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Investing in rural people

Report to the President

Proposed additional financing for scaling up to the Republic of Kiribati for the Outer Islands Food and Water Project (OIFWP)

Project ID: 1100001708

Note to Executive Board representatives

Approved on Friday 25 October 2019

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Contents

Appendices

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Abbreviations and acronyms

ACIAR	Australian Centre for International Agricultural Research
ALD	Agriculture and Lands Department
ANZ	Australia and New Zealand Banking Group Limited
AWP/B	Annual Work Plan and Budget
CFO	Community Field Officer
DSF	Debt Sustainability Framework
EB	Executive Board
FSPK	Foundation of the Peoples of the South Pacific, Kiribati
IFAD11	Eleventh Replenishment of IFAD's Resources
IWT	Island Water Technician
KFSU	Kiribati Fiduciary Services Unit (MFED)
KIRIWATSAN	Kiribati Water and Sanitation Project
M&E	monitoring and evaluation
MELAD	Ministry of Environment, Lands and Agricultural Development
MFED	Ministry of Finance and Economic Development
MORDI	Mainstreaming of Rural Development Innovations
MPWU	Ministry of Public Works and Utilities
OIFWP	Outer Islands Food and Water Project
PBAS	Performance-Based Allocation System
PMU	Project Management Unit
PIM	Project Implementation Manual
PPSC	Project Partnership Steering Committee

Financing summary

Initiating institution:	IFAD
Borrower/Recipient:	Republic of Kiribati
Executing agency:	Ministry of Finance and Economic Development (MFED)
Total project cost:	US$9.555 million
Amount of original IFAD financing:	SDR1.940 million (equivalent to approximately US$3.0 million)
Terms of original IFAD financing:	Debt Sustainability Framework (DSF) grant
Amount of original contribution of Recipient	US$1.071 million
Amount of original cofinancing	US$3.148 million
Amount of additional IFAD financing:	US$3.6 million
Terms of additional IFAD financing:	DSF grant
Amount of additional contribution of Recipient:	US$0.708 million
Financing gap:	US$1.028 million
Appraising institution:	IFAD
Cooperating institution:	Directly supervised by IFAD

Recommendation for approval

According to the delegation of authority procedure approved by the Executive Board at its 126th session and detailed in document EB 2019/126/R.48/Rev.2 the President is invited to approve the recommendation contained in paragraph 59.

I. Background and project description

A. Background

1. The Outer Island Food and Water Project (OIFWP) was approved by the Executive Board (EB) on 3 August 2014, and entered into force on 3 September 2014 with an extended completion date of 31 March 2023. The financing plan, as originally appraised, amounts to US$7.23 million, consisting of:

   (i) an IFAD grant of US$3.0 million;

   (ii) a cofinancing grant of US$3.0 million;

   (iii) a cofinancing grant by Australian Centre for International Agricultural Research of US$148,000; and

   (iv) a Government contribution of US$1.1 million.

2. As a result of the withdrawal of an anticipated cofinancier, the full financing plan described above did not materialise. The consequent shortfall of US$3 million, for the Household Food and Nutrition Component, led to its revision - from an expert and technology-driven approach to one based on the promotion of increased cultivation and consumption of local varieties of nutritious crops.

3. In view of OIFWP's demonstrated results, the Government of Kiribati is now seeking to utilise US$3.6 million of Kiribati's IFAD11 PBAS allocation towards scaling up the reach of OIFWP. The President's approval of the additional financing, would enable OIFWP to build on successes under the original financing and replicate these in five additional outer islands. Additional financing will also enable the Government of Kiribati (GoK) to consolidate the gains achieved in the original four outer islands, and provide a stronger platform for sustainability.

B. Original project description

4. The overall goal of OIFWP is that "people living in outer island communities have healthy, sustainable livelihoods". The project development objective is that "outer island communities are able to successfully plan and implement investments that result in better nutrition and access to clean water". OIFWP has four components:

   Component 1: Community planning and action.

   Component 2: Improved household food and nutrition.

   Component 3: Rainwater harvesting for increased household water supplies.

   Component 4: Project coordination and management.

II. Justification for the additional financing

A. Rationale and justification

5. OIFWP has made important contributions to improving livelihoods, food and nutrition security, and access to drinking water for people living in the targeted outer islands. It has been successful in delivering its key output and outcome targets, and demonstrated an effective methodology that is ready for replication and scaling. Under the proposed additional financing, the project's goal, objectives and components, as well as its implementation and financial arrangements, will remain unchanged from the approved original financing.

