+
44	Water well		Private	Not used	Private	2
45	Water well		Private	Not used	Private	30
46	Poly tank	5000	RC	Not used	RC	30
47	Water well		RC	Not used	RC	2
48	Water well		RC	Not used	RC	30+
49	Poly tank	10000	Kiriwatsan	Not used	Private	30+
51	Water well		RC	Not used	RC	40
52	Water well		Private	Not used	Private	40
53	Water well		RC	Not used	RC	30+
54	Water well		Private	Not used	Private	30+
55	Poly tank	10000	Kiriwatsan	Not used	Village	5+
56	Poly tank	5000	KAP	Not used	KUC	5+
57	Water well/local pump		Island council	Not used	Village	20+
58	Water well		Private	Not used	Private	4
59	Poly tank	5000	Island council	Not used	Council	10+
60	Poly tank	5000	Island council	Not used	Council	30

Figure 13. Aranuka water facility summary

HEALTH

While the communities of Baurua and Takaeang each have their own clinics, the health center is situated in the Aranuka Island Council district of Buariki. The people of Aranuka appear to be in excellent health; on average, fewer than three visits to the clinic are made annually, and the majority of these visits are for less serious illnesses that are not formally counted in health statistics. The only ailment having a higher prevalence on Aranuka than in all of Kiribati is night blindness, which is linked to a vitamin A deficiency. Only the pandanus fruit and the fresh coconut toddy—two staples of the Kiribati diet—are high in

vitamin A. Only 20% of adults in Aranuka usually or occasionally consume alcohol, which is a low rate. Kava usage, on the other hand, is far more prevalent, accounting for 31% of adults, or more over 50% of adult men (on Aranuka as on all islands, few women drink kava). The effects on families can be just as devastating with dads spending more money on kava than they can afford and being too sleepy the next day to work or go fishing, despite the fact that kava usage is not linked to aggression or disorderly behavior in the same way that alcohol is.

As is the case on all of Kiribati's islands, the majority of adult men and a sizable number of adult women smoke tobacco.

TRANSPORTATION

Pushbikes are the most popular kind of land transportation, followed by motorbikes and vehicles. Being a large island, the main road was built around the settlements at the lagoon side and extends the entire length of the island, making it simple to go back and forth between the mainland of Aranuka and the islet of Takaeang.

SEA TRANSPORT

EXTERNAL

Aranuka Island can also be reached from Tarawa via maritime and aviation services run by both public and private, or state-owned enterprises (SOEs). Private companies dominate the shipping industry; there is now only one government-owned shipping business. Aranuka Island, unlike Makin Island, has a shipping corporation and is primarily dependent on scheduled voyages from Tarawa and returning ships from Kiribati's southern islands for both passenger and cargo shipping. It only takes one day for regular ships and less than a day for faster ones to travel 95 miles to Aranuka Island. In comparison to Makin Island, marine transportation is frequently available and less expensive due to its proximity to Tarawa. Excluding excess cargo and items covered by the freight cost, which is determined by the quantity of products and the item size in cubic meters, multiplied by a certain rate, passengers can pay less than $100 AUD for a one-way voyage from Tarawa to Aranuka. Compared to expensive air freight, the overall freight cost for items sent to Aranuka is extremely reasonable. Depending on how far an island is from Tarawa, the freight fee varies from island to island. Given that the government, NGO projects, etc. primarily employ the charter service. The cost of the charter is determined by the tender shipping firm chosen and the daily tender rate presented. When the ship departs for Aranuka, the standard day tender rate for charter service is between AUD$5,000 and $10,000. In addition to the

charter rate, certain shipping companies additionally impose handling fees for cargo loading. Another expense to take into account is this one. Be aware that this rate is also an estimate and that it may change depending on the total budget that was disclosed during the tendering process, but the price may be close to that amount.

INTERNAL (LOCAL TRAVEL)

INTERNAL

Due to the increasing number of private boats on the island and the presence of 59 houses on Takaeang Islet, internal water movement between the Aranuka mainland and the islet is highly consistent (Kiribati National Statistics Office, 2020). In addition to private owners, every community on the island and the majority of church groups also have a 19-foot fiberglass boat. The government has donated these fiberglass boats as part of the Outer Island Boat and Engine Project through the Ministry of Fisheries and Marine Resources Development (Temauea, 2022). Aranuka mainland to Takaeang Islet boat rentals typically cost less than $100 for one-way trips and more than $100 for round-trips. The Island Council also recently acquired a landing craft, which is now mostly utilized to transfer fuel and large things to Takaeang Islet but is also used for passenger transportation. Given the short distance from the mainland to Takaeang, the hire fee for a one-way trip to the island is approximately AUD $200+; therefore, a return trip is approximately $400+. Trucks can be rented for land transportation, however the cost varies depending on the type of customer, with government employees paying more than neighborhood organizations or private parties. The cost of renting or hiring a motorbike can range from AUD$20 to AUD$30 per day, however prices can vary over time as has happened on other islands like Tabiteuea North, where the current fee is now AUD$30 per day.

AIR TRANSPORT

The only airline company currently offering charter, freighter, and air travel services to and from Aranuka is Air Kiribati Limited (SOE). For government employees and project staff traveling on a scheduled aircraft from Tarawa to Aranuka Island on Friday and Sunday, the standard round-trip airfare costs between AUD$250 and AUD$300 with a 15kg luggage allowance. The cost of the flight may occasionally change. Since about four years ago, there has been a dramatic increase in airfares that has about doubled the going rate. In addition, extra luggage can be sent as an excess item, which is highly expensive, or it can be sent as air cargo, which is less expensive but may take longer depending on the next available flight schedule. A return flight plus the cost of the air charter from Tarawa to Aranuka and back to Tarawa can total about AUD$10,000. This also relies on other expenses, such as administrative and other fees, as well as how far your destination is from Bonriki Airport.

However, the values are in that range or higher. The charter price for a flight to Aranuka Island can be as low as AUD$20,000 for a roundtrip or as high as AUD$10,000 for a one-way flight. These estimates are subject to change, as was said above, but changes are likely to become more frequent. Remember that you can lower the cost of employing the charter service by selling out any unsold tickets for that flight's remaining seats. Another choice is to share the cost of the charter flight with other government agencies or initiatives that may also be visiting Makin on the same day or even on a different day.

ENVIRONMENTAL ISSUES

The coastline erosion and land flooding caused by large sea surges are the most dangerous environmental problems on Aranuka. Other problems include improper trash disposal, a lack of sanitary facilities that won't contaminate the water supply, and a dusty environment during dry years. The full list of locations where coastal erosion is endangering significant community assets may be seen in the Aranuka Island Profile 2008. The following table outlines the issues raised by attendees from Aranuka during the National Summit on Climate Change and the Kiribati Development Plan in May 2011.

Table 6. Kiribati development plan: Environmental and climate change concerns of representatives from Kuria (Also relevant to Aranuka) attending the 2011 national Summit on Climate Change

ISSUES	REMEDIAL ACTION	PROBABLE CAUSE/S	SUSTAINABILITY IMPACT on SOCIETY	(EFFECTIVENESS)
Coastal erosion	-high sea surges -sea wall construction	-there is little impact, but it is a threat to properties -disturb the welfare of the people -rows of coconut trees and vegetation disappear from the beach	Design of seawalls need to be considered	-may sustain but have side effects

Water	-drought	-kills vegetation -fruit trees are affected in size -decreased income -brackish water for drinking and purposes -dry vegetation vulnerable for bush fire	-future plans for concrete cisterns -water tanks for ironed roofed houses	-sustainable but costly -can be sustained
Reduction of Marine resources	-illegal ships fishing in the seawaters	-unpredicted number of catch for future generations	-Local government division within MISA to make an Act to allow Island Councils bylaws to be legal and effective	-takes time to materialize

ENVIRONMENTAL ISSUES AND IMPACTS

Table 7. Environmental Issues and Impacts on Aranuka Island

Issues	Probable causes	Impact on society	Remedial action	Sustainable effectiveness
Flooding of land during high tide surges	Sea-level rise, full moon king tides, nearby natural tectonic plate movements, oceanic earthquake tremors and volcanic eruptions aftermath from other neighbouring Island countries	Seawater intrusion, land saltwater inundation wiping out essential food and medicinal crops causing food and local medicine scarcity as well as scarcity of clean freshwater for healthy drinking and bathing which leads to skin and woman conditions and overall lowers the quality of health of the Aranuka population; hence threatening the lives, homes, properties, assets, livestock and vegetation of the Aranuka population.	Required funding and projects for effective Infrastructure construction, standards/laws for freshwater safe; food and medicinal crop safe and home, property and assets safe: e.g. funding and high quality engineering to install numerous off ground rainwater catchments and pumps per household and community as well as effective management of these off ground catchments, projects to build tidal surge and storm strong homes with "off the ground" codes; more and modern quality coastal	Planning

			planning and protection	
Coastal erosion (*Reference MFMRD Takaeang Aranuka coastal assessment report 2020 for* OB)	Natural coastal change process are interfered for example by unmanaged beach sand and rock mining, land clearing of plants and natural structures for erecting buildings and increasing community living closer to the sea; seawall and structures obstructing the natural movement of sediments	Costly on property buildings and assets damage or protection measures (e.g. constructing proper seawall); potential of moving landowners from their homes to other places on the Island; inundation of seawater onto land and into groundwater	Effective coastal zone management and protection	Monitoring
Reduction in natural resources	Climate change, salt water intrusion and inundation, overheated weather, drought seasons	Scarcity of traditional land nutritious crops for food and medicine such as pandanus, taro, breadfruit, and for subsistence cash earnings such as	effective practical management of planting crops via village communal interactions and activities that include women and youth in consensus planning, decision making and practical;	Village consensus interactions, quality projects and fundings for alternative and effective planting harvesting and famer business trainings and schemes in Aranuka and/or for Aranuka (e.g. training for hydroponics, plant science, fertilizers,

		coconut for copra		women/men/youth in business)
Unexpected prolonged droughts and a dusty environment during these seasons.	Climate change	Health issues, skin and body diseases and infections, hunger, malnutrition, thirst, dehydration	Requirement for effective freshwater management projects and funding for instalment of quality facilities for management mad protection of freshwater for consumption as well as watering crops for food and traditional medicine, bathing and washing dishes, clothes and cleaning etc.	Projects and funding to designs and pipe systems to protect water wells from dust, dirt, salt water intrusion and inundation as well draw water effectively into homes and community meeting houses etc. and install more rainwater catchments or freshwater containments, facilities in places that are public, free, closer and accessible to the villagers and facilities to pipe and draw groundwater from better freshwater areas like the bushes or those away from village population.
Unsafe dumping of rubbish	No proper bin facilities to manage non degradable rubbish	Health hazards to people and the coastal and marine life	Effective and collaborative ongoing waste management via the Councils, village leaders and villagers	Planning, waste management trainings, project funding for quality schemes and facilities, instalment and practical waste management on Aranuka
Freshwater lens and	No proper sanitation facilities/lack	Health hazards for people	Requirement for quality water sanitation	Effective water sanitation projects, funding, training

sanitation issues	of proper sanitation facilities that will not affect the water lens		facilities and infrastructure	

ARANUKA COASTAL ASSESSMENT REPORT

(Ministry of fisheries and natural resources for the Office of te Beretitenti) 2020

Coastal erosion is a problem on the Island, according to a 2020 coastal assessment for Aranuka. Four buildings at Takaeang Primary School, which is positioned extremely close to the shoreline, are significantly impacted. However, local coastal zone management practices could help reduce the effects of coastal erosion because, according to their survey, the erosion in the study area is a natural and typical process of sediment change. In Kiribati and for particular Aranuka situation, MFMRD states that there is currently a balancing of the best available solutions between coastal erosion and protection. Building seawalls, for example, hinders the movement of sediment naturally and probably causes erosion. Therefore, given that the erosion is still in its early stages, planting sturdy root trees along the beach berm to protect residential areas next to the erosion on the island is a better option than building a seawall, which is expensive and would cost an estimated AUD$120,000 (1m of seawall costs between AUD$800 and AUD$1000). In order to reduce costs for both the seawall and the impacted buildings, it is best to demolish, remove, or relocate low-value assets from the exposed area if erosion continues to spread inland.

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Enhancing Resilience in the Outer Islands

Report for Makin Island

Prepared for:	SPREP
Project monitor:	Ruth M. Cross
Date:	13 July 2022

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Authors and Acknowledgements

TRAK Consultants

TRAK is a consulting firm based in Kiribati, specialising in the collection of data, delivery of workshops, social programmes, and international development projects. The firm is recognized for combining cultural awareness and sensitivities along with state of the art methods, and international development experience to provide customized evaluation and analysis services and to help their clients incorporate evidence to improve the design, financing, and implementation of their projects.

Authors

Ruth Cross, KOM
Kiribati National Coordinator

Significant Contributions

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Disclaimer

This report is based on a rapid analysis of field work data. Due to time constraints leading up to, and following fieldwork, the rapid analysis focused on identifying key themes and preliminary takeaways to support SPREP in the prioritization list provided.

This version of the report only focuses on findings from Makin.

Introduction

Background and Context

Kiribati is one of the most vulnerable countries to the adverse effects of climate change. Adapting to and mitigating the impacts of climate change remains a high priority and this is supported by the policies, frameworks and plans that have been developed to address the needs of the country. Kiribati therefore places a high priority on accessing climate finance to assist in addressing its adaptation and mitigation needs.

Access to sustainable sources of safe water, sanitation and hygiene continue to be exacerbated by the impacts of climate change, particularly for communities in the outer islands of Kiribati who are amongst the most vulnerable in the world.

In the outer islands of Kiribati, most people still rely on groundwater and rainwater harvesting to provide for their daily water needs including drinking, cooking, and washing. However, groundwater resources and rainwater water supply are critically dependent on weather conditions, climate variability and even seawater inundation from extreme high tides and exceptionally rough seas.

There are past and current projects on water, sanitation, and hygiene (WASH) that have involved select communities in the outer Islands including the IFAD Food and Water Project, Kiriwatsan project, USAID funded project involving the installation of water pumps in the outer islands, the planned Kiribati LDCF project - Enhancing " whole-of-islands" approach to strengthen community resilience to climate and disaster risks in Kiribati project. The proposed project will build upon lessons learned and experiences of past projects around WASH in the outer islands and will complement existing and planned interventions to replicate and expand interventions with positive outcomes.

The Assignment

Initial list of required information

Target Islands	• Aranuka • Tabiteuea Maiaki • Makin
General Information	• Geography of the islands • Population • Information on the villages and communities • Socio-economic data e.g. main livelihoods, average income, social and economic conditions • Resources (marine and terrestrial) and status • Maps of the islands including where the communities are, and where the water resources are • Who are the key stakeholders – groups that we need to engage with i.e stakeholder mapping • What information is available in terms of the three islands – how are they characterised? • What are the current plans for these islands as a whole, and what are future plans?
Climate related information	• Status of what is on the islands • Relevant climate impacts • Relevant climate hazards e.g Inundation risk • Local drought information • Historical rainfall data • What data is available which we can access? • Is there local evidence of recent impacts e.g. inundation, storms and overtopping events in and around the communities • Are there home gardens they are dependent on – what are they growing, where are they, are they observing any changes in rainfall or long-term drought.
Water related information	• How do communities access water? • What do they do when there is no access? • What water resources are currently on the island e.g. wells, tanks etc? Information is required by type, number, age and status.

	• Where is the water infrastructure on each island (e.g. map)? What is the water infrastructure and what is the current status? • Where are the freshwater resources? How are they being used now? What is the status? • What prior or current water security projects have been undertaken on the island • What roles do men and women play in the collection of water • Maps of the water resource infrastructure on the islands • Role of women in the islands in relation to (a) water resources; (b) decision-making • Are there any traditional adaptation or mitigation measures in place on these islands re water? • Do the islands have water safety plans, maintenance plans etc in place? • What support is provided to the islands for water maintenance? • What do communities do in times of drought or no access to water?
Previous or current projects	• What work is being undertaken in (a) Kiribati as a whole and (b) the targeted islands by other development partners, projects etc – both current and previous • Copies of project reports or evaluation reports of previous projects •
Governance Structures	• What are the governance structures on each island • Role of the Island Council • Reporting to MIA – how does this work? • Who are the decision-making bodies and how decisions are made? What is their role(s)? • What is the mechanism for any grievances / complaints? How does this operate?
Sanitation & Health	• Find out more about the health and safety related to water e.g. diarrhoea • Where do they get their water from at the moment • What sanitation measures are in place
Logistics	• What are the links to Tarawa for the islands • Are the islands accessible – how e.g. airplane, boat etc • What is in place re transport and accessibility external and internal to and on, the islands

PHYSICAL FEATURES

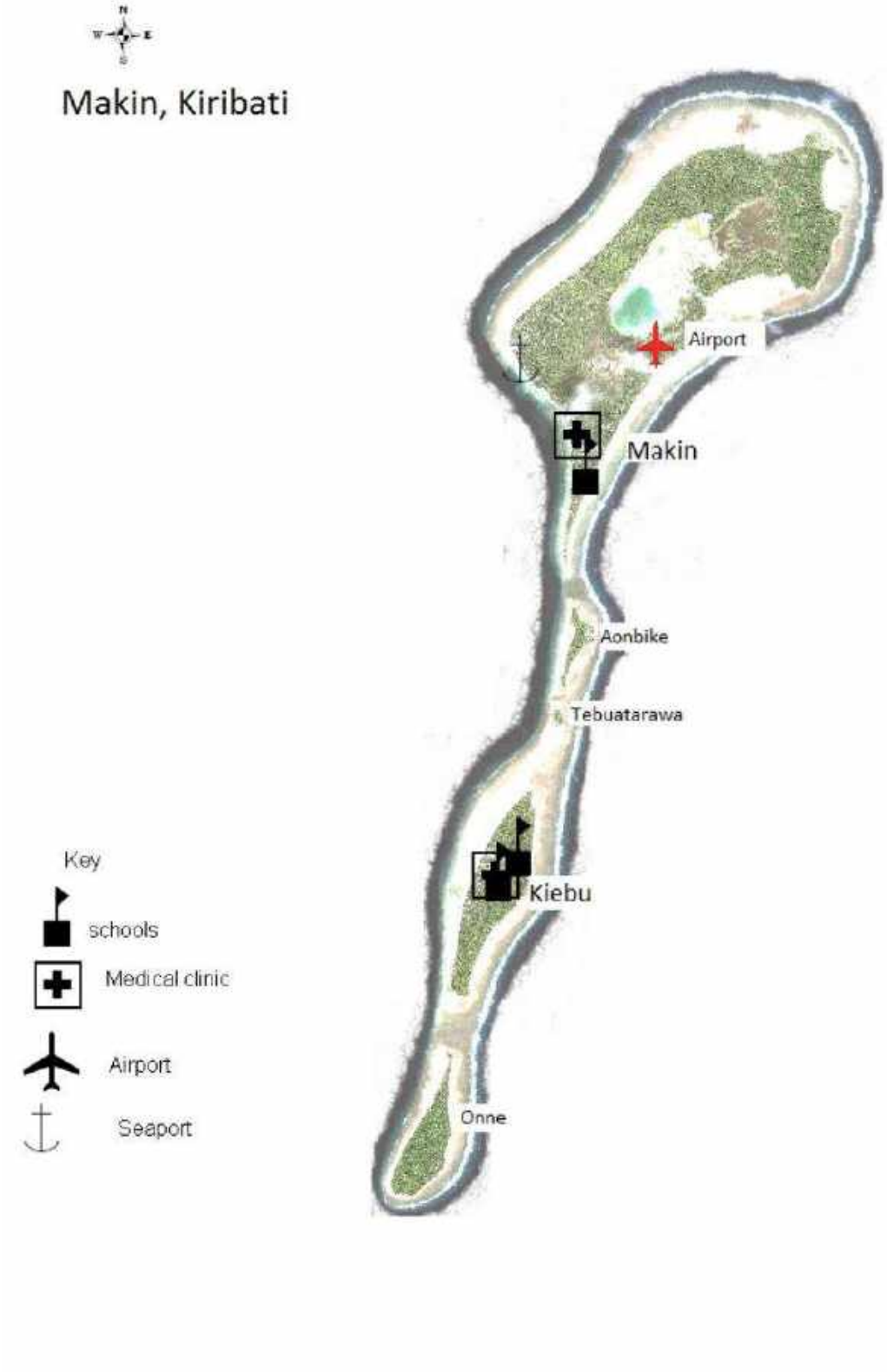
Makin is the second smallest inhabited island in the Gilbert Group, situated 190 km away north of Tarawa, and 3 kilometers northeast of Butaritari, located at Latitude 3^0 20'N and Longitude 172^0 59'E. It has a land area of 7.89 square kilometres with a width varying from 50 m to 2 km. There are five main islets, the largest two of which, namely Makin and Kiebu, are inhabited. The five islets are arranged in a linear formation from north to south, typical of small coral islands which do not have lagoons. Makin used to have a small lagoon, though the lagoon has now become shallow, most probably due to the construction of a causeway and later on, in the late 1990s, a bridge across the mouth of the narrow passage that links the shallow lagoon with the open sea.