6. OIFWP remains relevant to the development priorities of both the GoK and IFAD. The vision of the 2016-2019 Kiribati Development Plan (KDP) is "Towards a better educated, healthier, more prosperous nation with a higher quality of life". KDP priorities that OIFWP directly addresses are:

   (i) Improved infrastructure (water harvesting and storage);

   (ii) Improved access to basic services (water and agriculture);

   (iii) Improved health standards (improved quality of diet content);

   (iv) Climate change adaptation (water and food resilience); and

   (v) Gender equity and the empowerment of women.

7. Implementing agencies will continue the inclusive approach to community and household engagement, which is a hallmark of the project's community development approach. This includes ensuring the meaningful engagement of vulnerable people, particularly women, and youth. Women represent about half the population and young people account for about one third.

8. OIFWP's accomplishments, led by the Ministry of Environment, Land and Agriculture Development (MELAD) delivered through Island Officers and Community Field Officers (CFOs), has built trust and partnership with communities; and serves as a model for future outreach and engagement by MELAD in the agriculture sector. This has the potential to spark a dynamic transformation of the agricultural system in the outer islands, and to provide meaningful employment and increased incomes for these communities, as well as address challenges with nutrition and non-communicable diseases.

B. Description of geographic area and target groups

9. Project area and the target group. OIFWP was implemented in four outer islands: Abebama, Beru, North Tabiteuea and Nonouti, with a total population of over 11,600 people (25 per cent of the total outer island population) and 2,200 households. The additional financing shall scale up the original financing to five other outer islands in the south Gilbert line of islands. These have been selected based on the findings of a detailed analysis undertaken in 2016 on behalf of the Office of the President as part of a Whole of Island Approach (WOIA) to development in the Gilberts Group. The WOIA vulnerability ranking resulted in eight of the nine south Gilberts Group islands (i.e. except Arorae) being ranked the nine most vulnerable islands in the 19 islands comprising the Gilberts Group.

10. Specifically, the additional financing will scale OIFWP outreach to the 1,300 households in five South Gilberts Group islands: Aororae, Nikunau, Onotoa, Tabiteuea Maiaki and Tamana. In addition, the additional financing will consolidate activities for around 2,000 households on the four original islands (Abemama, Beru, Nonouti, and Tabiteuea Meang) with engagement for a further 18 months. There will be around 18,000 beneficiaries in total and phase two will continue to ensure women and youth have equal access to all project activities.

C. Components/outcomes and activities

11. The project has successfully built local institutional capacities under Component 1 that support sustainability of project outcomes. Interventions under Component 2 have supported increased local food production in the outer islands and improved nutrition awareness- thereby increasing self-reliance, improving household incomes and nutrition. Likewise, under Component 3, essential social infrastructures have been delivered that strengthen community resilience.

12. **Component 1: Community planning and action**. This component involved building the capacity of communities to plan and implement community development interventions, particularly in the areas of household food production and access to

clean water. This work is spearheaded by an NGO service provider, the Foundation of the Peoples of the South Pacific, Kiribati (FSPK), with technical support provided by staff from the Ministry of Environment, Lands and Agricultural Development (MELAD) and the Ministry of Public Works and Utilities (MPWU).

13. Over the course of the project, 43 Island facilitators and community field officers (CFOs) were recruited and trained in participatory approaches. They in turn supported training in community planning, financial literacy and governance. These trainings were attended by 11,515 community members, 38 per cent of whom were women. To date, 44 community plans have been formulated. These Community Plans have been consolidated into Island Plans for each of the outer islands under the project. The Island Council, which has administrative authority over activities undertaken on an island, have endorsed these Island Plans.

14. Under the scaling up, the project will launch community activities in 24 villages across the five new islands, to be completed in a phased approach in the first nine months of engagement. Community field officers- respected young men and women from their community- will be trained in planning and facilitation processes; and shall facilitate delivery of Components 2 and 3.

15. **Component 2: Improved household food and nutrition**. This component focuses on promoting activities to increase household production of fruits, vegetables, poultry, and root and tree crops, and to improve diets through an increased proportion of calories and nutrients from local food crops.

16. In spite of a shortfall in envisaged cofinancing, this component has made important progress towards its outcome target, that "households in the outer islands are growing and eating more nutritious foods". The Component adopted a community-based approach focused on increased cultivation and consumption of local varieties of fruits and vegetables. Over the course of the project, 43 small community nurseries have been supported and there are now 2,135 active home gardens in the four islands. This has helped diversify diets in the target communities, which have become more varied and nutritious. Local produce has reduced cash expenditures on foodstuffs; and some farmers are able to earn substantial incomes from selling surplus produce. While livestock production remains below original targets, support has been extended towards upgrading and improving existing household poultry production by a significant number of farmers since 2018. Through the production of educational and food preparation materials, and trainings in food preparation and preservation, OIFWP has also increased nutrition awareness within targeted communities.

17. In the scaling-up phase, CFOs will lead engagement with around 1,700 households in home gardening activities with a focus on local fruit and vegetable crops. New varieties and production methods will be supported with ACIAR. Twenty four community nurseries will be established to meet demand for seedlings and planting materials. Nurseries will be training focal points and active home gardeners will receive access to a set of basic tools. Most home gardeners will be women. In addition, cooking demonstrations and nutrition education for a targeted 1,750 women and men across the five new islands will be delivered in both the target communities and schools. Coverage will include safe food handling from preparation to storage and cooking classes based on the recipe book developed by the project and focussing also on meal preparation for children under five years of age - building further awareness of the benefits of local food, healthy diets, nutrient-saving cooking techniques, hygiene and health aspects.

18. **Component 3: Rainwater harvesting for increased household water supplies.** This component included the construction of purpose-built rainwater harvesting structures, each with a consensus-based water users' agreement on construction and maintenance, use of the land occupied by the structure, and water allocation among users.

19. The Component is close to achieving its outcome target: that households have secure access to a basic minimum quantity of clean drinking water. To date, 278 rainwater harvesting systems have been constructed, and associated water-user agreements have been put into place. Close to 50 per cent of the committee members of WUGs are women. This has 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 per cent to 69 per cent.

20. In the scaling up phase, 275 water harvesting facilities of 10,000 litres each will be established to serve 1,650 households. Each facility will have a water user group (WUG), with a representative from each participating household. CFOs will facilitate agreements on water allocation, legal ownership status of the rainwater structure, and O&M arrangements. WUG members will be trained in their responsibilities, including asset ownership, water sharing agreements and O&M funding and responsibilities. Each community will select a young person to become the Community Water Technician (CWT) to be responsible for day to day maintenance and water quality (salinity and potability). The CWT will be trained via the Technical and Vocational Education and Training programme; and will be paid a modest honorarium by the WUG members.

21. **Component 4: Project coordination and management** provides capacities for project implementation, monitoring, and strengthening of service delivery.

D. Benefits, costs and financing

Project costs

22. The total project cost including both original and additional financing is estimated at US$9.6 million, as shown in Table 1. Revised project costs by component and financier are provided in Table 2. Estimated costs by expenditure category are provided in Table 3.

Table 1
Original and additional financing summary
(Thousands of United States dollars)

	*Original financing**	*Additional financing*	*Total*
IFAD DSF grant	3 000	3 600	6 600
Financing gap	-	1 028	1 028
Cofinancier 1*	3 008		-
Cofinancier 2	148		148
Borrower/counterpart	1 071	708	1 779
Total	**7 227**	**5 336**	**9 555***

* The withdrawal of a cofinancier is reflected in a reduced final Total cost.

Financing and cofinancing strategy and plan

23. The total project cost of US$9.555 million will be financed by: (i) IFAD, for a total amount of US$6.600 million (69.1 per cent of total cost); (ii) ACIAR cofinancing of US$ 0.148 million (1.5 per cent of total cost); (iii) a government contribution of US$ 1.779 million (18.6 per cent of total cost); and (iv) a financing gap of US$1.028 million (10.8 per cent). The financing gap may be sourced through subsequent performance-based allocation system cycles (under financing terms to be determined and subject to internal procedures and subsequent Executive Board approval) or by cofinancing identified during implementation.