Makin is not a true atoll, but since the largest and northernmost of the islets, also called Makin, has a nearly landlocked lagoon, 0.3 km^2 in size and connected to the open sea in the east only through a 15 metre wide channel. Makin has a land area of 6.7 km^2 and a population of 1,786 (2015 population census).

Makin is divided into five islets by shallow reef passages. The island resembles a large exclamation mark, with the largest islet, Makin, located in the northernmost tip of the island. The island is protected from the ocean by a narrow strip of fringing reef which encircles the land. Some parts of Makin and Kiebu islets are swampy and are used by the villages to grow bwabwai (Cyrtosperma chamissonis) banana, and other food crops. Unfortunately these swampy areas are vulnerable to seawater intrusion which occurs once in a while during excessive high tides.

Like other coral islands and atolls Makin has sandy and porous soil, with an average height of about 2 meters above sea-level. However, due to its high annual rainfall, vegetation grows well on Makin, resulting in good fertile soil. Most of the important food crops such as coconut, bwabwai (giant taro), pandanus and breadfruit grow well without much need of cultivation.

Makin has an equatorial climate where temperatures are high all year round and there is a distinct wet and dry season. The temperature ranges between 28 degree Celsius at dawn to 31 degree Celsius in the early afternoon. Cool ocean breezes play an important role in keeping the temperatures down during hot days. Due to its geographic position Makin is generally wetter than most islands in Kiribati.


Makin, Kiribati
Airport
Makin
Aonbike
Tebuatarawa
Kiebu
Onne
Key
schools
Medical clinic
Airport
Seaport

POPULATION

The population of Makin in the 2010 census was 1,798; this is 1.7% of Kiribati's total population. Compared to the 2005 census of 2,385, there is a decrease, but this anomaly is explained by the fact that there was a sudden return of Makin people to the island in 2005 to celebrate various occasions. Apart from the 2005 anomaly, the population of Makin has been stable at around 1,800 people since 1985.

There are 347 households in Makin, and the average household size is just over 5 people (5.2). Makin has a very large youth population, with 42% of the population aged under 15, and in Makin as in the rest of Kiribati there appears to be a "baby boom" underway, with the population aged 0-5 outnumbering all other age groups. There are relatively few young people aged 15-19, which is consistent with the fact that there is no secondary school on Makin and children who wish to complete their schooling must travel to another island. (Data source 2010 census)

WEATHER PATTERNS

The wet season, according to records, falls between the months of September to February, while the dry season begins in March and ends in August. This pattern has changed dramatically. Droughts come unexpectedly and rain comes when El Nino conditions prevail in the Pacific.

LAND AND MARINE RESOURCES

Land is owned by the families of former chiefs and by the people in general. In the past the reef and offshore areas were also owned by families. The head of the family had a right to distribute and prohibit access to the reef (Lambert B: Land Tenure in the Pacific 1971). This practice no longer exists and the people are free to fish in any part of the reef and offshore areas.

Land use on Makin, like other islands in Kiribati, is unplanned. A substantial portion of the island is occupied by village settlements. These are normally located on the lagoon side (leeward) and at the center of the island. The villages consist of houses that are built in

linear formation following the general pattern of the island. The main road is built through the village and runs along the length of the island. Each village contains individual family households that consist of a separate kitchen, toilet, and a sleeping house. At the center of the villages, households are closer to each other with a distance of about 2-3 meters between them. At both ends of the villages households are more sparsely distributed.

A large portion of the land is used up by wild bush and cultivated bwabwai. The dominant tree in terms of numbers is the coconut, which grows everywhere. Other plants include pandanus (te kaina), breadfruit trees (te mai) and bananas that grow mostly in village areas. The vegetation grows well because of high annual rainfall and good topsoil. Inhabited houses are well built and clean but unoccupied ones are deteriorating with tall grass and fallen leaves everywhere. On Kiebu islet, the only bwabwai pit (Namonrua) that provides bwabwai to the community overflows during heavy rainfall.

There are two types of land ownership on Makin. The first system is where land is communally owned by the islanders, and everyone has the right to harvest the produce of the land. To ensure that everybody has equal access to the resources, no one is allowed to establish residence on the community land outside village boundaries. The second system is where individuals own small plots of land and only they and their immediate family members have the right to their land.

The table below shows the size of Makin's reef, lagoon and land area in square kilometers. Makin has 5.97 square kilometers of reef. This is a small reef area compared to other larger islands in Kiribati. The island is of simple coral formation and therefore has no real lagoon, however one of the larger ocean passages which cuts through the island has become shallow at one end, creating a small mud flat which still links the ocean with a narrow passage. Shellfish can be found on the mudflat at low tide, and abundant schools of small fish live among the roots of the mangroves during high tide. These resources provide an important source of food to the people of Makin village.

Makin fishermen are forced to rely mainly on deep ocean fishing for their livelihood like other reef islands without lagoons such as Nikunau, Tamana and Arorae. In times of rough weather people simply do without fish; those with cash buy tinned foods from the shops to supplement their diet.

FISHERIES

Since Makin is small, without a real lagoon, fishing is restricted to the ocean flat and deep ocean. The 2010 census records show that out of 328 households on Makin, 312 venture in small canoes and boats to fish in the deep ocean surrounding Makin to harvest tuna, flying fish, shark and other species. 244 households fish on the reef flat, although according to locals, the reef flat can be dangerous because of the presence of the Crown-of-thorns starfish (Acanthaster plancii).

Fishing is a daily activity for the men. A Council fishing bylaw on Makin prohibits fishermen from catching flying fish in the offshore waters close to land. Despite its small size (land and reef) Makin's offshore tuna resources are plentiful. Almost all of Makin's households are harvesting the sea in one way or another, mainly to satisfy their subsistence needs, but also for domestic sale.

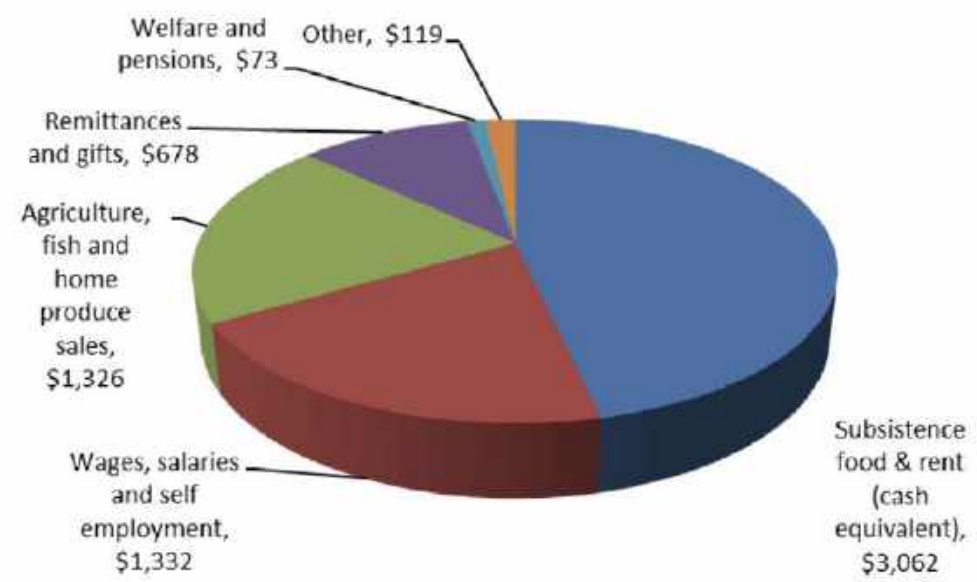
Table 1-2: Size of Reef/Lagoon Size, Makin

Islands	Reef(sq/km)	Reef base (sq/km)	Lagoon (sq/km)	Land (sq/km)
Makin	5.97	5.40	0.34	7.89

ISLAND ECONOMY

The Household Expenditure and Income Survey 2006 showed that in the Northern islands, of which Makin is one, subsistence activity (living from the land without purchasing or selling) remains the most important economic activity. The equivalent cash value of subsistence food, materials and rent accounted for 46% of total household income. Other important sources of income were wages and salaries, agriculture fish and home produce sales, and remittances and gifts.

Figure 1-5: Sources of Household Income, Northern Islands



Data Source: 2006 Household Expenditure and Income Survey

SUBSISTENCE ECONOMY

Typical subsistence activities include fishing, toddy cutting, cultivation and harvesting of food crops mainly coconut, pandanus, breadfruit and bwabwai, and the construction and maintenance of buildings which are mostly built with local materials. These activities are performed by the adult members of a family, while the younger members are expected to collect firewood and fetch water, clean the kaainga's compound, and assist the adult members to do the easy part of their chores.

Most of the fishing is done for subsistence but where there is a surplus this is either given freely to relatives or sold to others. Due to the increasing dependence on imported goods which are sold to the general public by small stores, the importance of cash as a medium of exchange is well appreciated by the population. However the lack of infrastructure prevents most people from engaging seriously in selling surplus produce like fish in order to make money. Furthermore, as a subsistence economy everyone is expected to be well skilled and knowledgeable in many things in order to survive in the harsh island environment. While some people may be more skilled in one thing compared to others, the concept of specialization which is a strong feature of cash-based economies is absent on the islands.

FORMAL EMPLOYMENT

In the 2010 census there were 115 people on Makin engaged in formal cash work. The Island Council is the biggest single employer for Makin islanders, employing 39 staff in 2010, including five staff employed by the Ministry of Internal and Social Affairs (the clerk, assistant clerk, treasurer, assistant treasurer and Island Project Officer) and 34 island residents employed as village wardens, village nurses, drivers, hotel keepers, and assistants. Seasonal employment is usually available when Government or large Council projects are undertaken, especially those which require the service of casual laborers. The most common projects which generate jobs for the young men of Makin include construction of buildings and roads and other large infrastructure.

MARKET ORIENTED EMPLOYMENT

In the 2010 census there were 507 people, or 49% of the potential workforce (people over 15) engaged in market oriented cash work on Makin – a much higher rate of employment than other outer islands.

Copra production is an important commercial activity on Makin and provides most of the income. The regular rainfall and good growing conditions allow for a constant supply of coconuts which provides a reliable source of income for many of the islanders.

In addition to copra production, some families sell bananas, fresh coconuts or pumpkins to generate income. However unlike copra production which is done on a large scale and well organized with a special government agency (Copra Board) to oversee its operation, banana production and vegetable production is still small with most of the operation overseen by small businesses. It is therefore difficult to obtain the amount of money generated, but the number of people engaged in "market oriented activity" on Makin is an indication that this is a significant and growing aspect of Makin life.

As a small island with undeveloped infrastructure, under-utilized resources, and a largely subsistence economy but with a high dependency on imported consumables, the size of trade and commerce on Makin is rather small but important. The most common imported items are food, tobacco and fuel, which are normally shipped to Makin by boat. Among the imported food, rice, flour, sugar and tinned food make up the bulk of the supply.

REMITTANCES

With limited employment and income-generating activities, many people on Makin depend to a great extent on remittances sent to them by relatives working in Tarawa or overseas. According to a survey conducted in 2006 by the Kiribati Statistics Office it was found that a household on Makin receives an average of AUD$678 in remittances and gifts. With 347 households on Makin, this means that over $200,000 flows into the island's economy every year.

ENVIRONMENT AND RESOURCES

WATER

The main water source for both drinking and washing is the freshwater lens. Only 9% of households use rainwater as their main source of drinking water, even though rainfall is high, because most households have roofs of local thatch which is not suitable for collecting rainwater. Well water on Makin is often polluted due to the proximity of some open wells to pit latrines, and people are advised to boil water before drinking.

According to records from the Ministry of Sustainable Energy & Infrastructure, Makin has benefited from various water development projects in the form of poly tanks, rainwater catchments, hand pumps and solar pumps. The hand pumps were installed in the households, with solar pumps and water tanks installed in the schools, the churches, and the community. The purpose of these projects is to improve water accessibility and provide clean drinking water to the population. On Kiebu, a rainwater system was installed to collect rainwater from a church building and distribute it to the entire village. The project was funded by Canada Fund. With a high annual rainfall, drinking water is not a problem on Makin except during severe droughts.

MAKIN WATER FACILITIES

Figure 2 Indicates all the water facilities and a resource map of all current water supplies on Makin mainland.

KIEBU WATER FACILITIES

Figure 3 indicates all the water facilities and a resource map of all current water supplies on Kiebu islet.


Kiebu Islet - Water Facility and Resource Map
N
Legend
Water_facilities
Cistern tank
Concrete tank
Desalination Plant
Local pump
Overhead
Poly tank
Water pump
Water well
Water well with pump/poly
Water well/local pump
Water well/pump
Brackish
Freshwater
0
250
500 m

MAKIN WATER FACILITIES

Waypoint	Facility	Status	Year	Ownership	Source	Capacity
121	Concrete tank	Damaged	30+	Village	Village project	20000
128	Poly tank	Damaged	10+	Village	Village project	5000
133	Concrete tank	Damaged	5+	Village	Village project	30000
137	Concrete tank	Damaged	10+	School	Village project	20000
139	Concrete tank	Damaged	10+	School	Village project	3000
160	Poly tank	Damaged	20+	KUC	Village project	5000
161	Concrete tank	Damaged	20+	KUC	Village project	5000
163	Concrete tank	Damaged	20+	Village	Village project	4000
165	Desalination Plant	Damaged	0-1	Village	Disaster Fund	
181	Concrete tank	Damaged	20+	Catholic	Village project	2000
293	Poly tank	Damaged	20+	Village	Village project	5000
349	Poly tank	Damaged	6+	KUC	KUC	5000
357	Poly tank	Damaged	20+	KUC	KUC	5000
214	Water pump	Damaged	10+	Catholic	Catholic	
231	Concrete tank	Damaged	20+	Village	Village project	1000
233	Concrete tank	Damaged	20+	Village	Village project	1000
242	Water well	Damaged	20+	Private	Private	
224	Concrete tank	Good/not used	20+	Village	Village project	2000
134	Overhead	Idle	10+	Clinic	GOK	500
136	Poly tank	Idle	10+	Clinic	GOK	5000
150	Poly tank	Idle	20+	Village	Village project	5000
153	Poly tank	Idle	20+	Village	Village project	5000
174	Cistern tank	Idle	20+	Catholic	Village project	40000
294	Poly tank	Idle	5+	Catholic	Catholic	20000
301	Poly tank	Idle	5+	Village	Village project	5000
321	Poly tank	Idle	5+	Village	KAP	5000
355	Poly tank	Idle	5+	KUC	KUC	5000
266	Poly tank	Idle	4+	Private	Private	5000
270	Poly tank	Idle	20+	GOK	GOK	3000
200	Concrete tank	Not used	20+	Village	Village project	2000
211	Water well	Not used	20+	Private	Private	
213	Overhead	Not used	5+	Catholic	Catholic	500
116	Poly tank	Used	5+	Village	Village project	6000
120	Poly tank	Used	0-1	Village	Village project	6000
122	Poly tank	Used	1	Village	Village project	500
123	Poly tank	Used	20+	Village	Village project	6000
124	Concrete tank	Used	5+	Village	Kiriwatsan	30000
125	Poly tank	Used	5+	Village	Kiriwatsan	10000
126	Poly tank	Used	5+	Village	Kiriwatsan	10000
129	Poly tank	Used	20+	Village	Village project	6000
130	Poly tank	Used	5+	Village	Kiriwatsan	500
131	Poly tank	Used	5+	Village	Kiriwatsan	10000
132	Poly tank	Used	5+	Village	Kiriwatsan	10000
135	Poly tank	Used	10+	Clinic	GOK	5000

140	Poly tank	Used	10+	School	Village project	5000
142	Poly tank	Used	10+	Village	Village project	500
145	Poly tank	Used	10+	Catholic	Village project	5000
146	Poly tank	Used	10+	Catholic	Village project	5000
147	Poly tank	Used	10+	Catholic	Village project	5000
148	Poly tank	Used	5+	Village	Village project	10000
149	Poly tank	Used	5+	Village	Village project	10000
152	Poly tank	Used	10+	Village	Village project	2000
157	Poly tank	Used	7	KUC	KAP	5000
158	Poly tank	Used	20+	KUC	Village project	5000
159	Poly tank	Used	20+	KUC	Village project	5000
162	Poly tank	Used	20+	KUC	Village project	5000
164	Concrete tank	Used	20+	Village	Village project	4000
166	Poly tank	Used	20+	School	Village project	6000
167	Poly tank	Used	20+	School	Village project	6000
169	Poly tank	Used	5+	Village	Village project	10000
170	Poly tank	Used	5+	Catholic	KAP	5000
171	Poly tank	Used	5+	Catholic	KAP	5000
173	Poly tank	Used	5+	Catholic	KAP	5000
175	Concrete tank	Used	20+	Catholic	Village project	10000
176	Concrete tank	Used	20+	Catholic	Village project	10000
177	Concrete tank	Used	20+	Catholic	Village project	10000
178	Poly tank	Used	20+	Catholic	Village project	5000
179	Poly tank	Used	20+	Catholic	Village project	5000
180	Poly tank	Used	20+	Catholic	Village project	10000
183	Poly tank	Used	5+	Catholic	KAP	5000
184	Poly tank	Used	5+	Catholic	KAP	5000
186	Poly tank	Used	20+	Village	Village project	5000
187	Poly tank	Used	10+	Village	Village project	5000
188	Poly tank	Used	10+	Village	Village project	5000
190	Concrete tank	Used	20+	Private	Village project	10000
276	Poly tank	Used	20+	Village	Village project	5000
277	Water well with pump/poly	Used	5+	Village	Village project	500
278	Poly tank	Used	5+	Village	Village project	5000
279	Water well with pump/poly	Used	5+	Private	Private	500
281	Poly tank	Used	5+	Village	KAP	5000
282	Poly tank	Used	5+	Village	KAP	5000
283	Concrete tank	Used	20+	Village	Village project	2000
290	Poly tank	Used	20+	Catholic	Catholic	5000
292	Poly tank	Used	5+	Catholic	KAP	5000
295	Poly tank	Used	5+	Catholic	Catholic	5000
297	Poly tank	Used	5+	Private	Private	5000
300	Poly tank	Used	5+	Catholic	Catholic	5000
302	Water pump	Used	5+	Private	Private	
303	Poly tank	Used	5+	Catholic	KAP	5000

309	Poly tank	Used	4+	Private	Private	5000
312	Poly tank	Used	5+	Private	KAP	5000
313	Poly tank	Used	5+	Village	KAP	5000
318	Poly tank	Used	5+	Private	KAP	5000
327	Poly tank	Used	5+	Village	Village project	5000
328	Local pump	Used	6+	Village	Village project	
329	Poly tank	Used	5+	Village	Kiriwatsan	20000
335	Concrete tank	Used	20+	Village	Village project	1000
341	Poly tank	Used	6+	Private	Private	5000
347	Poly tank	Used	6+	KUC	KUC	5000
350	Poly tank	Used	6+	KUC	KUC	5000
351	Poly tank	Used	6+	KUC	KUC	5000
352	Concrete tank	Used	40+	KUC	KUC	1000
353	Poly tank	Used	20+	KUC	KUC	5000
354	Poly tank	Used	20+	KUC	KUC	5000
356	Poly tank	Used	5+	KUC	KUC	5000
360	Poly tank	Used	20	KUC	KUC	5000
361	Poly tank	Used	20	KUC	KUC	5000
362	Concrete tank	Used	40+	Village	Village project	1000
363	Poly tank	Used	6+	Private	Private	500
366	Concrete tank	Used	40+	Private	Private	1000
368	Concrete tank	Used	40+	Private	Private	1000
380	Poly tank	Used	1+	GOK	GOK	5000
381	Poly tank	Used	1+	GOK	GOK	5000
382	Poly tank	Used	5+	Village	Kiriwatsan	20000
383	Poly tank	Used	5+	Village	Kiriwatsan	20000
196	Poly tank	Used	06-Apr	Village	KAP	5000
202	Poly tank	Used	06-Apr	Village	KAP	5000
218	Poly tank	Used	6+	Catholic	KAP	5000
219	Poly tank	Used	6+	Catholic	KAP	5000
220	Poly tank	Used	6+	Catholic	LDS	6000
226	Poly tank	Used	6+	Village	Kiriwatsan	10000
234	Water well	Used	1	Private	Private	
239	Concrete tank	Used	40+	Village	Village project	1000
241	Water pump	Used	6+	Private	Private	
254	Poly tank	Used	4+	Council	Kiriwatsan	20000
255	Water well	Used	20+	Private	Private	
260	Poly tank	Used	4+	Private	Private	5000
265	Poly tank	Used	4+	Private	Private	500
267	Water well/pump	Used	5+	Private	Private	
268	Poly tank	Used	1+	GOK	GOK	500
269	Water well	Used	20+	GOK	GOK	
271	Poly tank	Used	1+	GOK	GOK	2000
272	Poly tank	Used	1+	GOK	GOK	2000
274	Poly tank	Used	1+	GOK	GOK	2000

275	Poly tank	Used	1+	GOK	GOK	2000
370	Water well	Used/brackish	40+	GOK	GOK	2000
235	Poly tank	Used/damaged	10+	Private	Private	5000
236	Poly tank	Used/damaged	10+	Private	Private	5000
195	Water well	Used/fresh	20+	Private	Private	
198	Water well	Used/fresh	20+	Private	Private	
201	Water well	Used/fresh	20+	Private	Private	
203	Water well	Used/fresh	20+	Private	Private	
204	Water well	Used/fresh	20+	Private	Private	
206	Water well	Used/fresh	20+	Private	Private	
207	Water well	Used/fresh	20+	Private	Private	
208	Water well	Used/fresh	20+	Private	Private	
209	Water well	Used/fresh	20+	Private	Private	
210	Water well	Used/fresh	20+	Private	Private	
215	Water well	Used/fresh	20+	Catholic	Catholic	
216	Water well	Used/fresh	20+	Private	Private	
217	Water well	Used/fresh	20+	Private	Private	
221	Water well	Used/fresh	20+	Private	Private	
222	Water well	Used/fresh	20+	Council	Council	
223	Water well	Used/fresh	20+	Private	Private	
225	Water well	Used/fresh	20+	Private	Private	
227	Water well	Used/fresh	20+	Private	Private	
230	Water well	Used/fresh	20+	Private	Private	
232	Water well	Used/fresh	20+	Private	Private	
113	Water well	Used/freshwater	70+	Village	Village project	
114	Water well	Used/freshwater	20+	Village	Village project	
115	Water well	Used/freshwater	20+	Village	Village project	
280	Water well	Used/freshwater	20+	Private	Private	
284	Water well	Used/freshwater	20+	Private	Private	
285	Water well	Used/freshwater	20+	Private	Private	
286	Local pump	Used/freshwater	5+	Private	Private	
287	Water well	Used/freshwater	20+	Private	Private	
288	Water well	Used/freshwater	20+	Private	Private	
289	Water well with pump/poly	Used/freshwater	20+	Catholic	Catholic	500
291	Water well with pump/poly	Used/freshwater	5+	Catholic	Catholic	5000
296	Water well with pump/poly	Used/freshwater	5+	Private	Private	500
299	Local pump	Used/freshwater	5+	Private	Private	
304	Water well	Used/freshwater	20+	Private	Private	
305	Water well/pump	Used/freshwater	20+	Private	Private	
306	Water well	Used/freshwater	20+	Private	Private	
307	Water well	Used/freshwater	20+	Private	Private	
308	Local pump	Used/freshwater	5+	Private	Private	
310	Local pump	Used/freshwater	5+	Private	Private	
311	Local pump	Used/freshwater	5+	Village	Private	
314	Local pump	Used/freshwater	5+	Private	Private	

315	Local pump	Used/freshwater	5+	Private	Private	
316	Local pump	Used/freshwater	5+	Private	Private	
317	Local pump	Used/freshwater	5+	Private	Private	
319	Water well	Used/freshwater	20+	Private	Private	
320	Water well	Used/freshwater	20+	Private	Private	
322	Local pump	Used/freshwater	5+	Village	Village project	
323	Local pump	Used/freshwater	5+	Private	Private	
324	Water well	Used/freshwater	20+	Council	Village project	
326	Local pump	Used/freshwater	5+	Village	Village project	
330	Local pump	Used/freshwater	5+	Private	Private	
331	Local pump	Used/freshwater	6+	Private	Private	
332	Water well	Used/freshwater	20+	Catholic	Catholic	
333	Water well	Used/freshwater	20+	Private	Private	
334	Local pump	Used/freshwater	6+	Private	Private	
336	Water well	Used/freshwater	20+	Private	Private	
337	Water well	Used/freshwater	5+	Village	Kiriwatsan	
338	Water well	Used/freshwater	20+	Private	Private	
339	Local pump	Used/freshwater	6+	Private	Private	
340	Water well	Used/freshwater	20+	Private	Private	
342	Water well/local pump	Used/freshwater	20+	Private	Private	
343	Local pump	Used/freshwater	20+	Private	Private	
344	Water well	Used/freshwater	40+	KUC	KUC	
346	Water well	Used/freshwater	20+	Private	Private	
348	Water well with pump/poly	Used/freshwater	40+	KUC	KUC	5000
358	Local pump	Used/freshwater	5+	Private	Private	
359	Water well	Used/freshwater	40+	Private	Private	
364	Local pump	Used/freshwater	6+	Private	Private	
365	Local pump	Used/freshwater	6+	Private	Private	
369	Water well	Used/freshwater	40+	Private	Private	
371	Water well	Used/freshwater	40+	Private	Private	
372	Water well	Used/freshwater	40+	Private	Private	
373	Water well	Used/freshwater	40+	Private	Private	
374	Water well	Used/freshwater	40+	Private	Private	
375	Water well	Used/freshwater	40+	Private	Private	
376	Water well	Used/freshwater	40+	Private	Private	
377	Water well	Used/freshwater	40+	Private	Private	
379	Water well	Used/freshwater	40+	Private	Private	
237	Water well	Used/freshwater	20+	Private	Private	
238	Water well	Used/freshwater	20+	Private	Private	
240	Water well	Used/freshwater	20+	Private	Private	
243	Water well	Used/freshwater	20+	Private	Private	
244	Water well	Used/freshwater	20+	Private	Private	
245	Water well	Used/freshwater	20+	Private	Private	
246	Water well	Used/freshwater	20+	Private	Private	
247	Water well	Used/freshwater	20+	Private	Private	

248	Water well	Used/freshwater	20+	Private	Private	
249	Water well	Used/freshwater	20+	Private	Private	
250	Water well	Used/freshwater	20+	Private	Private	
251	Water well	Used/freshwater	20+	Private	Private	
252	Water well	Used/freshwater	20+	Private	Private	
253	Water well	Used/freshwater	20+	Private	Private	
256	Water well/pump	Used/freshwater	4+	Private	Private	
257	Water well	Used/freshwater	20+	Private	Private	
258	Water well	Used/freshwater	20+	Private	Private	
259	Water well/pump	Used/freshwater	4+	Private	Private	
261	Water well	Used/freshwater	20+	Private	Private	
262	Water well	Used/freshwater	20+	Private	Private	
263	Water well	Used/freshwater	20+	Private	Private	
264	Water well	Used/freshwater	20+	Private	Private	
212	Poly tank	Used/leaked	10+	Catholic	Catholic	5000
119	Poly tank	Used/leaked	10+	Village	Village project	6000
141	Poly tank	Used/leaked	10+	Village	Village project	5000
185	Concrete tank	Used/leaked	20+	Village	Village project	20000
325	Poly tank	Used/leaked	6+	GOK	GOK	5000
345	Poly tank	Used/leaked	6+	KUC	KUC	5000

ENVIRONMENTAL ISSUES

Environmental issues affecting Makin include saltwater intrusion to bwabwai pits, coastal erosion, depletion of natural resources and lack of freshwater during droughts.

At Kiebu islet, one communal bwabwai pit is located very close to a saltwater pond. When it rains the pond overflows causing damage to the bwabwai plants. More recently, the increasing incidence of unusually high tides has caused the intrusion of saltwater into the communal pit, resulting in salt contamination and damage of food crops.

HEALTH

There are two clinics and one health center on Makin. The clinics are located in each village, Makin and Kiebu; the health center is located in Makin. There is one Medical

Assistant (MA). The MA is in charge of 2 nurses and 4 nursing aides. The MA and nurses are paid by the central government while the nursing aides are paid by Makin Island Council. The health center and clinics have facilities to accommodate patients who are admitted for medical supervision. These health facilities are as follows:

i. Health Center: 1 health center, 3 wards, 3 cooking houses and 3 toilets

ii. Anrawa Dispensary/clinic: 1 clinic, 3 wards, 3 cooking houses, and 3 toilets

iii. Kiebu Dispensary/clinic: 1 clinic, 2 wards, 2 cooking houses, 2 toilets and 1 maneaba.

Maintenance of medical facilities on Makin has been neglected, resulting in the deteriorating condition of both local and permanent buildings. The main cause of this problem is the lack of maintenance funds.

In common with all of Kiribati, the main health problems on Makin are respiratory infections, fevers and diarrhoea. Fish poisoning is more common in Makin than in most other islands. Diabetes and hypertension, serious diseases associated with poor diet and lack of exercise, are less commonly diagnosed on Makin than on many other islands.

Half of the adult population of Makin smokes, with 29% drinking alcohol and 29% drinking kava regularly or sometimes. Rates of smoking and kava drinking are about average for Kiribati, while reported rates of alcohol use are among the highest in Kiribati, which is surprising as alcohol consumption is strongly discouraged by village leaders.

TRANSPORTATION

The main transport infrastructure on Makin is made up of 7.29 miles of road that covers the main islet of Makin, and 1.4 miles on Kiebu. The road is normally 3 to 4 meters in width, enough for the use of small to medium size vehicles. As in all outer islands, roads are unpaved, with the surface overlaid with coral mud that dries and hardens in the sun. The same mud however quickly softens during heavy rains, resulting in the creation of small and large potholes on the road. Because Makin is a wet island, its road is subject to constant damage and it is a huge burden to the Island Council to maintain it, especially without proper equipment and with insufficient funds. To assist in the maintenance and repair work on the road, the central government have provided a small backhoe and tipper truck to Council, but these have now become the problem of Council to maintain.

Bicycles are the most common form of land transport, followed by motorbikes. Cars are uncommon and there is no bus service. However trucks are available for hire.

Inter-village travel between Makin and Kiebu islets is done using canoes small boats.

It is possible to walk between the islets during low tide but the distance is the main deterrent. The separation of Kiebu and Makin islets affects children the most, in particular those who have to attend junior secondary school. Whereas there is a primary school on Kiebu, the junior secondary school is located on Makin islet, and children must travel every day or stay with relatives on Makin. Those who do not have access to transport either miss a lot of classes or just simply drop out of school.

Boat services between Makin and Tarawa are reasonably frequent but do not run to a published schedule. Air Kiribati has scheduled flights from Tarawa to Makin every Wednesday and Friday.

SEA TRANSPORT

Traveling to Makin Island from Tarawa is done via shipping and airline services operated by the private sector and public sector or State Own Enterprises (SOEs). The shipping services are dominated by the private sector with only one government shipping company currently in operation. Fortunately, Makin Island Council also has its own shipping company called Keangnimakin Shipping Services Limited (KSSL) with three fleets currently providing sea transportation for passengers, sea freight, and charter services from Tarawa to Makin and back to Tarawa. Other shipping companies only operate to Makin Island on a charter schedule for bulkier loads like machinery, large project materials etc.

According to KSSL Main Office (Staff, 2022), the KSSL has no fixed shipping schedule from Tarawa to Makin or vice versa. Its schedule depends entirely on the number of goods imported from Tarawa to Makin by private sectors, shipments of essential goods and services like fuel, grains, and the provision of charter services to the government for moving students to Tarawa and back to Makin which is done on an annual basis while other shipping activities varies from time to time.

Normally, these shipping activities occur either once or multiple times per month which is one of the contributing factors to the constant flow of goods and services to the island that has boosted economic development. Furthermore, there are also certain travel restrictions for passengers traveling to Makin only when fuel is been transported. Yet, goods and other items apart from passengers are eligible for this shipment.

Sea fare cost to Makin from Tarawa is around AUD$70+ for a one-way trip, excluding the excess cargo and goods that fall under the freight cost, which is measured by the number of items, and the item size in cubic meters, and multiplied by a certain rate. The overall freight cost is very affordable for goods shipped to Makin compared to the cargo air freight which is costly. The freight charge differs from island to island, reliant on the distance of the island away from Tarawa.

Given the charter service is mostly used by the government, NGO projects, etc. The charter cost depends on the selected tender shipping company and the daily tender rate offered. The normal daily tender rate for charter service is around AUD$5,000-$10,000 per day which applies upon departure of the vessel to Makin. Note that this rate, is also an estimation, and the rate can vary depending on the overall budget advertised in the tender process, but the cost can be around that figure.

INTERNAL (LOCAL TRAVEL)

Internal sea travel between Makin mainland and Kiebu Islet is very constant and it can occur daily as a large portion of the Makin population also resides on Kiebu Islet with a total of 73 households according to the Kiribati 2020 census data. For sea transport, boats owned by various groups including the Unimwane Association, Church groups, and private owners, are used for traveling to Kiebu or nearby Butaritari (KiLGA, 2014). The Council provides a bus service using trucks donated by Taiwan. Fares are AUD$0.50 for adults, AUD$0.20 for school children, and AUD$0.20 for bags.

The same trucks can be hired but rates vary with the type of customer, with government staff paying more than local groups or individuals. Motorbikes can also be hired or rented, and it can cost around AUD $20 per day but this rate can also change over time as seen in other islands like Tabiteuea North with the new rate of AUD $30 per day.

Also, note that external shipping from Tarawa also reaches Kiebu Islet via Makin mainland. The islet constantly receives external shipping arriving at her shores which is part of KSSL normal routine when visiting Makin. So, goods and materials can be shipped directly to Kiebu Islet when using the KSSL shipping service. Other shipping companies may also use the same routine but depends on the destination of the charter.

Air Transport

Air Kiribati Limited (SOE) is the only airline operator currently providing services for air travel, cargo freighter, and charter services to Makin and vice versa. The normal air fare to Makin Island from Tarawa for government officials and projects staffs traveling on a scheduled flight on Tuesday and Sunday is around AUD$500-$600 return ticket with a 15kg luggage allowance.

The airfare can also vary from time to time. This change has been experienced for the last 3-4 years with an extreme rise in airfares that almost doubles the usual price. Apart from that, extra luggage can either send as an excess item but will be very expensive, or another cheaper option is to use the air cargo service, but it can delay depending on the next available flight schedule.

The air charter on the hand from Tarawa to Makin and back to Tarawa can cost roughly around AUD$10,000 plus a return flight. This also depends on the distance of your destination from Bonriki Airport and other costs, administration fees, and any other fees. But the figures are between or above that amount. For Makin Island, the charter can be just below AUD $20,000 for a return flight or around AUD$10,000 plus for a one-way flight. As highlighted above, these estimations can also change from time to time but certainly, the changes will likely increase.

Note that, when using the charter service, you can also reduce the cost by selling out air tickets for any remaining and unused seats for that flight. Another option is to co-finance the charter flight with other projects or government ministries who may also plan to visit Makin on the same date or maybe a proposed date.

ENVIRONMENTAL ISSUES AND IMPACTS

Table1-4: Environmental Issues and Impacts, Makin Island

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
1. Sea water intrusion into *bwabwai* pits	Storm surges causing sea water intrusion to bwabwai pits;	-*bwabwai* plants died and therefore need replanting;	-replanting of bwabwai by a group known as karoronga or kawawa is popular practice	-the process is on going to maintain and sustain the livelihood of bwabwai plants for islanders;
	-channel dug from the land to drain rain water into the sea during colonial era by prisoners at Tekiinimakin; impact of causeway/bridge built across inlet lagoon causing slow water movement from land to sea	-seawater comes into the channel at high tides filling bwabwai pits destroying their livelihood;	-PWD has built a one way cage to allow fresh water to drain out and reduce seawater coming in	-the community tries to replenish the bwabwai plants;

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
		-namo-n-rua (communal *bwabwai* pit) is greatly affected, the main source of bwabwai for the people	-a longer term solution needs to be invented, perhaps adding another cage on the other side of the channel. There may be a slow recovery due to removal of the causeway (it has been replaced by a bridge) and deepening the lagoon	-the one way cage is not very effective
2. Coastal erosion	Aggregate mining and land reclamation	-decrease in land masses	-It is planned to have a separate regulation to oversee aggregate mining that complements the Revised Environment Act 2007	-this had not come to fruition
		-not enough land space for land owners to live	-replanting, demarcation and consultation re: mangroves took place in 2010	-Makin people including island council officials are willing to monitor, whist ECD officers from Tarawa will come and monitor on planned schedule

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
		-line of coconut trees at coastal areas falling into the sea and lost productivity -high salinity at Makin north		
3. Reduction in natural resources	-construction of an inland causeway in late 1980s.	less marine food for islanders;	-adaptive measures in terms of food security must be carefully planned at village/island level;	The reduction in natural resources will continue unless all islanders agree to adopt the measures listed, and there is a fair input of capital from sources available locally and abroad
	-causeway recently turned into a bridge	-damages to marine life will continue, leading to a shortage of marine food for islanders	-families can be encouraged to cultivate and plant indigenous plants plus exotic plants (Taiwan Technical Mission to assist) which are adapted to Kiribati climate	

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
	-blasting of a boat channel giving rise to ciguatera poisoning - increasing human population results in increasing demand for resources	-death of edible marine species for the islanders such as mud worm and shellfish -decrease in mangrove crab, sipunclids, shellfish and other marine resources	-encourage domestic trade in land edible plants and marine species from respective islands	
4. Unexpected prolonged droughts	-global warming	-will affect vegetation, fruit trees and ground water	-plan to have concrete cisterns for rain water catchment for every household and at communal compounds -plan to provide water tanks for every household and sheds that have aluminium roofing;	-in times of drought there will be plenty of rain water stored for islanders - effective family planning programs focusing on individual family freedom of choice and advocating negative impact of overpopulation, overcrowding and dwindling resources

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
			- encourage effective family planning programs to sustain water consumption, awareness on looking after water	
5. Kiebu village – scarcity of ground well water	-Kiebu is an islet quite distant from main island settlements	-scarcity of drinkable ground water for people living on the islet	-need immediate permanent rain water catchment, such as water tanks for each household and a concrete water cistern;	-rain water being stored will serve the community of Kiebu for a very long time
	- increasing number of people living on the islet	- huge impact on health of school children	- awareness on importance of looking after reservoirs and water systems - assisting villagers to bring well water from distant sources to the village; - need to control vandalism and negligence	-concrete cisterns persists for years

FIELDWORK ASSIGNMENT

This section synthesizes results across 4 core research questions related to the three constraint areas[1] (**Table 1**). Findings are informed by surveys of village resource people/leaders, focus group discussions (FGDs) with adults and youth, and key informant interviews (KIIs) with Island Councils, mayors, and women's groups.

Table 1. Summary of Overarching Research Questions Across 3 key issues

Constraint	Research Questions
CNC	• What are the top environmental/resource concerns? • To what extent do respondents witness changes in CNC resource availability? • Do respondents feel that current CNC management mechanisms are effective and inclusive? • How can village-level adaptation/mitigation techniques be expanded/improved? • What are important entry points for women and youth's agency in CNC resource management?
PFM	• What are the perceived impacts (positive and negative) of the copra subsidy?

Protocols, Instruments, & Sampling

The locations for the civil consultations were Makin, Aranuka and Tabiteuea South.

Data Collection Protocols

In advance of data collection, the Permanent Secretary of the Ministry of Internal Affairs was notified of SPREP's intent to hold civil society consultations. A general letter along with tailored letters for each Island Clerk & Mayor were sent. Once receipt was confirmed, the SPREP team followed up with each Island Clerk & Mayor.

All data collection was performed by SPREP I-Kiribati team members ("field team"), with remote support from other team members.

A data collection protocols session was held on June 17th 2022 in Makin. All members of the SPREP Kiribati Country Team attended the first session.

The sessions covered the field work schedule, sampling, instrument overview (administration and entry), and data collection principles. The data collection principles and broader protocols were developed to align with GSI transparent, reproducible, and ethical data and documentation guidelines:

- **Inclusive & Culturally Aware:** Civil society consultation plans were developed in close collaboration with SPREP'S I-Kiribati team members to ensure all protocols were inclusive and culturally aware. This influenced the process leading up to the data collection (hosting meetings with Island Councils & Mayors, visiting island shrines, learning about local customs, designing inclusive sampling strategies) to the data collection process itself (pairing men with male facilitators and women with female facilitators, for example).
- **Ethical:** Informed consent and photo release forms were signed by all participants of the consultations. Consent and photo release forms were drafted in English and then professionally translated to Kiribati. The field team walked through both forms with every participant. The forms covered involvement expectations, potential risks/benefits, intended use, and storage of data.
- **High Quality**: To avoid compromising data validity, steps were taken to facilitate consistent data collection (standard forms/templates, field work guides, data collection protocol training, recording FGDs/KIIs where possible, check-ins with the remote team) and entry (standard forms/templates, data quality checks, examples of transcription, peer review of transcripts).