Table 2
Additional financing: Project costs by component (and subcomponent) and financier
(Thousands of United States dollars)

	IFAD additional financing		*Government contribution*		*Financing gap*		*Total*	
	Amount	%	Amount	%	Amount	%	Amount	%
Community Planning & Mobilization	875	97.0	18	2.0	9	1.0	902	16.9
Household Food and Nutrition	466	46.3	378	37.5	163	16.2	1 007	18.9
Household Drinking Water	1 238	52.5	262	11.1	856	36.3	2 357	44.2
Project Management	1 020	95.3	50	4.7	-	-	1 070	20.0
Total	**3 600**	**67.5**	**708**	**13.3**	**1 028**	**19.3**	**5 336**	**100.0**

Table 3
Additional financing: Project costs by expenditure category and financier
(Thousands of United States dollars)

	IFAD additional financing		*Government contribution*		*Financing gap*		*Total*	
	Amount	%	Amount	%	Amount	%	Amount	%
Investment Costs								
Equipment and Materials	1 052	54.7	212	11.0	661	34.3	1 925	36.1
Consultancies	1 541	100.0	-	-	-	-	1 541	28.9
Goods, Services and Inputs	377	55.2	75	11.0	230	33.7	682	12.8
Training	278	96.9	-	-	9	3.1	287	5.4
Workshops	96	83.7	19	16.3	-	-	115	2.2
Vehicles	47	84.0	9	16.0	-	-	56	1.0
Salaries and Allowances	100	16.5	377	62.3	128	21.2	605	11.3
Operating Costs	**109**	**87.0**	**16**	**13.0**	**-**	**-**	**125**	**2.3**
Total	**3 600**	**67.5**	**708**	**13.3**	**1 028**	**19.3**	**5 336**	**100.0**

Summary of benefits and economic analysis

24. The main tangible benefits have and will continue to accrue from: (i) increased food availability through the adoption of home gardening and poultry activities; (ii) reduced household dependence and overall expenditure on imported foods; (iii) income generation opportunities for poor households, which will be able to sell occasional production surpluses; and (iv) reduced incidence of water-borne diseases as a result of better access to safe water sources. In addition, the project will create some employment opportunities and is likely to result in reduced medical expenditures for the Government. One of the important intangible benefits is the development of skills within each community to identify local problems and issues, and determine options for how to seek solutions and address these.

25. The benefits of home and school gardens' production on the southern islands and the time savings that will accrue to households from rainwater harvesting systems have been quantified and combined with costs for scaling-up, then converted to economic prices. This generated an estimated economic internal rate of return of 13.9 per cent.

26. Benefits that cannot be quantified are also quite important. For drinking water, the analysis captures only a limited aspect (time savings) of the overall benefits. On most of the islands the water from shallow wells is often brackish for some of the year, especially during extended dry periods. Households greatly appreciate the ability to capture more rainwater and store it for later use. Similarly, while the most significant impact of home gardens will be through improved and more varied diets, the analysis only quantifies financial returns to family labour. For a typical home garden, this is estimated at US$ 1.60 per hour, after the initial establishment period.

Sustainability

27. The most recent OIFWP Supervision Report assessed the project's 'Sustainability and scaling-up' potential as moderately satisfactory. The project has empowered rural communities through an inclusive and participatory community planning process. This approach is gaining traction within Government with potential for institutionalising it through the National Government development structure to help address other important challenges, such as climate change or youth training and development.

28. The partnership with FSPK, an NGO with a long-standing relationship to IFAD, has seen its evolution to be a trusted partner amongst the community, and component strategic partner for Government in delivering community development activities to the rural and outer island communities. Further, because FSPK was engaged in community development in the outer islands well before OIFWP, and are expected to continue to be engaged with these communities after OIFWP, they will play an important role in ensuring long term sustainability of the investments made in household food and nutrition, and community water infrastructure.

III. Risks management

A. Project risks and mitigation measures

29. Given the experience and successes in the original four islands, it is expected that very similar results can be achieved in the five southern islands of the Gilberts group and that the risks to achieving project outcomes may be regarded as low.

30. The most significant risks to successful project implementation and achievement of the stated objective are linked to: (i) the challenges of logistics in the country, (ii) the harsh atolls environment; (iii) limited numbers of trained staff and experience in implementation of externally financed objectives, (iv) limited civic responsibility or respect for public goods, and (v) a cultural environment that tends to discriminate with respect to age and gender, giving greater weight to the views and preferences of men and elderly people. MELAD and OIFWP learned important lessons early in OIFWP implementation on how to mitigate these risks and with time identified

practical solutions to improve communication, develop staff skills and enhance participation, notching important successes in all these areas.

31. There will also be management risks relating to the loss of key staff, poor or irregular communications between senior management, staff, service providers and partners. These will be mitigated through (i) improvements in written agreements and MOUs with clearer specification of roles and responsibilities; and (ii) a regular schedule of formal feedback meetings between the project manager and each senior staff member and partner, to improve coordination.

B. Environment and social category

32. Overall the project will result in positive environmental and social outcomes. The project will directly address priority areas identified in the Kiribati Development Plan (KDP), specifically: (i) improved infrastructure -water harvesting and storage; (ii) improved access to basic services -water and agriculture; (iii) improved health standards -quality of diet content; (iv) climate change adaptation -water and food resilience; and (v) gender equity and the empowerment of women.

33. IFAD's Environmental and Social Assessment Procedures (SECAP) originally rated the project as category C, however this has been modified to category B under the updated SECAP procedures of 2017. The engagement of Agricultural Assistants on the islands will be strengthened to manage the intensification of agriculture and expansion of home gardens in the outer islands and mitigate any adverse impacts on habitats, ecosystems and/or livelihoods.

34. Through the inclusive community driven approach, the project will be able to leverage increased awareness and sensitisation to social issues such as addressing communicable and non-communicable diseases, gender-based violence and sexual exploitation and abuse. The project will strengthen its collaboration with its existing partners to address these challenges, particularly with the Ministry of Health & Medical Services, Ministry of Education, Ministry of Women, and Ministry of Internal Affairs.

C. Climate risk classification

35. Kiribati is rated as high for climate risks, and the designs of development activities for Components 2 and 3 are underpinned with climate smart and resilient interventions which reduce the risk of climatic events impacting on project outcomes.

36. This high risk rating reflects the fact that Kiribati is one of the most vulnerable countries to the adverse impacts of climate change. The atolls of Kiribati rise 3-4 metres above mean sea level and are an average of a few hundred metres wide. Inundation and erosion destroy key areas of land, and storm surges contaminate the fresh groundwater lens which is vital for survival. An economic evaluation of the costs of climate change related risks has been estimated to be 35 per cent of Kiribati GDP[1].

37. In recognition of the high vulnerability of rural communities to extreme climate events, the additional financing proposed will be invested in strengthening the resilience of home gardens and agricultural systems on the outer islands to climate change and climate variability. Consideration of climate change and adaptation is an explicit part of Component 2, that are proposed to strengthen community understanding and implementation of activities that build climate resilient communities.

[1] Republic of Kiribati National Adaptation Program of Action (NAPA), Environment and Conservation Division, Ministry of Environment, Land and Agricultural Development, Government of Kiribati, 2007

IV. Implementation

A. Compliance with IFAD policies

38. OIFWP is fully aligned with the goals and objectives of the IFAD Strategic Framework 2016-2025, IFAD's strategy for Small Island Developing States, and other relevant policies and strategies, including those for targeting, gender equality and women's empowerment, the environment and natural resource management, and climate change.

B. Organizational framework

Project management and coordination

39. The project will maintain the same implementation arrangements with MELAD as the lead agency in project implementation and hosting the PMU. The existing PPSC continues and will continue to be chaired by the Secretary of MELAD with representatives of: MFED; the Office of Te Beretitenti; MPWU; the Ministries of Internal Affairs; Women's Development; Health and Medical Services; Education; Foreign Affairs and Immigration; Commerce, Industry and Cooperatives; the Office of the Attorney General; and FSPK. The PPSC will: provide overall oversight of project activities; review and approve AWP/Bs and the PIM; promote coordination among the international, regional, national and local development implementing partners; identify policy issues; and ensure transparency and accountability in project management.

40. Each component has been implemented under the responsibility of an implementing agency: FSPK for Component 1, ALD/MELAD for Component 2, and MPWU for component 3. Each component has a manager and staff deployed at the island level, that is, island facilitators and CFOs (component 1), agricultural assistants (Component 2) and IWTs (Component 3).

41. Project activities will be implemented in close consultation with Island Councils so as to ensure maximum complementarity with other government or donor interventions.

Financial Management, Procurement and Governance

42. The financial management and procurement functions will be maintained under KFSU unit established at MFED. This practice is also being followed for other projects financed in the country by the World Bank and the Global Environment Facility.

43. **Accounting and reporting.** All accounts and records will be maintained on a cash basis and in accordance with the systems used by KFSU (the current accounting software being QuickBooks). The system's features are compatible with IFAD's minimum reporting requirements. QuickBooks will be used to generate project financial reports and to monitor financial progress.