Instruments

Three types of instruments were developed for the civil society consultations. Each instrument was designed by TRAK Consultancy and then shared with the SPREP team for review. Once finalized, each instrument was translated to Kiribati by a professional translator before deployment.

Survey

The survey covered 6 core themes: community discussion and decision-making, prioritization of island and village water security problems, fishing, food, and protecting your environment, rules about managing water supplies, history, and development. Select questions were based on the Village Resource Survey (VRS).

Paper-based surveys were administered by the field team. Copies of the survey were given to respondents to review. A field team member then went through each question to ensure the respondent understood the question and completed each section correctly.

FGD

The FGD covered 6 core themes: intrahousehold and gender dynamics, prioritization of problems and potential solutions, food and water, environmental challenges, governance of coastal natural capital and other resources. Apart from minor differences to tailor to a particular group, the same questions were asked of adults and youth.

FGDs were led by a facilitator with either a note-taker present and/or recorded using a recording device[2]. Notes were transcribed and translated by the team member that facilitated the FGD and shared with other team members for review before data processing.

Table 1. Sampling & Inclusion Criteria Summary

Group	Inclusion Criteria	Target N
Youth (FGD)	• 18-24 years of age. • Lived most of their life (>half) in their village or a neighboring village on that island. • Representation across experience: education, disability, income generating activities of any type, engagement in fishing activities (whether for the family/subsistence or for income).	(2 young women, 2 young men, per village)
Adults (FGD)	• 25+ years of age. • Lived most of their life (>half) in their village or a neighboring village on that island. • Representation across experience: handicraft producer, wage worker (teacher, healthcare, etc.), active church member, person with a family member working at sea or abroad, business owner, person with a disability, non-land owning, commercial fisherfolk.	(2 women, 2 men, per village)
Village Resources People/Leaders (Survey)	• Individuals that are considered leaders/influential in the community/resource people such as: members of village or island groups (including faith groups), unaine/unimwane[3], government extension workers, teachers, etc.	(8 women, 8 men, per island)
Island Councils + Mayor (KII)	• Individuals who are currently in office.	Varies by location

[2] The intended protocol was to have a facilitator and a note-taker present for each FGD and recording for quality assurance. However, scheduling constraints meant some FGDs had to be held concurrently. As the field teams comprised 2 members, this meant where a note-taker could not be present, the FGD was recorded and then notes were transcribed following the FGD with high-level notes documented by the facilitator.

[3] Elder men are called Unimwane, and elder women are called Unaine.

Women's Group Organizations (KII)	• Women's group representatives (e.g. Women Interest Workers of Island Councils, MWYSSA-Assistant social welfare officers, AMAK Affiliates).	**4-6**

Analytical Approach

FGDs/KIIs were translated and transcribed by the field team members and analyzed using summative content analysis[4]. Analyses and interpretations were sense checked by I-Kiribati team members. **Note, any quotes included in this report are translations from Kiribati.**

Responses were checked for consistency and floor/ceiling effects were examined.

	High level of agreement across all data sources and respondent types.
	Moderate level of agreement. Some group-based disagreement (e.g. youth vs. adults).
	Low level of agreement. Disparate perspectives across data sources and respondent type.
	Inconclusive. Not enough information to suggest one way or another.

Final Sample

Table 3 summarizes the sample to date, per location. Although some barriers (time, resource, and COVID-19) affected select aspects of the data collection plan, the consultations were successful overall. Key issues and their implications for the analysis are described in **Table 4**.

Field team members (image)

For a summary of the overall demographics of each location, see **Annex 1**.

[4] Keywords/content of interest was based on the research questions and the constraint problem tree nodes.

Table 3. Sampling Summary

Group & Instrument	Makin			Aranuka			Tab South			Total to Date (All)	Original Target
	F	M	Total	F	M	Total	F	M	Total		
Youth (FGD)	5	6	11	8	8	16	0	0	0	27	48 (24 F, 24 M)
Adults (FGD)	4	10	14	8	8	16	0	0	0	30	48 (24 F, 24 M)
Village Resources People/Leaders (Survey)	8	8	16	8	8	16	0	0	0	32	48 (24 F, 24 M)
Island Councils + Mayor (KII)	2	5	7	0	7	7	0	0	0	14	N/A
Women's Group Organizations (KII)	0	-	0	2	-	2	0	-	0	2	~4-6
Data not collected											

What Are the Top Environmental/Resource Concerns?

Water related issues (well water contamination, brackish water, drought) emerged as the **top concern** for respondents in Makin. Of village resource people/leaders surveyed **(Figure 1)**, nearly 60% ranked drinking water contamination as the top issue affecting their communities. Similarly, of 36 FGD participants that offered answers to the question about top stresses affecting their household, 64% mentioned water related issues, and 33% mentioned reduced agricultural activity[5].

The most frequently reported issues raised in the FGDs and KIIs related to water scarcity (quality and quantity) were reduced agricultural activity, disease, and increased burden to fetch water. Even assets that could reduce this barrier (like ownership of a motorbike) had limitations, such as fuel shortages requiring individuals (primarily women/youth) to carry water from other parts of the island, boil water, or rely on other community members for transportation.

Options	Rank 1	Rank 2	Rank 3		Legend	
Drinking water (well water) contamination	**59.4%**	9.7%	0.0%		50% +	
Lagoon water contamination[6]	3.1%	6.5%	3.2%		25%<50%	
Food insecurity	0.0%	0.0%	3.2%		10%<25%	
Health problems	3.1%	9.7%	9.7%		5%<10%	
Gender-based violence	3.1%	6.5%	0.0%		<5%	
Not enough educational opportunities	3.1%	6.5%	16.1%			
Not enough employment opportunities	6.3%	9.7%	9.7%			
Need more money to fill basic needs	3.1%	19.4%	16.1%			
Reduced agricultural (plant) productivity	6.3%	**25.8%**	9.7%			
Reduced fish stocks	9.4%	0.0%	3.2%			
Inadequate transport to ST and/or other islands	0.0%	6.5%	9.7%			
Power supply	3.1%	0.0%	19.4%			

Figure 1. Ranking of Issues Affecting Communities from the Survey

[5] Note at time of analysis, this is based on FGDs with adults and youth from both islands, except young women from Makin as this transcript was not yet processed.

(Source: Surveys of Village Resource People/Leaders in Makin)

Both men and women 25+ noted that women, who are considered physically weaker[7], face more difficulty in obtaining water. They reported that children are also often sick due to contaminated water and miss school as a result.

The second and closely related concern for most respondents was reduced agricultural productivity. In particular, respondents from both islands were concerned about reduced crop availability (e.g. breadfruit) resulting in a dietary shift to more processed foods. Less productive coconut trees were also mentioned as an area of concern due to reliance on the copra subsidy (discussed in further detail later in the report). Women in Makin were particularly concerned about this issue as cargo is infrequent and processed foods in particular are often out of stock.

Perspectives from Island Councils

"Though some of our people find it easy if they have money, for the most of our people in the islet water is our main problem and concern. We don't care about money, but we care more about the basics in life, especially water".
(*Male Council Member from Kiebu Islet, Makin - June 2022*)

"There is a big difference between now and 10 years ago, our natural resources have depleted. There are much fewer coconuts. My village is very into agriculture and farming and there's a lot of women who are making gardens. But it's difficult as the sun is so hot and there is not enough water. Even our local plants, pandanus, te bero, papaya are not as abundant or easy to grow. Our marine resources are also affected, you used to be able to fish from the beach and get plenty of fish but that is no longer the case." (*Female Participant from Makin - June 2021*)

Water and reduced agricultural activity very consistently emerged as top concerns across all adult respondents (lay respondents and leaders/councilors). Also raised in FGDs and KIIs (though less consistently) were concerns over income availability, access to select assets (for men - boats and fishing gear, for women - gardening tools), and coastal erosion. Other issues were raised at a similar frequency in the FGDs/KIIs as the survey (**Figure 1**).

Youth in both locations were less consistent regarding their concerns however water, income related issues (limited coconut availability, desire for assets), and family dynamics

[7] The word (physically) 'weaker' was used by adult and young men in reference to women across various FGD questions.

were discussed. When asked directly about water, all youth were aware of issues of availability, quality, and challenges of fetching water (hot temperatures, fuel shortages).

Level of Agreement

Overall, the agreement regarding the top issues facing communities was high.

Water (quality and quantity) very clearly emerged as the top issue for communities. Minor differences emerged in the second and third order priorities in responses to the survey (**Figure 2**). Note rank ordering differences could not be checked statistically at this sample size.

Group	Rank 1	Rank 2	Rank 3
Makin (N=16)	Drinking water (well water) contamination	Health problems	Need more money to fill basic needs
Men (N=16)	Drinking water (well water) contamination	Reduced agricultural (plant) productivity	Need more money to fill basic needs
Women (N=16)	Drinking water (well water) contamination	Need more money to fill basic needs	Not enough educational opportunities

Figure 2. Ranking of Issues Affecting Communities By Location and Gender (Source: Surveys of Village Resource People/Leaders in Makin & Aranuka)

Finally, while everyone is affected by these challenges, they are affected differently. Women are typically in charge of child rearing, collecting water, cooking, and taking care of the elderly. The younger women assist with all these chores in the same way that the young men assist with the chores that are associated with older men - such as copra cutting and fishing. Therefore, while all have an equity in water and agriculture, the primary implication may differ.

Inclusivity

When asked who attends village meetings, 61% of village resource people/leaders said any community member can attend, while 26% said only village leaders. As mentioned above and shown in **Figure 4**, these meetings are one of the key forums to discuss management of coastal resources and so inclusivity to all community members is salient. In the FGDs/KIIs participants felt that anyone can attend/there are no restrictions for participation (both framings were used). However, digging further suggests while there are no de jure restrictions, women and youth are often less engaged. For example, in Aranuka, while 'anyone can speak at meetings', it is convention that one representative per household speaks (which often will be men).

Youth are generally unengaged on issues of community resource management for a range of reasons discussed below.

Do organized meetings of village residents include discussion of island rules and management of the village environment and resources?

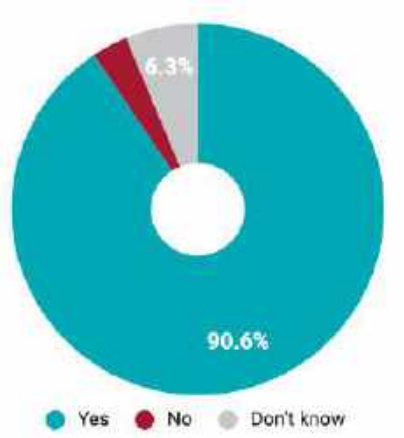


Figure 4. Discussion of Island Rules and Management (Source: Surveys of Village Resource People/Leaders in Makin & Aranuka)

From a community perspective, there was no indication that Island Councils were able to influence directives from Tarawa, though this was not described as a big point of contention. National rules were seen as the most important for improving conditions of resources, followed by local rules (**Figure 5**).

Some participants, most notably youth, mentioned that they were not aware why rules were created. While understanding the root causes would require more research, some of the likely causes based on the FGDs are (1) youth are not provided as much information since community management is led by adults, (2) as a result they are less interested/too busy to participate in community management, and/or (3) information is not provided in a way that can be digested by young people. However, given the answers provided in the various FGDs, it can be inferred that the status quo is seldom challenged and that individuals will follow the rules they are taught "because those are the rules". In fact in one FGD (with young men from Aranuka), when asked what they would change about

community resource management, they were unsure how to answer as they did not substantively understand the question[8].

Perspectives from Women

"Of course there is some difference, and we mostly work out that as a team. Women stay at home, while men go out fishing and gleaning."
(*Adult Woman from Makin - June 2022*)

"Yes, men are the head of the family and always represent the family in village meetings. Women act more as advisers when there is a difficult decision that men encounter. Women are becoming aware of their right."
(*Adult Woman from Makin - June 2022*)

[8] Important to note, the I-Kiribati facilitators understood the question and were able to provide a clarification. In fact, the facilitators had flagged in advance of field work that it was likely some youth would be 'unable' to answer the question as challenging the status quo is rare and consequently they may not even understand what they are being asked.

How Can Village-Level Adaptation/Mitigation Techniques be Expanded/Improved?

At a high-level, village resource people/leaders Island Councils/mayors ranked rules-based approaches (national and local) as the most important thing that can improve management and conditions of their water supplies, environmental concerns, seas/lagoons. Other solutions (waste disposal, fishermen leaving villages, FADs), did not rise to issues of high concern in either the survey, FGDs, or KIIs.

When asked if they had the appropriate resources, financial and otherwise, Island Councils and Mayors from Makin and Aranuka expressed a need for support to develop strategic plans, particularly for water and coastal erosion. Both groups expressed a lack of training and understanding of how to prevent the lack of water and continuing erosion of the islands. These groups also expressed interest in taking ownership of monitoring activities, including establishing a board/committee for disaster management, learning to develop disaster plans, learning how to monitor coastal resources, how to develop and prepare response kits & first aid kits, and food preservation. They also expressed the need for tangible resources, such as water tanks, food storage containers. It is not uncommon in Kiribati for these items to be provided by the government or through development projects. The leadership also cautioned that even with such resources, unless those performing monitoring were given an income, it may not be sustainable.

Sea walls and mangroves were both mentioned as potential solutions to decrease coastal erosion. However, there are several factors that have impeded the construction of these - lack of funding, limited knowledge, and inhospitable environments. Councilors from Makin cited issues with mangroves due to moss/algae that destroys them. This is particularly important as it points to the challenge of not just implementing, but identifying, appropriate solutions in such a geographically diverse country. In some villages, communities have used trash to develop seawalls in an effort to protect land and water resources.

Examples of mangrove forests in Buota, North Tarawa (September 2017)

Perspectives from Makin

"We need the government to decentralize more of its functions to our Island Council. For example, we need specialized people with us, people are who are highly qualified and can assist the island on any development matters. We need a doctor here, not only a nurse, or an engineer, not only a water technician, or carpenter." (*Male Council Member from Makin - June 2022*)

"People can get assistance from the Agricultural Extension Officer (AEO) based at the Island Council's Office. The AEO assist in training people on how to grow seeds, and sometimes you can also buy seeds from his office. We have received some assistance from the AEO but this is only through the community. They cannot share shovels and other stuff to an individual." (*Adult Woman from Makin - June 2022*)

Outside of rules-based approaches and support with monitoring and resources for disaster risk monitoring/management, there were no consistent suggestions regarding adaptation/mitigation. However, some of the cross-cutting ideas shared in FGDs with adults and Councils are shared here as they provide important starting points for exploring entry points or highlight broader systemic issues that have to be addressed for any proposed solution to be effective and/or sustainable.

- **Maintenance**: The ability to maintain assets that are provided to assist with adaptation or mitigation must be carefully planned. Remote islands often lack the technical capacity to maintain such assets and even when this is addressed, struggle with the ability to acquire parts. This is the case with the desalination plant in Kiebu Islet of Makin which has been out of commission.
- **Strengthening Communications:** While Makin is connected to OceanLink, respectively, weak and unstable communications are challenging for maintaining consistent communications with Tarawa.
- **Support for Marine and Agricultural Cultivation**: In different FGDs, respondents expressed desire for support on both expanding marine resources (bivalves, clams, sea-worms, sea cucumbers) with closures for cultivation. Women also expressed interest in future support for agricultural activities and support on access to tools.

What are Important Entry Points for Women and Youth's Agency in Water Security?

Youth

The important takeaway with respect to youth engagement (at least in the outer islands) is that youth are generally less educated on issues of managing water security (regardless of gender). Young women did not have many opinions on these issues and both young women and men were deferential to village leadership. Even when asked about broad issues that concern them, youth mentioned things like 'access to sports equipment' or 'help with managing family conflict'. When asked about youth, adults were primarily concerned with their education (dropping out, or being pulled from school to cut copra or due to illness) or engaging in 'trouble-making' (stealing, alcohol). No proposed solutions (from adults) focused on youth engagement[9].

Therefore, any engagement of youth must operate within this structure. Youth engagement will require:

- Buy-in and explicit efforts from council/village leaders and development partners.
- Communication strategies that are digestible to youth with clear takeaways on how it affects them **directly** are necessary. Young men in particular were focused/concerned about being able to generate income, and so articulating how resource management relates to resource/income generation can be impactful. This is just as important for coastal resources as for copra.

Perspectives from Makin

"There are also many drop-out in Makin (those who drop out of school). We may need education for these youths – maybe a training institute that can receive them if they don't finish high school. We recognize that cutting copra is not a good future for them, there is a saying here "education is a new land for them".
(*Adult Male from Makin - June 2022*)

[9] Note this is not to say adults think youth should not be involved, however it is to say that the general perception is that major community issues are for adults to address.

Women

There seems to be strong agreement among men and women that all groups are represented in village/island issues. This perception is guided by cultural norms. In order to properly gauge whether this is accurate, a study would have to be undertaken to determine if women (and other vulnerable groups) are adequately represented and how this affects their daily lives and/or hinders their ability to participate in income generating activities and society at large.

Women from Aranuka (December 2021)

Some considerations for women:

- In general, harvesting of non-finfish seafoods is a key (income generation) entry point for women. As this is threatened due to declining stocks, any efforts to cultivate non-finfish seafoods should be designed with women in mind (unlike for example, going out further to fish which is not only male-dominated, but challenging for lower-income families given resource constraints).
- Similar as with youth, explicitly seeking women's participation in village meetings/discussions would have to be led by Council. The caveat is that if women perceive that male head of households can accurately represent views of their families, a broad appeal by Council is unlikely to be effective.
- Many women expressed interest in agriculture (especially home gardens). However, beyond technical assistance, which is available to some through the agriculture extension officers, access to assets and tools would have to be addressed.

Important Note: It is expected that there will be substantial differences between the outer islands and South Tarawa with respect to engaging women and youth as there is a more active civil society and groups targeting specific groups including youth led-NGOs and women's groups.

Enhancing Resilience in the Outer Islands

Report for TabSouth Island

Prepared for: SPREP
Report by: Tokintekai Bakineti
Date: 13 July 2022

Introduction

Project / Program Background and Context:

[1]TRAK consultancy firm In Kiribati was commissioned by SPREP to conduct consultations with people in the rural communities in Kiribati to support the development of the project plan and proposal for the Adaptation Fund (AF) project 'Enhancing the Resilience in the Outer Islands of Kiribati. Hence, for the Implementation of this consultation mission, TRAK sub-contracted local specialists to undertake this consultancy assignment. These local specialists came from different technical and development backgrounds and thus have the skills and experiences in conducting field research and data collection and spatial mapping to map out water infrastructure and resources on the Island.

[2]Based on the Government of Kiribati choices of Islands to be covered in this project, Makin, Aranuka and Tabiteuea South were the selected islands for this project. The visit to other selected Islands have completed however, this mission report is focused specifically on the mission that went to Tabiteuea South which took place from the 3 - 13th July, 2022.

[3]In general, the mission followed local protocols and procedures and other guidelines mainly in engaging people in the communities. This is quite a sensitive approach and should be followed and observed with proper and due considerations.

Kiribati context - situational analysis

[4]Kiribati is one of the most vulnerable countries to the adverse effects of climate change. Adapting to and mitigating the impacts of climate change remains a high priority and this is

[1] TRAK Is a privately run consultancy firm based In Kiribati
[2] These proposed Island needs Cabinet approval
[3] Island protocols are phenomenal and should be observed with due respect and considerations
[4] Kiribati National Climate Change policy

supported by the policies, frameworks and plans that have been developed to address the needs of the country. Kiribati therefore places a high priority on accessing climate finance to assist in addressing its adaptation and mitigation needs.

Access to sustainable sources of safe water, sanitation and hygiene continue to be exacerbated by the impacts of climate change, particularly for communities in the outer islands of Kiribati who are amongst the most vulnerable in the world.

In the outer islands of Kiribati, most people still rely on groundwater and rainwater harvesting to provide for their daily water needs including drinking, cooking and washing. However, groundwater resources and rainwater water supply are critically dependent on weather conditions, climate variability and even seawater inundation from extreme high tides and exceptionally rough seas.

There are past and existing projects on water, sanitation, and hygiene (WASH) that have involved select communities in the outer Islands including the IFAD Food and Water Project, Kiriwatsan project, a USAID/SPREP funded [5]project involving the installation of water pumps in the outer islands, the planned Kiribati LDCF project - Enhancing " whole-of-islands" approach to strengthen community resilience to climate and disaster risks in Kiribati project which is now being implemented.

The proposed project will build upon lessons learned and experiences of past projects around WASH in the outer islands and will complement existing and planned interventions to replicate and expand interventions with positive outcomes and ensuring complementarity.

[5]Generally, in Kiribati, the wet season, according to records, falls between the months of September to February, while the dry season begins in March and ends in August. The temperature ranges between 28˚ Celsius at dawn to 32˚ Celsius in the early afternoon but have been known to get hotter or warmer than 32˚ C. Cool ocean breezes play an important role in keeping the temperature down during hot days

[5] Tabiteuea South Socio-economic profile, 2007 MISA

TABITEUEA SOUTH

Physical features

[5]Tabiteuea, like Tarawa were separated into two islands due to their sizes and to allow easier management during establishment of the island councils in the 1960s. Tabiteuea and Tarawa were thus split into two islands, north and south, and with individual separate island councils and later Betio was fitted with a separate island council as befitting the population residing on it.

North Tabiteuea starts from the village of Tekabwibwi and extends all the way to the islet of Aiwa in the center of the island that also marks the - 13 - boundary of Tabiteuea North and Tabiteuea South. From the northern end of TabSouth, Tewai comes first as the first inhabited islet followed by Taungaeaka, Buariki, Nikutoru, Katabanga and the islet of Takuu as the southernmost village.

The rest of the islets that are not habited are used as copra sites for families owning lands there. There are 7 causeways that link the islets that make up Tabiteuea South from the village of Tewai to Takuu (see geographical map of TabSouth). Katabanga to Takuu causeway has been broken and has also not been repaired since. There are two causeways linking Taungaeaka to the islet before the village of Buariki. Undivided, Tabiteuea is the largest island in the Gilbert group that comes third after Tabuaeran and Kiritimati in the Line group. However, on its own, Tabiteuea South comes sixteenth in size in land area after Butaritari in the northern group. Located in the southern Gilberts, it is among those of the driest islands in the country that suffers greatly from re-occurring droughts over the years. Like the rest of the islands in the southern Gilberts, 'bwabwai' pits are most of the time located further inland, away from the coast in order to access fresher water normally found further inland, away from the coast. Typically, coral islands and atolls are small, averaging 2 meters above sea-level, with sandy and porous soil.

The main source of drinking water is the underground water that is tapped by wells dug 3-5 meters into the ground. The quality of groundwater is easily affected by both droughts and heavy rains that either render it unfit or fit for drinking. Not only is the livelihood of the population dependent on the quality of groundwater but so is the terrestrial fauna and flora. Coconuts dominate atoll vegetation along with other common shrubs found along the coast such as saltbush and *messerschmidia.*

The ocean flat is also normally rich in marine resources, which range from seashells obtained right from the beach to small and large fishes that live in the waters at the edge of

the fringing reef. There are also seasons for migrating jellyfish that get washed ashore and are collected off the beach. Fishing methods commonly used on the ocean flat include, among others, collection of shellfish, hooking of octopus, sea-snake and other small fishes, rod fishing (roaroa), spear-fishing (katebe), torch fishing (kibe), and more. The ocean most of the time is not accessible to villages located towards the center of the island as the village settlements are located on the lagoon side of the island and the size of the lagoon limits access to the ocean. The fact that fishing beyond the safety of the reef requires more energy, complicated fishing methods and much more expensive fishing gear, not to mention the availability of either a canoe or boat has rendered ocean fishing not as popular as the other locations. Outboard motors and local canoes are the main mode of transport for ocean-going fishermen when they are not net fishing.

Population

[6]The total population on Tabiteuea South Is 1,357 according to the 2020 census report of which 674 are males and 683 are female. There are a total number of 274 households on the Island.

Weather patterns

Climate with the exception of Tarawa that has its own meteorological office, the non-availability of rainfall measuring equipment on the outer islands has resulted in the lack of rainfall data for all the outer islands of Kiribati including those in the Phoenix and Line group and Tabiteuea South. Tabiteuea South, like the other islands scattered astride the equator, has a tropical climate and like the southern islands, experiences minimal rainfall throughout the years. It is hot and humid all year round with east trade winds moderating the temperatures throughout the year.

[7]Generally, the winds and rain come towards the end of the year in October until February or March while the rest of the months remain dry. Most of the Kiribati islands are located in the dry belt of the equatorial oceanic climatic zone, between 5◦ on either side of the equator. The strong influence of El Nino and La Nina events on the climate is therefore prevalent throughout and Tabiteuea South is no exception. Where the northern islands are favorably affected during El Nino events, Tabiteuea South experiences dry weather and vice versa during La Nina events. The El Nino Southern Oscillation (ENSO) variability is

[6] 2020 Kiribati Census report, MFED
[7] http://www.cpc.ncep.noaa.gov.

defined by the Southern Oscillation Index (SOI) that measures the difference in pressure between Darwin, Australia and Tahiti. Simply defined, El Nino is the warming of the sea-surface temperatures in the equatorial Pacific Ocean that influences the atmospheric circulation and consequently rainfall and temperature in specific areas around world. Depending on this complex interplay of sea surface temperatures (SSTs) in the equatorial Pacific ocean, atmospheric circulation is affected which either then moves eastward or westward producing either of the two events, El Nino or La Nina which in turn either results in rain or drought on the islands depending on where the atmospheric circulation is headed.

Land and Marine resources

Like other islands in Kiribati, land on Tabiteuea South is owned by family inheritance. Lands are divided among the heirs on the death of the owner with male heirs taking precedence over females. There are also lands given away as gifts and for nursing an aged or sick person. However, the increased migration of natives to other islands has sometimes resulted in landowners dying elsewhere without immediate families on the island. As such, lands that have not been divided between sons and daughters are left as family lands, awaiting the presence or representatives of all the children of the deceased to divide the lands in court unless, a will had already been made by the deceased parent.

In other cases, where there is not even an immediate child present, the deceased parent's land is then used and managed by his/her siblings. Then there is also the tradition of owning 'te tekateka', basically a plot of land in the village settlements. These village settlement plots are normally inherited by the eldest son or daughter if there are no sons, along with the houses that stand on them. Disputes over land ownership and boundaries are settled in Lands Court.

Fisheries

It is difficult to quantify the fish resources of TabSouth or any island for that matter. However, it is generally accepted that the bigger the reef area the larger the fish resource, particularly reef fish. Consequently, with a large reef and lagoon area, it can only be concluded that TabSouth has a vast and diverse number of marine resources. Free migratory fish such as skipjacks and yellow fin tuna (Katsuwonus pelamis, Thunnus albocores), flying fish (Cypserulus sp.) and shark (Ginglymostoma ferrugineium) amongst others are always abundant and an increasing number of people are engaged in both ocean fishing and lagoon/reef flat fishing. A variety of shell fish can be found on the lagoon and reef flats at low tide or sometimes in deeper lagoon waters, and abundant schools of small fish swim and live among the roots of the mangroves.

Fishing is largely a man's responsibility even though women are not restricted from fishing. Not every man owns a canoe or boat but the majority of households either own a canoe/boat or have access to one. Nonetheless, it is extremely rare to borrow canoes belonging to other households unless it belongs to an immediate family member. In 2005, a total of 61 canoes, 24 boats and 34 outboard engines were recorded with ownership distributed throughout the villages of the island as in the chart above. The majority of these fishing vessels are found in the capital village of Buariki while quite a number of canoes can also be found in the village of Takuu. Canoes are highly priced items as they are hard to make and equally hard to get materials to construct one. The frames and planks are made up from imported timber obtained from Banaba, Nauru and South Tarawa while the outrigger is made from local wood mostly those that are light most of the time breadfruit, sea trumpet and the great lettuce tree. The fishing pattern on TabSouth is dependent on the ownership of a canoe/boat, fishing equipment and skills handed down from the fore-fathers.

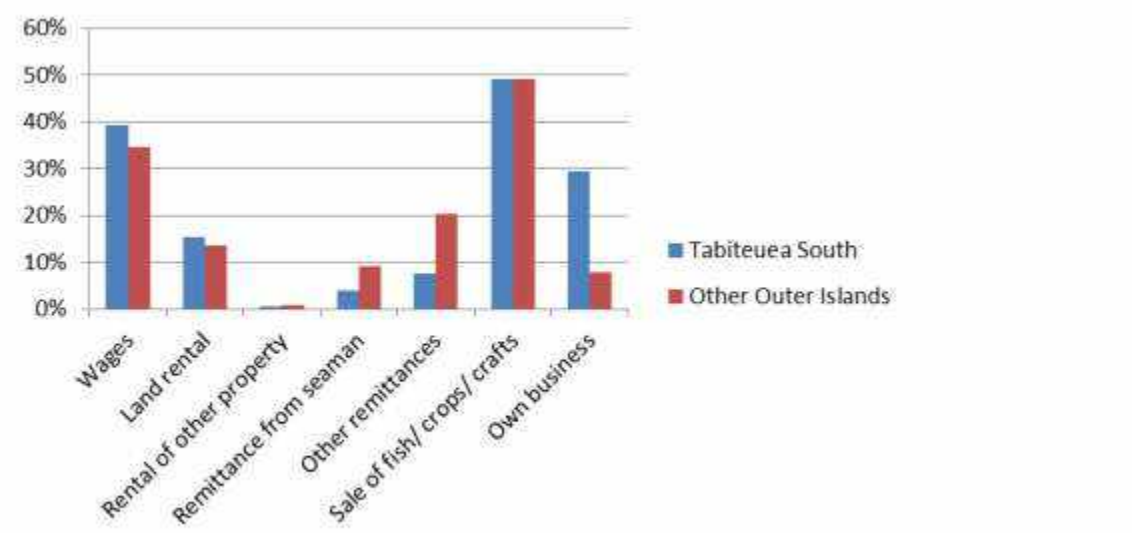
Eel trapping is dependent on knowing how to construct an eel trap, sea worm fishing dependent on how and where it is probed while deep sea fishing depends on how far the line should be allowed and knowing what kind of bait to use to catch specific kinds of fish. Constructing a fish trap on the reef requires knowledge of the reef features, current and tides and so forth. All these fishing know-hows are family guarded secrets just as cultivation know-hows of the different cultivated tree crops are also kept in the families. However, due to the strategic location of the villages on the lagoon side of the island has made it easy for the island community to access the lagoon. The right chart categorizes fishing activities by location and shows that the most popular fishing activity is net fishing that is mainly carried out in the lagoon and reef flats when the tides comes in or in deeper waters when the tide is out. A most common way is to leave a fishing net overnight or for several hours at a certain place and come back late to collect the fish trapped in the net.

The lagoon flat is the exposed area of the lagoon during low tide that can stretch for miles and is a favorite fishing location for shellfish and sea worms. The other reason that most people popularly frequent the lagoon flat for fishing is because the methods of fishing and equipment required and used are simple and cheap.

Island economy

Like all islands of the Southern Gilberts, Tabiteuea South is still very much a subsistence economy, based on fishing and seafood collection, subsistence agriculture, and making buildings and household items from locally available materials, mainly coconut and pandanus. Only 39% of households on Tabiteuea South receive any money from wages or salaries, 4% receive remittances from seamen and 8% receive remittances, mainly from family working in South Tarawa or elsewhere. Around half (48%) of households earn money

from the sale of fish, crops and/or crafts. In the case of Tabiteuea South, copra production accounts for most of this income although some households also earn cash from sale of fish, including sea cucumber which is exported to China.



Source: 2010 Census. Figures do not total to 100% as some households have more than one source of cash income.

Subsistence economy

[8]Copra production remains the most important commercial activity on Tabiteuea South that has provided a reliable and sustainable source of income for many of the islanders. In all years, income from copra alone is sufficient that Tabiteuea South households sit above the universal poverty line established as a Millenium Development Goal, having an income of more than $1 per day.

Then there is the famous sea worm and sea cucumbers that are also fished off the lagoon flat. Eels, turtles, common mojarra, lobsters and crabs etc can be found in abundance in the surrounding ocean and lagoon. All these marine resources by far provide an important source of food and income to the people of the island. The main and major source of protein to atoll islanders is fish and shellfish as hardly any other animal can live and survive in the atolls with their limited vegetation.

Pigs and chickens on the other hand take time to grow and are normally kept for special functions or family celebrations. Fish is therefore a daily protein that can be found in both

[8] Copra production, Statistics Office, MFED

the ocean and lagoon. With their vast lagoon and reef area, the people on the island are fortunate for during stormy times, the lagoon still provides an abundance of resources for their livelihoods.

ENVIRONMENT AND RESOURCES

Water

Being a dry island, water becomes an issue during drought times when the freshwater lens sitting atop the seawater in wells are depleted without rains restoring the lens. The village of Takuu suffers brackishness and with the nearest freshwater site being approximately 8km away on the separate islet of Katabanga, the have to suffer drinking their only means of water, brackish as it is. The only shortcut to fetching water from Katabanga by those on Takuu would be by using canoes or boats to cross 3 km of lagoon to get to the freshwater site at Katabanga. The community of Tewai also suffers greatly from water but not because there is not enough freshwater but because the community prefer living on the adjacent islet of Buatua than on mainland Tewai. However, the distance to freshwater by those on Buatua is not as far when compared to the Takuu community.

Environmental issues

Coastal erosion is fast becoming the major environmental issue for the islands of Kiribati including Tabiteuea South. Many locations on Tabiteuea South have been seriously eroded, resulting in the relocation of infrastructure (road, buildings, etc.) or the recurrent high expenditure of maintaining seawalls for protection. Flooding during high tides has been experienced in the village of Tewai, at Buatua and at Taungaeaka.
These floods result in saltwater pollution of the freshwater lens which in turn leads to dying fruit trees and bwabwai and brackish well water. Taungaeaka also suffers from erosion starting from where the causeway ends at the village area to nearly halfway through the village. Takuu at the southern end of the island suffers from extreme erosion where rows of trees have fallen with a few left standing on the beach.
Brackish wells are also a common occurrence during long periods of drought. The islet of Takuu is suffering mild erosion all around and their freshwater is becoming brackish, Takuu residents are now fetching water from Katabanga or mixing their existing well water with the rain while Katabanga is using their only freshwater well located at Tawaea. Fruit trees have been greatly affected by the heat and lack of water to the extent that there are very few coconuts and the toddy cutters have to give up most of their toddy trees as the spathes are either too small to get anything out of or the toddy itself is not forthcoming. A full list of locations experiencing climate change and sea level rise impacts, including their

GPS co-ordinates, and further details of problem areas and sites of significance are given in the Tabiteuea South Island Profile 2008 available on www.climate.gov.ki.

Health

There are 3 clinics on the island and one of these is the Health Centre, complete with a dispensary and wards. Generally, each outer island has one main Health Centre looked after by a Medical Assistant (senior and trained than Nursing Officers).

Transportation

Traveling to Tabiteuea South Island (Tab-South) from Tarawa is also done via shipping and airline service operated by the private and public sector or State Own Enterprises (SOEs). The private sector dominates the shipping service, with only one government shipping company currently operating. Unlike Makin Island, Tab-South has no shipping company and heavily relies on scheduled voyages from Tarawa for passengers and sea freight.

Tab-South is 244 miles from Tarawa, the furthest island besides Makin and Aranuka. The standard vessel can take around 3-4 days, while 2-3 days for faster ships from Tarawa. The island has a very shallow and long reef flat within the lagoon side, where the main port is located. Low-draft vessels can easily be anchored near the coast, making it very convenient for offloading and loading of cargo. However, with only five landing craft operating in Kiribati, ships hardly visited the island due to the shallow and long reef flat besides other factors. Usually, the island receives ships roughly once a month or once in two or three months. This low frequency has been the major factor causing a shortage of supplies on the island that continues to date.

Unlike Makin and Aranuka, Tabiteuea South is very far from Tarawa, so sea transportation is likely expensive. Different shipping companies offer different rates for sea fares and cargo freight. According to Mr. Iererimo Mwea, the Operation Manager at Lu's Marine, the average sea fare to Tab-South is around AUD120-$130 excluding the excess cargo and goods that fall under the freight cost, which is measured by the number of items, and the item size in cubic meters, and multiplied by a specific rate. Apart from the sea fare, the overall freight cost is also cheap compared to the costly air freight. The freight charge differs from island to island, depending on the island's distance from Tarawa.

The charter service is mainly used by the government, NGO projects, etc. The charter cost depends on the selected tender shipping company, and the daily tender rate offered. The

average daily tender rate for charter service is around **AUD$5,000-$10,000** per day, which applies upon vessel departure to Aranuka. Some shipping companies also charge handling fees for cargo loading besides the charter rate. This is also an additional cost to consider. Note that this rate is also an estimation, and the speed can vary depending on the overall budget advertised in the tender process, but the cost can be around that figure

Internal sea travel between Tabiteuea South mainland and Taku Islet is constant due to the growing number of private boats on the island, the proximity to the mainland, and the islet also has 32 households (Kiribati National Statistics Office, 2020). Apart from private owners, most church groups and each village on the island also own a 19ft fiberglass boat. The government donates these fiberglass boats through the Ministry of Fisheries and Marine Resources Development under the Outer Island Boat and Engine Project (Temauea, 2022). The average boat hire rate between the mainland and Taku Islet is AUD$150 for a return trip.

In addition, the Island Council recently owned a landing craft that is now used for passenger transport but primarily for fuel and bulky items delivery to Taku Islet. The hire cost for a one-way trip to Taku Islet is around AUD 200+, so a return trip is around $400+, which is quite expensive given the short travel between the mainland to Taku.

For land transport, trucks can be hired, but the rates vary with the type of customer, with government staff paying more than local groups or individuals. Motorbikes can also be leased or rented, costing around AUD$30 per day.

Air Kiribati Limited (SOE) is the only airline operator currently providing air travel, cargo freighter, and charter services to Aranuka and vice versa. The standard airfare to Tab-South from Tarawa for government officials and projects staffs traveling on a scheduled flight on Wednesday and Sunday is around AUD$400-$500 return ticket with a 15kg luggage allowance.

The airfare can also vary from time to time. This change has been experienced for the last 3-4 years with an extreme rise in airfares almost doubling the usual price. Apart from that, extra luggage can either send as an excess item but will be very expensive, or another cheaper option is to use the air cargo service. Still, it can delay depending on the following available flight schedule.

The air charter on the hand from Tarawa to Tab-South and back to Tarawa can cost roughly around AUD$15,000+ a return flight. This also depends on the distance of your destination from Bonriki Airport and other costs, administration fees, and additional fees. But the figures are between or above that amount. For Aranuka Island, the charter can be

below AUD&20,000 for a return flight or around AUD$10,000+s for a one-way flight. As highlighted above, these estimations can also change from time to time, but the changes will likely increase.

Note that, when using the charter service, you can also reduce the cost by selling out air tickets for any remaining and unused seats for that flight. Another option is to co-finance the charter flight with other projects or government ministries who may also plan to visit Tab-South on the same or a proposed date.

FIELDWORK ASSIGNMENT

Prior to the team date of departure to TabSouth, the team leader (Ruth Cross) organized a team meeting where team members meet to get to know each other and especially the tasks the Individuals should perform. Based on the record of this event, the following Individual consultants/specialist were presented in the meeting - Tokintekai Bakineti, Kaiea Awira, Ruth Cross, Manikaoti Timeon.

At the outset of the meeting, the team leader briefed the team what was done with the previous trip to Makin in which this trip is going to be a replicate of the same approach and methodologies that were used in that mission.

As a protocol, in advance of the team's departure to the island for data collection, the Permanent Secretary of the Ministry of Internal Affairs was notified of SPREP's intent to hold civil society consultations. A general letter along with tailored letters for each Island Clerk & Mayor were sent. Once receipt was confirmed, the SPREP team followed up with each Island Clerk & Mayor.

The team arrived on TabSouth Island on Sunday 3rd July, 2022 where the team settled In at the Catholic Parish Rest house. On that same day the team meet with the Mayor and Island Council Clerk. The purpose of the meeting was mainly to brief Island officers the purpose of the trip and to request assistance regarding the logistics and the organization of the team's meeting with selected members of the community. It was agreed in the meeting that communities on the Island would be represented by selected members of the community which should be made of old men, men, women and the youth.

Protocols, Instruments, & Sampling

Data Collection Protocols

Upon arrival, the team made a courtesy call meeting with the Mayor and Island Council Clerk. This meeting was a normal part of the protocol on the Island to inform Mayor and Island Council Clerk the purpose of the visit and to seek the approval to work with people in the communities.

From this briefing session, the Mayor and the Island Council Clerk agreed to support the team by sorting out the logistics and the transportation of participants to the meeting venue. On that same day, the Island Council Clerk sent out Invitations to the communities based on the agreed criteria that guide the selection of participants to this consultation session.

Because of the Isolation of Takuu village, the team visited the Islet by boat which Is more convenient than getting participants to travel to the meeting venue on the mainland.