44. **Flow of funds.** IFAD will provide funds to the Government in the form of a grant under the terms and conditions specified in the financing agreement. There exists a designated account in Australian dollars ($A) in the name of the recipient, managed by MFED. MELAD will ensure that project funds are channelled to KFSU to finance the financial management and procurement officers.

45. **Procurement.** Procurement of works, goods and services will be done under the KFSU at MFED in accordance with World Bank procurement guidelines, except where procurement requires national competitive bidding, in which case GOK national competitive bidding procedures will be applied by KFSU. The project has contributed to KFSU by meeting the salary of one senior procurement officer for four years at GOK salary rates.

46. The preparation of annual procurement plans (PP) will form the basis for all procurements and will be consistent with the duly approved annual work plan and budget (AWPB). The PP should comply with IFAD standards in both format and

content and will be submitted (together with the AWPB) to the PPSC for approval and to IFAD for no objection.

47. **Audit.** An annual audit of project financial statements will be conducted by the Supreme Audit Institution – the Kiribati National Audit Office, legally mandated to audit and report on the use of public financial resources for all government agencies. Audit reports will be submitted to IFAD within six months of the end of each fiscal year. In addition, the Government will submit quarterly unaudited financial reports to the Fund, prepared by KFSU, within one month of the end of each calendar quarter.

48. The current Internal Audit arrangements in place at MFED will need to be strengthened. Due to capacity and staffing constraints, internal audit is not regularly executed on a semi-annual basis. The Internal Audit Unit at MFED will undergo an internal restructuring supported by international donors. This is expected to improve the frequency and quality of internal audits. However, there is a need to provide training support to the Internal Audit Unit on IFAD's financial management procedures, including procurement.

49. **Governance.** Strengthening governance is one of the principles underpinning the Kiribati Development Plan (KDP). This does not only include broad public sector governance but there is recognition of the need to also strengthen local governance mechanism within the community's social structures. Goal 5 of the KDP is to "strengthen national governance systems to promote the principles of good governance including accountability, transparency, and inclusiveness".

50. The Government has taken steps to improve the qualities of good governance, accountability, transparency. This entails strategies such as: (i) implementation of commitments under ratified international conventions including the Human Rights Convention, the Convention on the Elimination of all forms of Discrimination against Women, the Convention on the Rights of Persons with Disabilities, the Convention on the Rights of the Child, and the Convention Against Corruption; (ii) Timely financial audits and performance audits of Ministries and SOEs undertaken by the Kiribati National Audit Office; and (iii) Improving public service governance through adopting transparency and accountability mechanisms in services delivery by Government employees.

C. M&E, learning, KM and strategic communication approaches

51. **Monitoring and evaluation (M&E).** The M&E system will continue to monitor physical and financial progress, as well as progress towards project objectives, and will serve as a key management tool. Inputs, outputs, process and outcomes will be monitored in accordance with logical framework indicators based on the financial management system, staff reports and surveys. All data will be disaggregated by sex and age.

52. **Knowledge management.** The project design includes features to foster learning and sharing of knowledge in target communities, among the managers of this project, and across the wider group of stakeholders in the Government, civil society, and development assistance providers in Kiribati.

53. OIFWP is already producing knowledge management materials from its community engagement process and to also support awareness and adoption of traditional and new agricultural practices to improve productivity of home gardens. Awareness materials have also been produced with partner organisations such as a recipe book with the Ministry of Health to create awareness on the preparation of nutritious foods from local plants and home gardens.

54. The project will continue to utilise existing government channels, such as the Parliament or the Kiribati National Expert Group, for policymaking and subject matter consultations. Social media platforms will be explored to document and share online lessons and knowledge emerging from project implementation.

D. Proposed amendments to the financing agreement

55. The Financing Agreement will be revised in terms of the amount IFAD will be contributing, as per cost table 2, in accordance with category allocations outlined in table 3. The completion date has been extended by 42 months. There are no other changes in the Financing Agreement.

V. Legal instruments and authority

56. A financing agreement between the Republic of Kiribati and IFAD will constitute the legal instrument for extending the proposed financing to the recipient. The signed financing agreement will be amended following approval of the Additional Financing.