Table 1. Sampling & Inclusion Criteria Summary

Group	Inclusion Criteria	Target N
Youth (FGD)	• 18-24 years of age. • Lived most of their life (>half) in their village or a neighboring village on that island. • Representation across experience: education, disability, income generating activities of any type, engagement in fishing activities (whether for the family/subsistence or for income).	**48** (8 young women, 8 young men, per island)
Adults (FGD)	• 25+ years of age. • Lived most of their life (>half) in their village or a neighboring village on that island. • Representation across experience: handicraft producer, wage worker (teacher, healthcare, etc.), active church member, person with a family member working at sea or abroad, business owner, person with a disability, non-land owning, commercial fisherfolk.	**48** (8 women, 8 men, per island)
Village Resources People/Leaders (Survey)	• Individuals that are considered leaders/influential in the community/resource people such as: members of village or island groups (including faith groups),	**48** (8 women, 8 men, per island)

		unaine/unimwane[9], government extension workers, teachers, etc.	
Island Councils + Mayor (KII)	•	Individuals who are currently in office.	Varies by location
Women's Group Organizations (KII)	•	Women's group representatives (e.g. Women Interest Workers of Island Councils, MWYSSA-Assistant social welfare officers, AMAK Affiliates).	**4-6**

Table 2. Number of selected community representatives participated in FGD

Group & Instrument	Tab South			Total to Date (All)	Original Target
	Y	M	W		
Government workers (consultation 1 - FGD)	0	2	4	6	
Takuu village (consultation 2 - FGD)	2	4	3	9	
Reps from Buariki, Tewai villages (consultation 3 - FGD)	2	6	3	11	
Reps from Nukutoru, Katabanga, Taungaeaka (consultation 4 - FGD)	0	5	3	8	
Total	4	17	13	33	

Legend: Y = Youth, M = Men, W = Women

Instruments

There were two methodologies that were used to engage communities in this consultation and also to map out water resources and Infrastructure on the Island. Thus, FGD was used to generate information from community representatives that partaking in the consultation sessions. Survey on the other hand was adopted to map out the water resources and infrastructures on the island. This tool works with GIS as an instrument to

capture positions and the locations of water resources and infrastructures on the map of the Island for ease of Identifying the details of such resources.

Prior to the team moving to collect and apply each of the above data collection instruments in the field, the team sit together discussing and agree on the processes and other important aspects of this data collection exercise.

The team agreed on the sample size that would represent the voice of people in the community in this consultation exercise. Therefore, the sample size should include selected representatives for old men, men, women and the youth from each community. A special meeting with Government officers on the island was also included in the program. The team took some time to shape some understanding in regard to the questionnaires and the anticipated responses these questionnaires would generate.

The team also agreed to see that data gleaned from each consultation session should all be cleaned straight after each session

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Survey

While Tokintekai Bakineti and Mimitong Kirata conducted community consultations, Kaiea Awira undertook a thorough survey through which information about water resources and infrastructures and mapping these water resources across the Island were gleaned.

Kaiea and Island Water Technician worked on this mapping exercise. The maps taken in this survey exercises are all presented in annex: 2

Focus Group Discussion (FGD)

FGD was conducted with the selected community representatives from each village. The selection of participants to participate in this consultation sessions were Identified by members of the communities where the local system of picking for participants were used.

After following a normal procedure and traditional protocols of welcoming and meeting invited guests, the FGD started off by reading to participants guiding notes that clearly convey messages that describes the purpose and what participants would expect in each consultation session.

The FGD covered 6 core themes: intrahousehold and gender dynamics, prioritization of problems and potential solutions, food and water, environmental challenges, governance of

coastal natural capital and other resources. Apart from minor differences to tailor to a particular group, the same questions were asked of adults and youth.

In the process, men and women were separated into two different groups when each group was led by a facilitator who facilitates the discussion and at the same time taking note of the responses coming out from the discussions. The facilitator ensures that the discussion is moving as anticipated and that everybody enjoyed and engaged freely and openly in the discussion.

Responses to each of the questions were discussed among FGD member and recorded accordingly. It Is very possible that there are questions with multiple answers. These answers reflected the views generated in the discussion and thus each of these answers were prioritized based on a consensual agreement among participants on the choices of what they consider most appropriate to the situation and the realities.

After each session, notes were transcribed and translated by the team member that facilitated the FGD and shared with other team members for review before data processing.

The table below summarizes key thematic areas and how the questions were framed to dig out information related to understanding the context and the anticipated responses.

Intra household and gender dynamics	Questions around this thematic area provide understanding on the different area of responsibilities that men and women have, to ascertain where men exercise agency and where women exercise agency in the lives and where they do not
Drinking water	Questions around water determine the main source of drinking-water for members of the household (i.e., the water source that supplies most of the household drinking-water needs). The type of water source or technology specified by the household is used as an indicator for whether the drinking-water is of suitable quality. The water sources likely to be of suitable quality, or “improved”, are: a piped water supply into the dwelling; piped water

	to a yard/plot; a public tap/standpipe; a tube well/borehole; a protected dug well; a protected spring; and rainwater. Water sources that are "unimproved" are: an unprotected dug well; an unprotected spring; a cart with a small tank/drum; a water tanker-truck; and surface water.
The Environmental challenges	The purpose of these question is to generate understanding on key environmental issues and how they are affected by climate change issues
Governance of natural capital and other resources	The purpose of these questions is mainly to understand water governance system, general governance structure on the island and how decisions impact water resources and infrastructure management and access

Analytical Approach

FGD data

Data collected from this FGD were consolidated putting all responses together from the different groups. Since the data collected are all qualitative, therefore summative content analysis was adopted as a tool to process and analyze the data.

In the process of consolidating data collected, it was important that all data are categorized under each thematic areas where they are assessed based on their relationship to key issues. Participants' responses and perceptions around those issues are recorded and discussed with members of the group. This is simply a categorization process in which data are organized to show the pattern on how the data represent concept and themes investigated in this consultation sessions.

The table below summarizes the data inputted under each thematic area where answers are categorized to show the pattern of how answers fit under each category.

Thematic key areas	Key issues	Perceptions around issues
Intrahousehold and gender dynamics	Who is responsible in the family to fetch water	Men because of the distance to walk with water container

	Role of women in decision making for water	Women does not normally participate in the decision making process – men does
	How family get access to water	Either by digging their own well or use water from community-shared tanks
	Previous water project	Poor set up/designs of water tanks with corrugated iron roofing feeding rainwater into the tanks
	Issues with previous water project	Tanks are poorly maintained No clear accountability and responsibility WT lacks the spare part
	Water-induced stress on people	Increased temperature
Environmental challenges	Environmental concerns	Increased groundwater salinity level Increased temperature Dying of trees Migration of fish species
	Impact on people's livelihood	Travelling a distance to fetch water People can't do much in the open sun
	Shared natural resources by community members	Competition over shared natural resources such as coconut,
Governance of Natural Capital and Other Resources	How decisions are made around water issues	At a household level, the couple decides where they should dig their well At the village level, men decide on how people should engage with projects and benefit.
	How communities are engaged in water management	Signing MOUs, they decide on the type of service they should provide
	How water stakeholder holds accountable for maintenance of water infrastructure?	Signing MOUs, Village agreement
	Any environmental issue that need to be monitored?	Over-harvesting of natural resources, planting trees

The result of the ranking exercise is provided in the table below. This analysis was performed using a "pairwise correlation" method where data gleaned from each session was ranked and rated on a "most important to less important" scale. This ranking exercise compared issues with each other to come up with most important issue.

The numbers used corresponds to the numbers given the issues in the table ?

	1	2	3	4	5	6	7	8	9	10	11	12	Point
1		2	3	4	1	6	7	8	1	10	11	12	2
2			3	4	2	6	7	2	2	2	2	2	6
3				3	3	3	3	3	3	3	3	3	11
4					4	7	4	4	4	4	4	4	9

5						6	7	8	5	5	5	12	3
6							7	6	6	6	11	12	6
7								7	7	7	7	7	10
8									8	8	8	12	5
9										9	9	12	2
10											10	12	2
11												12	2
12													7

Perceptions	**point**	**ranking**
1. Women does not normally participate in the decision making process – men does	2	
2. Either by digging their own well or use water from community-shared tanks	6	4
3. Kiriwatsan – Poor set up/designs of water tanks with corrugated iron roofing feeding rainwater into the tanks	11	1
4. Tanks are not well maintained No clear accountability and responsibility WT lacks the spare part	9	3
5. Increased temperature	3	
6. Increased groundwater salinity level Increased temperature Dying of trees Migration of fish species	6	
7. Travelling a distance to fetch water People can't do much in the open sun	10	2
8. Competition over shared natural resources such as coconut,	5	
9. At a household level, the couple decides where they should dig their well At the village level, men decide on how people should engage with projects and benefit.	2	
10. Signing MOUs, they decide on the type of service they should provide	2	
11. Signing MOUs, Village agreement	2	
12. Over-harvesting of natural resources, planting trees	7	5

Survey

The table below shows a result of the mapping exercise that was conducted to map out water resources and infrastructure on the Island. It also presents details and status about each water infrastructure on the Island.

The table below provide a summary of the status of water resources and infrastructure on the island

	Tewai	Taungaeaka	Buariki	Nukutonu	Katabanga	Takuu
Water gallery			1	1	1	1
Damaged polytanks	1	1	6	1	3	3
Idle polytanks	2		12	3	2	
In-use polytanks	3	3	7			6
Wells with freshwater	2	1	1	1	1	1
Wells with brackish water	1	3			1	
Desalination Plant						1
Overhead tank			1	1		
Concrete tank						1
Solar pump			1			

Outcomes

The rating of the problems clearly identified the following issues as key priorities for water issues on the island of Tabiteuea South. Missing from this list are pressing issues which came out from the general discussions which are summarized in Annex 1.

1. **Poor set up of water tanks –** Obviously, there are quite a number of tanks which are broken which is a result of a poor design of the system. This is evident from the survey and also from the trip the team took around the island to observe the situation on the island. There are tanks whose roofing are blown off and tanks are in real poor shape. These tanks could be saved somehow and repaired to its original state. This carries a lot of advantages in terms of saving waiting time for new tanks to be dispatched.

2. **Travelling a distance to fetch water** – There was a real concern apparently came up in the discussion which reflected the need to cut down the amount of walking or the distance where people have to walk in order to get access to freshwater supply. This issue according to the discussion prompted insecurity concerns for women and girls at some point when they perform this task. Also, there are families who are very unfortunate not to get a motorbike who walks the distance with heavy containers.

3. **Tanks are poorly maintained** – Signing MOUs with people in the community is sometimes not well understood by those who involve in the signing. This has a lot of implications on how the system are managed given that those who are obligated to maintain the tanks failed to play their part due to misunderstanding.
   The island council should come in fully equipped to take over this role to maintain the function of these tanks. Only if these tanks are maintained and well functional that people would continually access to freshwater supply.
   People in TabSouth are very individualistic and traditionally never willing to work to benefit others.

4. **Digging wells or sharing water resources with others in the community** – This issue confirmed that access to water supply is a real issue on the island. In events when the drought period is prolonged which thus increased water salinity level, there are families who survived on saline water. This situation is the main contributing factor that exposing families to the outbreak of diseases and other water related diseases.

5. **Over-harvesting of natural resources –** There is a worry that over-harvesting of natural resources will escalate the vulnerability situation on the island. The island

council and village policy should step up to stop and to prevent any further damage this practice will implicate on people's livelihood.

Annex 1:

Outer Island site visits

Mission report: TabSouth Stakeholder Consultation and mapping exercise

1. Members of the consultation team on this SPREP mission to TabSouth are; Mimitong Kirata (Team leader), Tokintekai Bakineti (member), Kaiea Awira (GeoMapping Specialist). The team travelled to TabSouth island on Sunday, 3rd July, 2022. The team stayed 3 extra nights on the island due to flight cancellation and hence returned to Tarawa on Wednesday 13th July, 2022.

2. The objective of the mission is to undertake consultation with water key stakeholders to collect data on social activities around water issues, past and current water projects, water infrastructure, environmental issues related to water, island and local governance structure and how decisions influence community access to water, accountability and responsibility and the management of water system on the island.

3. Water key stakeholders on the island were represented in this consultation by selected community members from the different social categories; old men, men, women and the youth, island council and Government representatives on the island.

4. The team members performed specific tasks to achieve the mission objectives. Hence, Kaiea Awira was tasked to perform water infrastructure mapping for all water resources on the island whilst Mimitong Kirata and Tokintekai Bakineti undertake community consultation with selected community members.

5. TabSouth is an island lies to the south of Tarawa and only reachable by boat and plane. The 2020 Census report shows TabSouth has a population of 1,357 people and 279 households. There are 6 villages on the island namely; Tewai, Taungaeaka, Buariki, Nukutoru, Katabanga and Taku. TabSouth total land area is 11.85 sq.km extending from the northern village of Tewai to the southern village of Taku. Widest width: 1.89 km at Buariki Narrowest width: 0.02 km at Katabanga and length of the island is 29.87 km

6. **Water security:** The only water source on the island is sourced from ground wells. Some of the tanks which were installed by previous projects are no longer functional thus prompted a large majority of the population on the island to rely heavily on the ground water. The team witnessed the broken water infrastructure built by Kiriwatsan and other previous project. Most of these tanks are not functional and people in the community rely largely on the island council for maintenance work to sustainably manage the function of these water system. MOU's are adopted in this arrangement as an instrument serving purposefully to hold water stakeholders accountable to sustain the function of the system and the continuing supply of freshwater to people on the island.

6.1. Forming up community structures with an intention to devise transfer of ownership of the project assets is seem to weakly function. Obviously, the purpose of signing an MoU which relate to how stakeholders are responsible and obliged to their roles which are clearly stipulated in the MoU is not clearly understood. [1]It was noted the with previous project that community had issues with the KIRIWATSAN project. People signed MoU with Kiriwatsan to provide the labour and maintenance however this has never been worked. Paying for labour on the islands will need to be a core consideration for the project

6.2There is obviously a paradigm shift in the way people perceive the function and benefit derived from community-based project. This shift is resulting from experiences gleaned from how community-based project are being managed and maintained to continually serve their purpose. It was apparent from the island council point of view that when projects are handed over to people in the community, the support and maintenance funds provided by implementing agencies also stops. This leaving the island council to struggle to maintain the function of these projects. As much as the island council is willing to take over the management of these project, its capacity to take on this additional responsibility is constraints by the tight and limited financial resources the island council have for materializing these purposes.

6.3 The Island Water Technician lacks the equipment and spare parts to repair damages to these water infrastructures. The need for this service is highlighted however the water technician has been requesting for these parts from MISE but fails to receive any. The water technician is also responsible for water quality monitoring mainly groundwater. According to water technician, water is still consumable until salinity level goes beyond 2,500 $\mu S/cm^3$.

6.4 A consensual understanding agreed with the concept which implies the smaller the number of households sharing one system, the better. This understanding

reflected on prior experiences people have with previous project in which nobody is obliged to maintain and cared to repair broken part although they involve in the signing of MoU. There was also a strong view raised around demanding an individual household approach as opposed to community-based approach.

6.5 As noted in Taku village and in other villages, water seem to be a communal property and should be accessed openly by the entire population no matter where it is found on the island.

6.6 The size of a well especially in locations where the freshwater lens is very thin is very important to maintain the continuing supply of freshwater. This is one traditional method of keeping freshwater supply sufficient to fill up enough containers at a time.

6.7 People struggle to survive with water issues which apparently had become part of their livelihood chores. Fetching water has become a shared responsibility between family members who ensures water is always made available for family use. The prolonged no-rain season triggered these struggles which compounded by the increased salinity level of groundwater. This scenario prompted people to move to other wells where freshwater is found.

6.8 Previous studies affirmed that [3]no matter how long the droughts, there is always bound to be a freshwater site that can withstand these long drought periods which the people get their potable drinking water from. The distance from the village in which these freshwater sources was observed and that people travels on motorbikes and pushbikes to access to these water resources. Conversely, families who lack the capacity to get motorbikes and pushbikes bear the load to carry water containers from these distances.

7.0 Governance structure

7.1 Island council is the paramount executive body on the island. The island council is made up of elected and nominated members from villages across the island. These members are elected and serve a four-year term in office. The mayor is the head of the island council who is elected island wide.

7.2 Council of old men is traditionally playing a critical role in cultural matters on the island. This body works hand in hand with the island council mainly in dealing with island cultural matters in which their decisions are endorsed by villages.

7.3 Maneaba system is normally a village based decision-making system where men who represent each family in the village sit in these fora.

7.4 At a household level, men and wife are effective in making decisions to resonate family interest. This is where pre-requisite decisions are made and proposed for wider discussion in the maneaba for approval.

8.0 Island Council Strategic Plan: According to the island council clerk on the island, it was noted the island council does not have a Strategic Plan. Despite that, KiLGA is coming soon to help the Island Council to produce a strategic plan.

8.1There is no tradition and water policy whereby land use management plan, clearly stipulating a clear guideline on the management of community-based water infrastructures and systems which are currently in place.

8.2 There is no assets management plan to guide activities on the maintenance of water
infrastructures and other water resources. This plan could serve to reinforce community accountability and other stakeholders in managing these water resources and assets only if it exists.

9.0 Land access: Like other islands in Kiribati, land on Tabiteuea South is owned by family inheritance. It is through this land tenure system that lands are divided among the heirs who maintained the right to access and the right to distribute and prohibit access to the land resources. This land tenure system clearly explained why setting up water infrastructure on the island cannot go without seeking the consent of landowners.

10.0 Desalination Plant

10.1 There is only one desalination plants installed on the island at Taku village. This plant is not yet operational as some parts are still yet to arrive. Once the plant is up and running, the freshwater that the plant will supply would complements freshwater supply sourced from wells on the island. This water system is providing an alternative to ameliorate issues around water availability and healthy drinking water

10.2 The technicalities of the system may possibly be a constraining factor that may have an adverse effect on the function of the system. This in fact, need an upscaling

of the water technician capacity to manage and maintain the plant to continually run to produce the desired output.

11.0 Hand pumps

11.1 The Tamana hand pump was used commonly throughout the island. This is a manually operated hand pump which pumps water from a distance well to households. There are ….. total number of hand pumps currently functional throughout the island. This type of pump is easier to maintain and repaired given the parts are simple and thus locally made.

12.0 Solar pumps

12.1 Total number of solar pumps currently in-use and operational is….. Solar pumps are technically expensive and require some skills and technical expertise for its maintenance. Apparently, people who own solar pumps have prior acquaintance and skills that enabled them to manage and maintain the system.

12.2 There was a mention that solar pumps have problems as they keep pumping regardless of the water lens conditions, whereas a Tamana pump can be more easily managed. People seem to prefer hand pumps to pump water to overhead tanks which then gravity fed to water taps on the ground.

13.0 Tanks

13.1 Some communal tanks are installed in church compounds. From community experience, tanks kept and maintained at the church compounds served only to support church functions while community access is limited and only by permission from church minister, pastor, or priest that access to this water resources is possible. This has a negative consequence with the initial arrangement when these tanks were built. Conversely, there are tanks which are literally owned by the church in which the church has full control on it use.

13.2 Tanks which were installed by the KIRIWATSAN project are poorly designed that most of them are broken and not functional. Some of these water systems had iron-roofing blown off without any trace of any repair to maintain the tanks. Some tanks are standing idle with no taps. These raises an alarming question of who is responsible and accountable to repair and to ensure that these water systems are kept running to serve the need of the community population.

13.3 A significant number of broken tanks was evidently observed on the island. If these tanks could be repaired to serve their purpose, the amount of water they could hold to supply people in the community would be sufficient enough to counter issues related to accessing water in a distance.

14.0 Maintenance: For water infrastructure, maintenance requests come to the Island Council and delegates. Funds for maintenance works come from the community rather than having a budget allocation from the Island Council. If community can't raise funds, then they escalate to the Island Council and if they can't help then they escalate to MISE.

16.0 Health: There are obviously diseases that infect women which resulting from the consumption of unboiled water straight from the well. These diseases such as skin diseases, diarrhea, and cholera affect children and even adult. The nursing officer revealed that women also suffer diseases which resulting from bathing in an unclean water which leading to some women have cancer.

17.0 Environmental considerations: There is obviously an increased stress which resulting from an increased temperature and other environmental factors that placed stress on the function of ecosystem services including the function of humankind. Men and women strained a lot when they work in a very hot condition. This prompted working in a shade or taking rest.

The population on the island is quite small and therefore the rate in which natural resources are being harvested is within the capacity of the natural resources to re-generate.

As most or even the majority of lands are communally owned, the cost the environment is witnessing is the lack of motivations the individual has to improve the land condition. People seem to compete on harvesting the natural resources without any intention to give back anything to the land.

18.0 Gender considerations:

18.1 The roles within the community are divided on gender with the men undertaking fishing, whilst women cook. Everyone collects water. The fishing generates income by sales on the island.

18.2 Women can co-share land, however men have the decision-making role over the land as per their traditions. Men are normally custodians to family assets and properties.

18.3 The traditional roles are starting to shift. Women tend to let men lead but they can raise issues to their husbands to take up for a wider discussion in the maneaba.

18.4 Challenges:
The following challenges were gathered from the discussions and from a general observation on the status of water systems on the island.

a. There is obviously a paradigm shift in the way people perceive the function and benefits derived from community-based project. This shift is resulting from experiences gleaned from how community-based project are being managed and maintained to continually serve their purpose. It was apparent from the island council point of view that when projects are handed over to people in the community, the support and maintenance funds provided by implementing agencies also stops. This leaving the island council to struggle to maintain the function of these projects. As much as the island council is willing to take over the management of these project, its capacity to take on this additional responsibility is constraints by the tight and limited financial resources the island council have to materialize these purposes.

b. All lands are communally owned and therefore access to use the land always require a formal arrangement that should involve landowners. This is a critical part of the process which should be well discussed and well understood.

c. Communities who sign MoUs should be well informed of what constituted in the MoU and bound to take full responsibilities and obligations stipulated in the MoU.

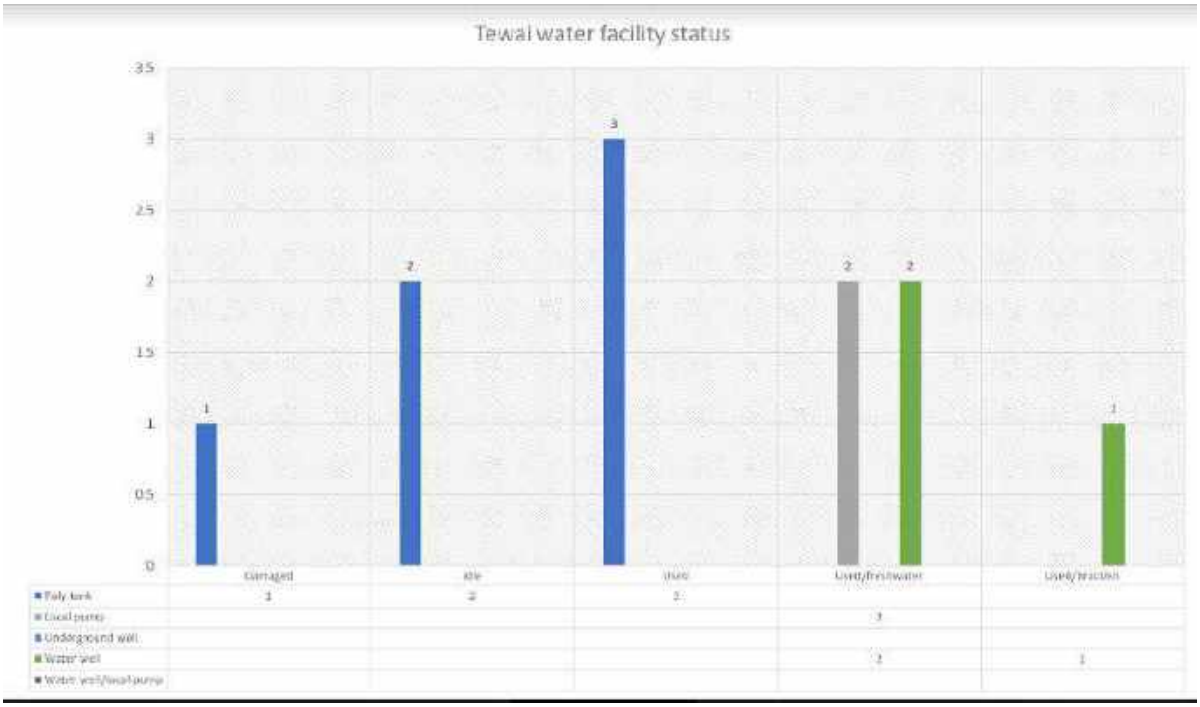
d. Water technician should have a proper store house stocked with spare parts for maintenance and repair of broken parts

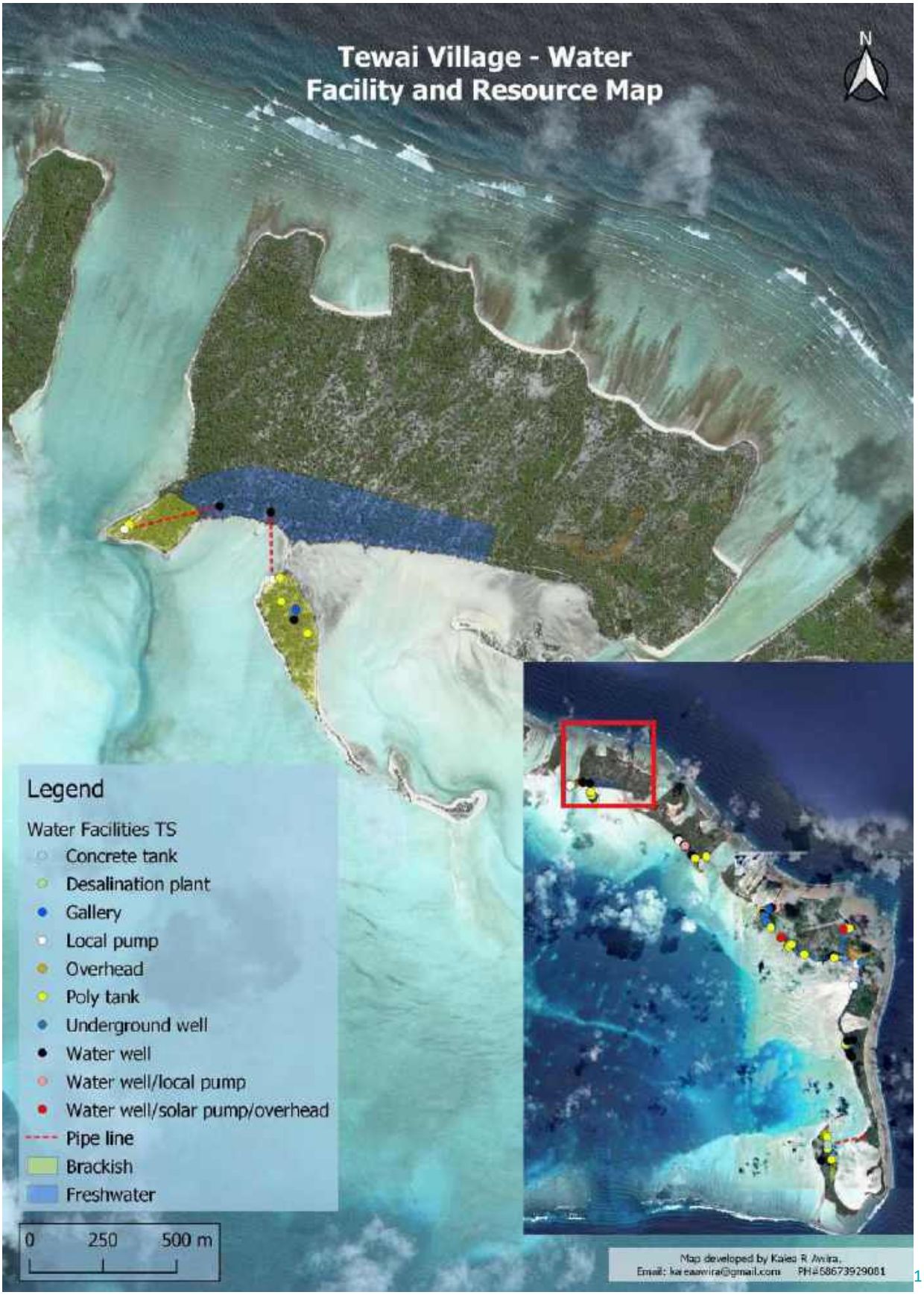
e. The island council should play an active role in maintaining momentum and continually engage through WT with people in the community

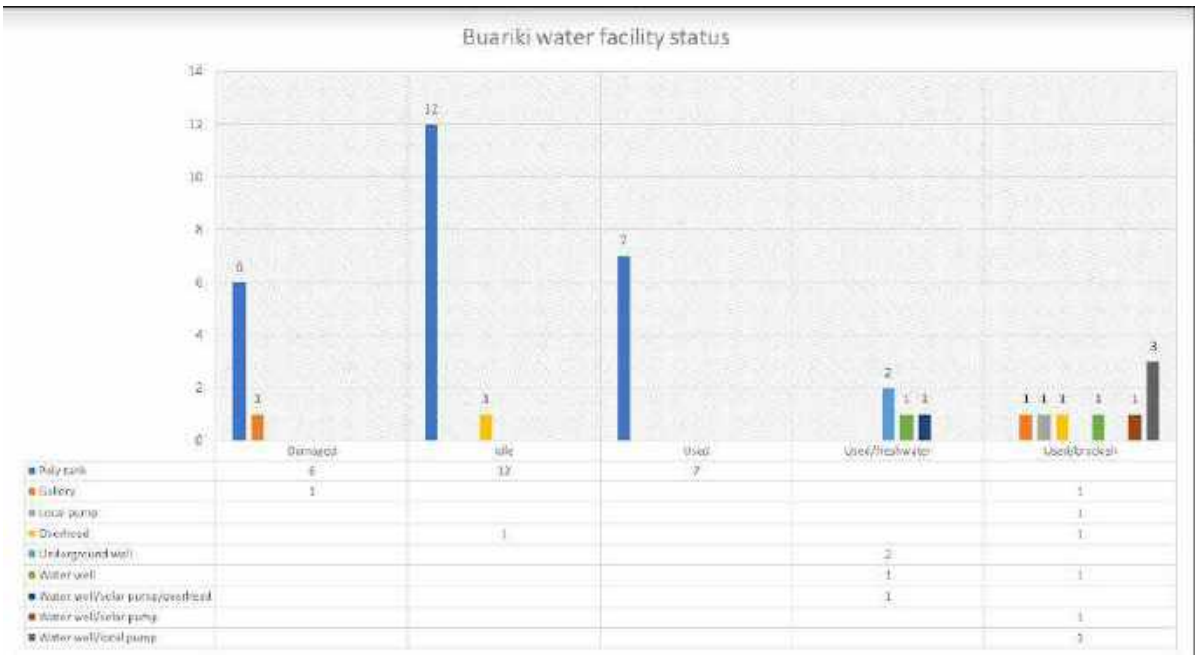
f. Stakeholders on the island should involve actively in the implementation of all project activities on the ground.

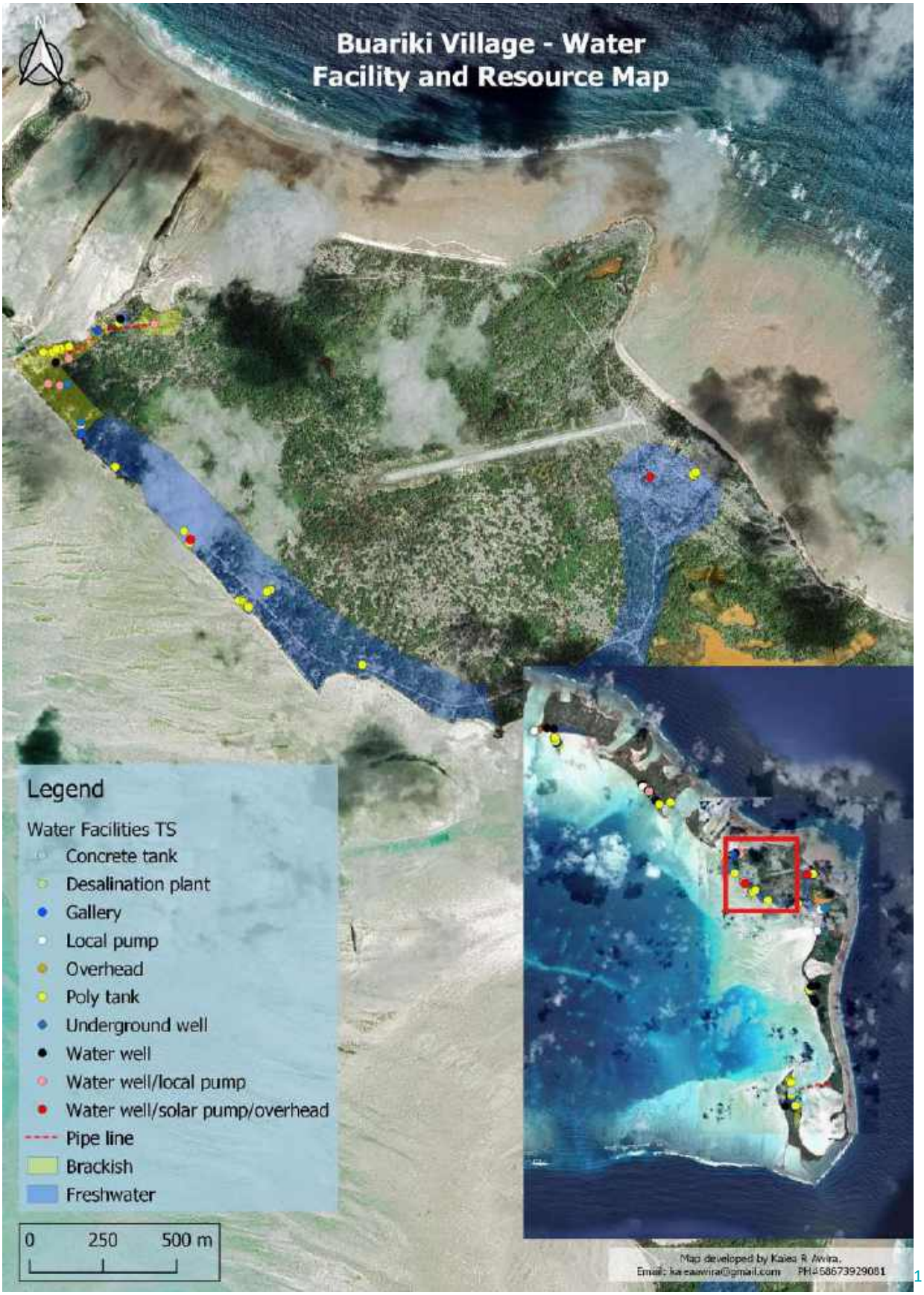
g. Island Council Strategic Plan should be aligned with the Ministry Operational Plan (MOP) to hold sectors accountable and responsible.

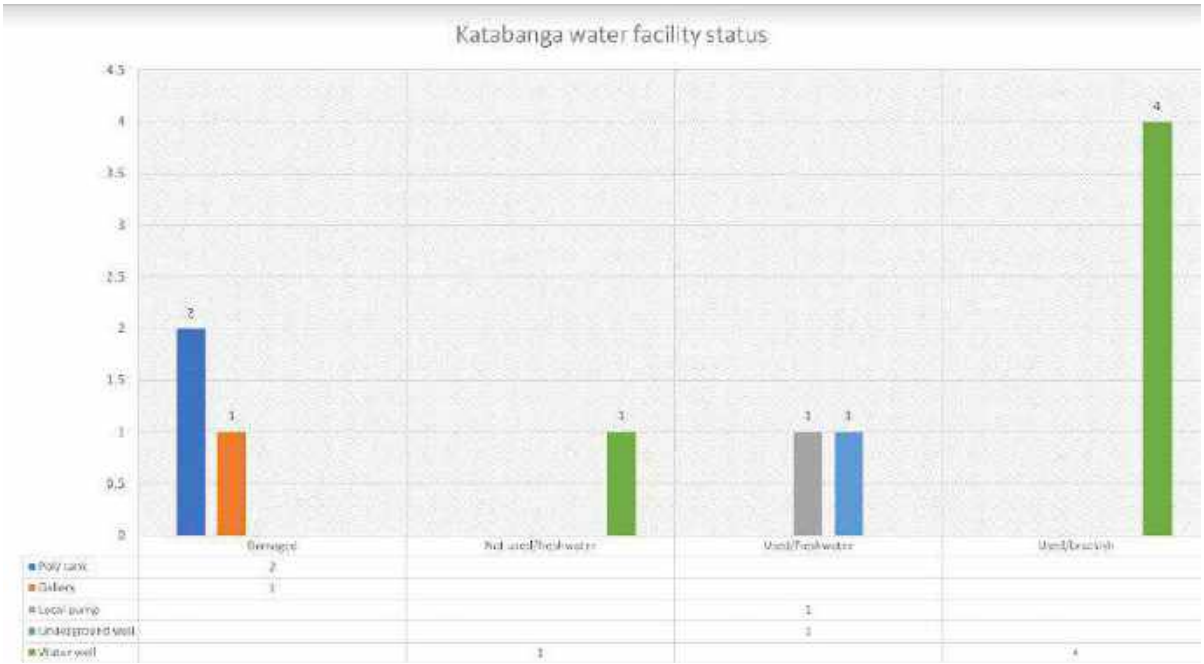
Annex 2: Status of water resources and infrastructure on Tabiteuea South

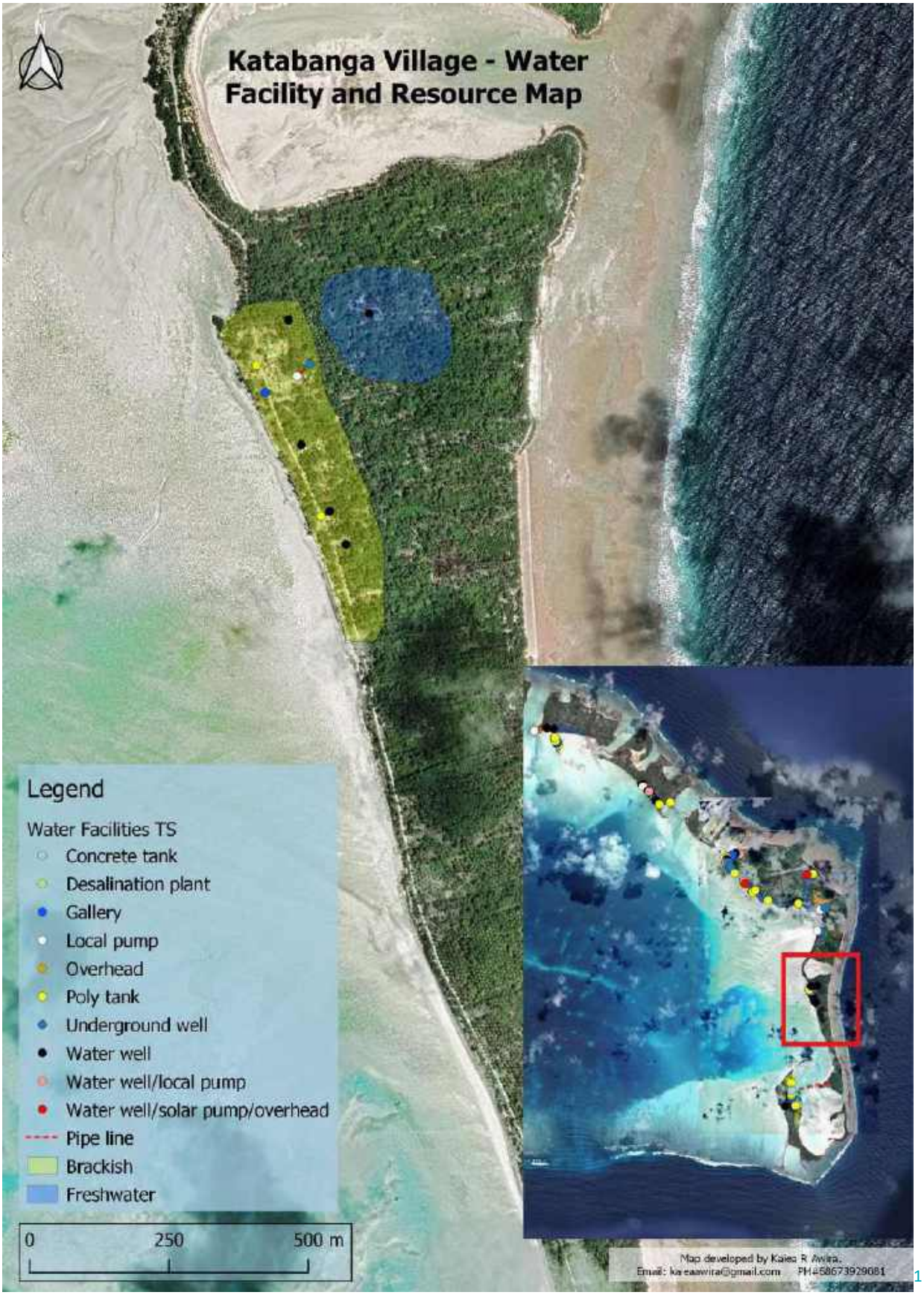


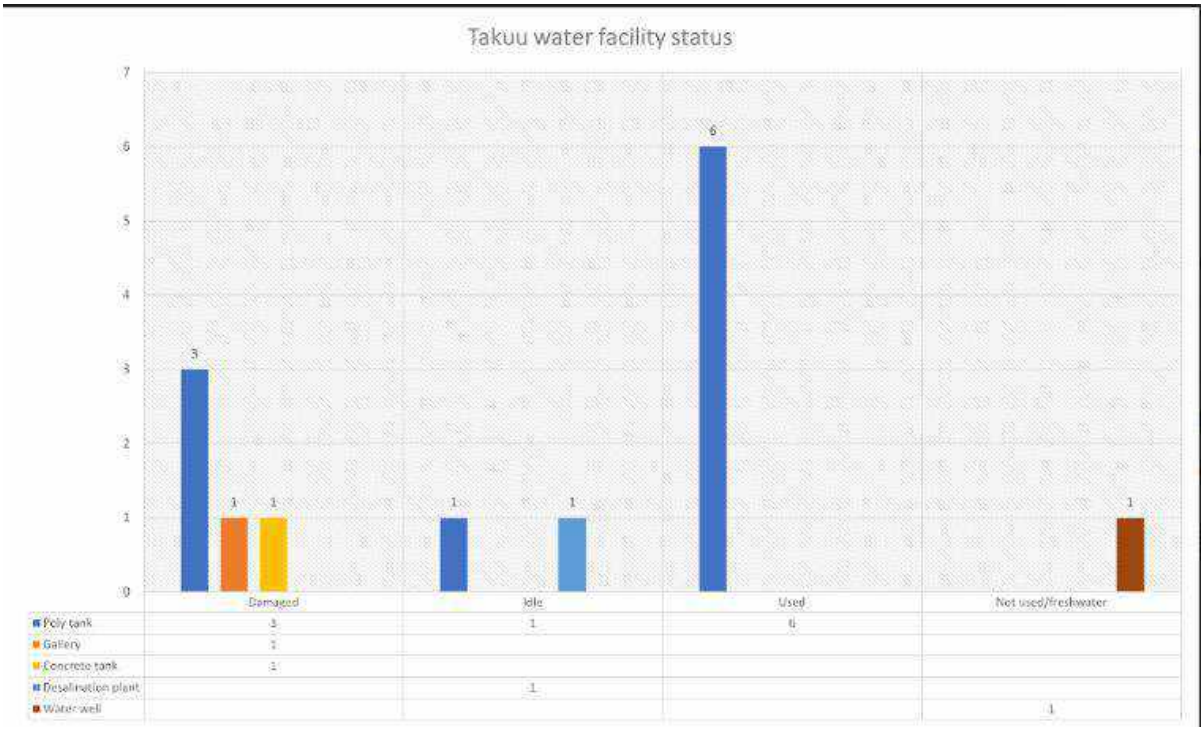

Tewai Village - Water Facility and Resource Map
N
Legend
Water Facilities TS
Concrete tank
Desalination plant
Gallery
Local pump
Overhead
Poly tank
Underground well
Water well
Water well/local pump
Water well/solar pump/overhead
Pipe line
Brackish
Freshwater
0
250
500 m
Map developed by Kaiea R Awira,
Email: kaieaawira@gmail.com PH#68673929081