57. The Republic of Kiribati is empowered under its laws to receive financing from IFAD.

58. I am satisfied that the proposed additional financing will comply with the Agreement Establishing IFAD and the Policies and Criteria for IFAD financing.

Recommendation

59. I recommend that the President approve the proposed financing in terms of the following resolution:

> RESOLVED: that the Fund shall provide a grant under the Debt Sustainability Framework (DSF) to the Republic of Kiribati in an amount of three million and six hundred thousand US dollars (US$3,600,000) and upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented herein.

Donal F. Brown
Associate Vice-President, Programme Management Department

Updated Logical Framework Incorporating Additional Financing

Narrative Summary	*Key Performance Indicators*	*Phase 1 Target*	*Phase 2 Target*	*Project Target*	*Means of Verification*	*Assumptions (A) / Risks (R)*
Goal: People living in the outer islands have healthy, sustainable livelihoods.	• Number of HH reporting increased availability of fresh food and drinking water.	1,850	1,030	2,880	Sample surveys of 400 households at baseline & completion	• No major drought so water available for household use and vegetable gardens
Project Development Objective: Outer Island communities able to successfully plan and implement investments resulting in better nutrition and access to clean water.	• Number of communities reporting increased food production and improved availability of water.	43	24	67	Sample surveys of 400 households at baseline & completion	• Communities willing to participate in water & home garden activities;
Component One – Community Planning and Action						
Outcome 1: Communities are planning and prioritising activities in a participatory and inclusive way.	• No. of community plans validated by all community members and implemented according to defined priorities.	43	24	67	Project Progress Reports Island Clerk review of validated plans for quality and relevance. Island Council consultations	• Island Councils and community leaders willing to support plan preparation.
Output 1.1: Communities facilitated to validate existing plans and mobilize food and water activities.	• No. of groups (incl. WUGs) formed /strengthened (about 6-9 HH per WUG) • No. of multi-sectoral community plans formulated/validated • No. of M/F persons trained in community management topics	61 43 M: 1,670 F: 1,670	270 24 M: 1,235 F: 1,235	331 67 M: 2,905 F: 2,905	Monthly M&E Reports	• Communities prepared to participate in planning and in-kind and or cash contributions to relevant activities • NGO, CFOs and other in-field implementers committed and capable to facilitate the planning process
Component Two – Household Food and Nutrition						
Outcome 2: Households in the OIs are growing and eating more nutritious local foods.	• Number of women eating at least five of the ten defined food groups (Minimum Dietary Diversity Score for Women) • Number of HHs reporting increased production of local foods	n/a 1149	2,880 1,731	2,880 2,880	Sample survey of 400 women using 24 hours recall methodology. Sample surveys of 400 households at baseline & completion	• HH members willing to change dietary habits from reliance on imports • Subsidies on inter-island transport and on copra production do not prove to be disincentives for home garden production.
Output 2.1: Increased total output of local fruits, vegetables, root crops and poultry.	• No. of HHs engaged in home gardening & poultry activities. • No. of community nurseries established and meeting output targets.	889 43	1,631 24	2,880 67	Monthly M&E Reports with data from CFO and AA	• Weather conditions and only limited sea level rise permit homestead gardens to be established.
Output 2.2: Nutrition promotion sessions (nutrition education and cooking demonstrations) conducted	• Number of person (F/M) attending nutrition education sessions and cooking demonstrations	F:1,000 M:500	F:1,150 M:600	F: 2,150 M: 1,100	Monthly M&E Reports with data from CFO & Nutrition Promoters	Women interested in changing cooking habits from convenience focus to nutritional value.

Narrative Summary	*Key Performance Indicators*	*Phase 1 Target*	*Phase 2 Target*	*Project Target*	*Means of Verification*	*Assumptions (A) / Risks (R)*
Component Three – Household Drinking Water						
Outcome 3: Households have secure access to a basic minimum quantity of clean drinking water.	• No. of HHs reporting improved access to clean water for 95% of the time.	530	2,350	2,880	Sample survey of 400 households at baseline and completion	Households able to cooperate to share water assets and water allocations
Outputs 3.1: Rainwater harvesting facilities are installed and operating.	• No. of drinking water systems constructed • Percentage of water infrastructure operational & sustainable by 2023 • No. of WUGs effectively managing water infrastructure (1 WUG/system). • No. of HHs with access to rain water storage facility	61 95 61 530	270 95 270 2,350	331 95 331 2,880	Operational audits of community water infrastructure Monthly M&E Reports	Contractors complete construction of water harvesting facilities according to specifications, budget and on time.