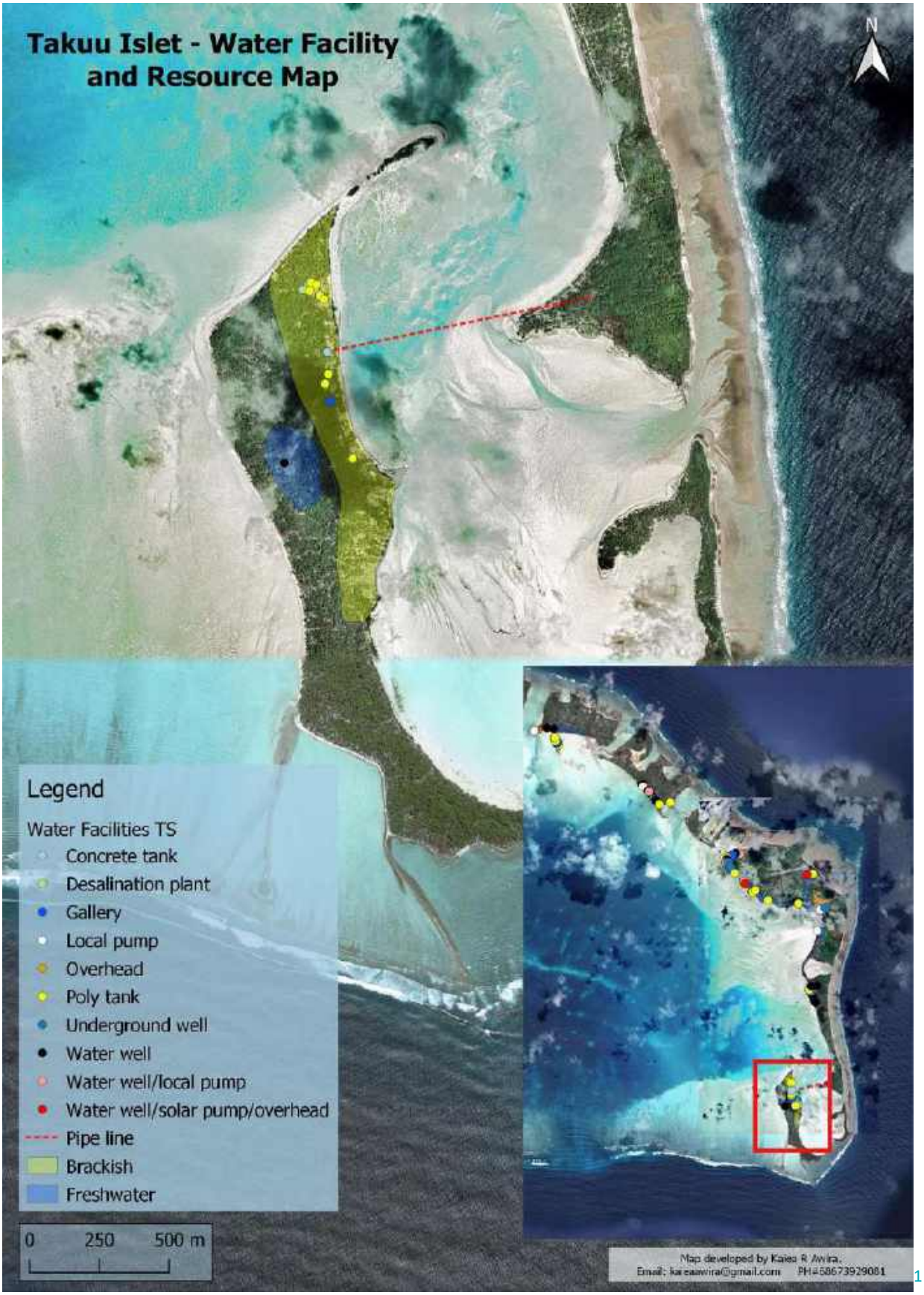

Buariki water facility status
14
12
10
8
6
4
2
0
6
1
12
1
7
2
1
1
1
1
1
1
1
3
Damaged
Idle
Used
Used/freshwater
Used/brackish
Poly tank 6
Gallery 1
Solar pump 1
Overhead 1
Underground well 2
Water well 1 1
Water well/solar pump/overhead 1
Water well/solar pump 1
Water well/coral pump 1


Buariki Village - Water Facility and Resource Map
Legend
Water Facilities TS
Concrete tank
Desalination plant
Gallery
Local pump
Overhead
Poly tank
Underground well
Water well
Water well/local pump
Water well/solar pump/overhead
Pipe line
Brackish
Freshwater
0
250
500 m
Map developed by Kaiea R Awira.
Email: kaieaawira@gmail.com PH#68673929081


Katabanga water facility status
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2
1
1
1
1
4
Damaged
Not used/Freshwater
Used/Freshwater
Used/Brackish
Poly tank
2
Dakeis
1
Local pump
1
Underground well
1
Water well
1
4


Katabanga Village - Water Facility and Resource Map
Legend
Water Facilities TS
Concrete tank
Desalination plant
Gallery
Local pump
Overhead
Poly tank
Underground well
Water well
Water well/local pump
Water well/solar pump/overhead
Pipe line
Brackish
Freshwater
0
250
500 m
Map developed by Kaiea R Awira.
Email: kaieaawira@gmail.com PH#58673929081


Takuu water facility status
7
6
5
4
3
2
1
0
3
1
1
1
1
6
1
Damaged
Idle
Used
Not used/Freshwater
Poly tank 3 1 6
Gallery 1
Concrete tank 1
Desalination plant 1
Water well 1


Takuu Islet - Water Facility and Resource Map
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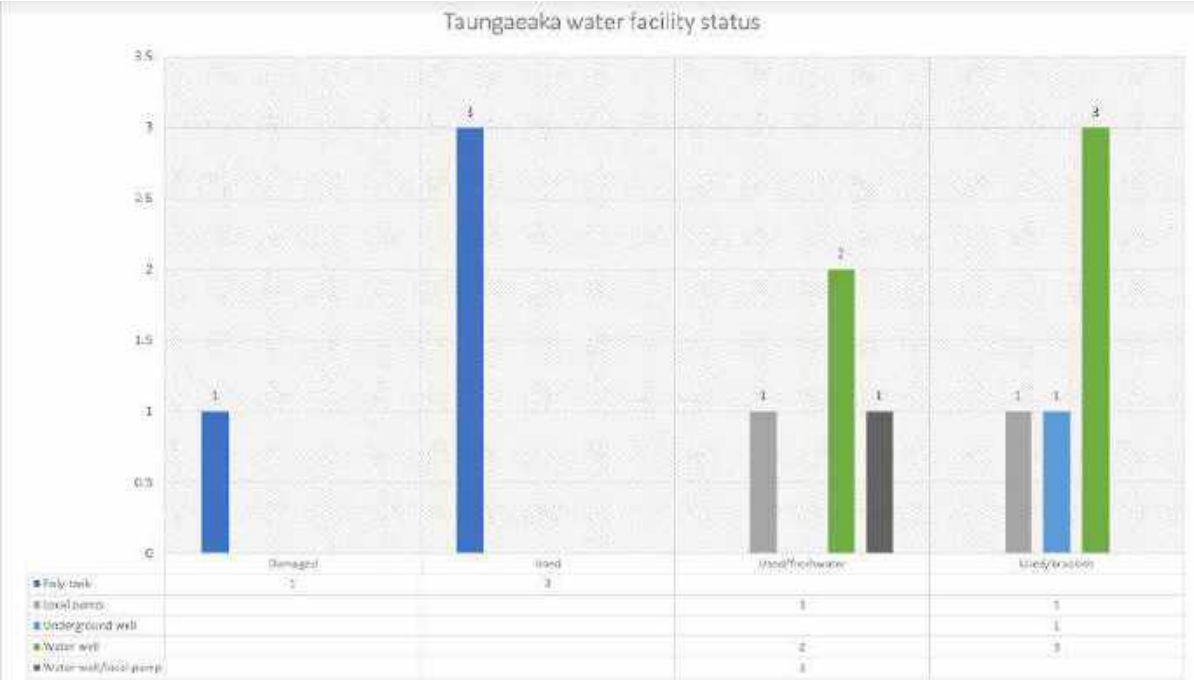
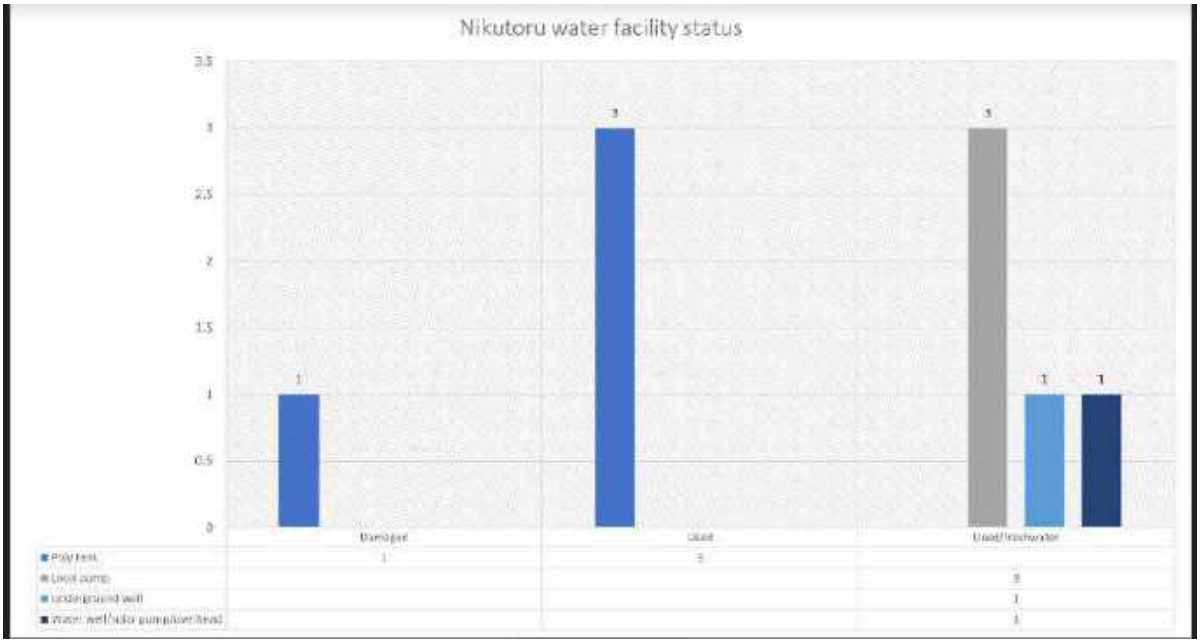
Legend
Water Facilities TS
Concrete tank
Desalination plant
Gallery
Local pump
Overhead
Poly tank
Underground well
Water well
Water well/local pump
Water well/solar pump/overhead
Pipe line
Brackish
Freshwater
0
250
500 m
Map developed by Kaiea R Awira.
Email: kaieaawira@gmail.com PH#68673929081


Taungaeaka water facility status
3.5
3
2.5
2
1.5
1
0.5
0
Damaged
Used
Used/freshwater
Used/brackish
Poly tank
Underground well
Water well


Nikutoru water facility status
3.5
3
2.5
2
1.5
1
0.5
0
Damaged
Used
Used/freshwater
Poly tank
Local pump
Underground well


Taungaeaka Village - Water Facility and Resource Map
N
Legend
Water Facilities TS
Concrete tank
Desalination plant
Gallery
Local pump
Overhead
Poly tank
Underground well
Water well
Water well/local pump
Water well/solar pump/overhead
Pipe line
Brackish
Freshwater
0
250
500 m
Map developed by Kaiea R Awira.
Email: kaeaawira@gmail.com PH#68673929081

Waypoint	Source	Status	Year	Ownership	Capacity	Facilities
62	Kiriwatsan	Used	5+	Village	1000	Poly tank
63	Private	Used/Brackish	20+	Private		Water well
64	Island project	Damaged	30+	Village	80000	Gallery
65	Kiriwatsan	Damaged	5+	Village	10000	Poly tank
66	KUC	Used	5+	KUC		Local pump
67	KUC	Idle	5+	KUC	5000	Poly tank
68	KUC	Idle	5+	KUC	5000	Poly tank
69	Private	Used/fresh	20+	Private		Water well
71	B'hai	Used/fresh	20+	B'hai		Water well
72	School/GOK	Used	5+	School	5000	Poly tank
73	Kiriwatsan	Used	5+	School	10000	Poly tank
74	School/GOK	Used/fresh	5+	School		Local pump
75	Private	Used/brackish	20+	Private		Water well
76	Kiriwatsan	Used	5+	Village	10000	Poly tank
77	Private	Used/brackish	20+	Private		Water well
78	KUC	Used/freshwater	10+	KUC		Local pump
79	Private	Used/freshwater	10+	Private		Water well
80	Private	Used/freshwater	10+	Private		Water well
81	Private	Used/freshwater	10+	Private		Water well/local pump
82	Private	Used/brackish	10+	Private		Local pump
83	Private	Used/brackish	10+	Private		Underground well
84	Private	Used/brackish	10+	Private		Water well
85	Kiriwatsan	Damaged	5+	Village	10000	Poly tank
86	GOK	Used/freshwater	10+	School		Water well
87	GOK	Used	5+	School	10000	Poly tank
88	GOK	Used	5+	School	10000	Poly tank
89	Council	Used/bracksih	10+	Council		Water well/local pump
90	Conucil	Used/brackish	10+	Council	500	Overhead
91	Council	Idle	5+	Council	5000	Poly tank
92	Council	Used	10+	Council	5000	Poly tank
93	Council	Used	10+	Council	5000	Poly tank
94	Council	Used/brackish	10+	Council		Water well/local pump
95	GOK	Damaged	10+	Clinic	5000	Poly tank
96	GOK	Damaged	10+	Clinic	500	Poly tank
97	GOK	Used/freshwater	10+	Clinic		Water well
98	Council	Used/freshwater	30+	Council	30000	Gallery
99	Council	Damaged	5+	Council	5000	Poly tank
100	Council	Idle	10+	Council	5000	Poly tank
101	Council	Idle	5+	Council	500	Overhead
102	Council	Used	5+	Council	5000	Poly tank
103	Council	Used	10+	Council	5000	Poly tank
104	Council	Idle	10+	Council	5000	Poly tank
105	Counicl	Idle	5+	Council	5000	Poly tank
106	Coucil	Used/brackish	10+	Council		Water well
107	Private	Used/brackish	10+	Private		Water well/local pump
108	Private	Used/brackish	10+	Private		Water well/local pump
109	Private	Used/brackish	10+	Private		Underground well
110	Village	Damaged	30+	Village	30000	Gallery

111	Private	Used/brackish	10+	Private		Local pump
112	Private	Used/brackish	10+	Private		Underground well
113	Kiriwatsan	Damaged	5+	Village	10000	Poly tank
114	Kiriwatsan	Damaged	5+	Village	10000	Poly tank
115	KUC	Used	5+	KUC	5000	Poly tank
116	KUC	Idle	10+	KUC	5000	Poly tank
117	KUC	Used/freshwater	10+	KUC	200	Water well/solar pump/overhead
118	Kiriwatsan	Damaged	5+	Village	10000	Poly tank
122	Kiriwatsan	Damanged	5+	Village	10000	Poly tank
123	Private	Used/brackish	10+	Private		Water well
124	Private	Used/brackish	10+	Private		Water well
125	Private	Used/brackish	10+	Private		Water well
126	Village	Damaged	30+	Village	30000	Gallery
127	KUC	Used/brackish	5+	KUC		Local pump
128	KUC	Used/brackish	10+	KUC		Underground well
129	Kiriwatsan	Damaged	5+	Village	10000	Poly tank
130	Village	Not used/freshwater	10+	Village		Water well
131	Private	Used/brackish	10+	Private		Water well
132	Private	Used/freshwater	10+	Private		Underground well
133	Private	Used/freshwater	10+	Private		Local pump
134	Kiriwatsan	Damanged	5+	Village	10000	Poly tank
135	Private	Used/freshwater	10+	Private		Local pump
136	Private	Used/freshwater	10+	Private		Underground well
138	Kiriwatsan	Used	5+	Private	10000	Poly tank
139	RC	Idle	10+	RC	5000	Poly tank
140	RC	Idle	10+	RC	5000	Poly tank
141	GOK	Used	5+	School	5000	Poly tank
142	GOK	Idle	5+	School	5000	Poly tank
143	GOK	Used	10+	School	5000	Poly tank
144	GOK	Used/freshwarter	10+	School	10000	Water well/solar pump/overhead
145	RC	Used	5+	RC	500	Poly tank
146	RC	Idle	10+	RC	5000	Poly tank
147	RC	Idle	0.1	RC	10000	Poly tank
148	RC	Idle	0.1	RC	10000	Poly tank
149	RC	Idle	0.1	RC	10000	Poly tank
150	RC	Idle	0.1	RC	10000	Poly tank
151	RC	Idle	10+	RC	5000	Poly tank
152	RC	Idle	10+	RC	5000	Poly tank
153	RC	Used	5+	RC	5000	Poly tank
158	Kiriwatsan	Damaged	5+	Village	10000	Poly tank
159	Village	Not used/freshwater	10+	Village		Water well
160	Village	Damaged	30+	Village	30000	Gallery
161	GOK	Used	10+	Clinic	5000	Poly tank
162	GOK	Damaged	10+	Clinic	5000	Poly tank
163	Kiriwatsan	Damaged	5+	Village	10000	Poly tank
164	GOK	Idle	1+	Village		Desalination plant
165	Kiriwatsan	Used	5+	Village	10000	Poly tank
166	GOK	Used	10+	School	5000	Poly tank
167	GOK	Idle	1+	School	5000	Poly tank
168	KUC	Used	10+	KUC	5000	Poly tank
169	KUC	Used	10+	KUC	5000	Poly tank
170	KUC	Used	5+	KUC	5000	Poly tank
171	Village	Damaged	30+	Village	1000	Concrete tank
172	Private	Used/freshwater	10+	Private		Water well