Economic and financial analysis

I. Background

A. Introduction

1. This appendix presents the economic and financial analysis for the additional financing of the Kiribati Outer Islands Food and Water Project. The analysis follows that prepared for the project during the mid-term review carried out in May 2017.

2. Kiribati consists of more than 30 low lying atolls spread across more than 3.5 million square km of ocean. It is highly vulnerable to sea level rise and has the lowest per capita GDP in the region (US$1,578 in 2015). Some 20% of the population live below the basic needs poverty line. The economy has performed relatively well in the recent past, with GDP growth reaching 10.3% in 2015, but falling back to just over 1% in 2016. Annual growth is expected to be about 3% in the medium term.[2] The economy depends on exports of copra and fish, which are relatively small, and significantly on fishing licence fees which have been high in recent years and averaged nearly 80% of GDP in 2014-16, compared with an historical average of around 25%. Fishing licence revenues are volatile and depend on weather, among other factors.

3. Kiribati has significant infrastructure gaps in transport and communications among other areas. Some of these gaps are being address in cooperation with development partners. Recent and ongoing projects have addressed roads, airports and aviation and telecommunications.

4. On the outer islands, drinking water has traditionally come from wells that are often brackish for at least of the part of the year. Clean water for water for drinking and cooking has potential health benefits and is preferred by the population when it is available. Improving nutrition, especially by increasing the consumption of home grown and locally available vegetables, is also important given that in many cases the local diet has become dominated by fish and imported rice.

B. Project Objectives

5. The development objective is "Outer Island communities are able to successfully plan and implement investments that result in better nutrition and access to clean water". The correlated indicators of achievement are increased household food production and access to clean drinking water.

6. Component 1, Community planning and action, enables communities and households to plan and implement their plans to improve household food production and access to clean water. Trained Community Field Officers (CFO) assist communities to prepare community agriculture and water development plans and liaise with government staff and community leaders.

7. Component 2, Improved household food and nutrition, helps households grow and eat more nutritious foods in sustainable ways that take challenging environmental issues and the fragile ecological environment into account. The focus is on improved home gardens and improving the poultry, root crops and tree crops that are part of traditional household food production systems.

8. Component 3, Rainwater harvesting for increased household water supplies, provides secure access to a basic minimum quantity of clean drinking water by building rainwater harvesting structures, each with a consensus-based water-user agreement for the maintenance of the structures and the use of the water.

[2] IMF, Staff Report for the 2017 Article IV Consultation, Washington, November 2017.

II. Approach and Assumptions

1. **Numeraire and prices.** The analysis uses the domestic price level numeraire, expressed in local currency (i.e. Australian dollars). The financial prices used are those applying in the market in mid-2018. To convert financial prices and costs to economic prices and costs when using the domestic price level numeraire, the foreign component of the price of traded goods is adjusted by the shadow exchange rate factor (SERF), scarce labour is adjusted by the shadow wage rate factor (SWRF), taxes are removed from prices and domestic resources are multiplied by a factor of 1 (i.e. the financial prices of domestic resources are equal to the economic prices).

2. **Taxes and duties.** Kiribati applies a value added tax (consumption tax) of 12.5% on most goods. There are a number of goods that are exempt from VAT or are zero rated. In the context of this project, the most significant goods exempted VAT are uncooked rice and wheat flour. Import duties also apply on some imported goods. Taxes and duties are removed from financial prices in the process of deriving economic prices.

3. **Conversion factors and exchange rate.** The standard conversion factor (SCF) for the project has been estimated, as shown in Table 1, using import and export data for three years. This method for estimating the SCF is commonly used to provide an acceptable approximation. The SCF of 0.96 used in the analysis is the average of the values estimated for the years 2015 to 2017 (SERF = 1.04).

4. The exchange rate used throughout the analysis is USD1 = AUD1.34

Table 1: Estimate of Standard Conversion Factor

	2015	2016	2017
Imports (M) (AUD '000)	137462	147401	151375
Exports (X) (AUD '000)	12018	14123	19884
Taxes on imports (T_M) (AUD '000)	4832.5	2769	12116
Taxes on exports (T_X)	0	0	0
Standard Conversion Factor	0.97	0.98	0.93
Shadow Wage Rate Factor (1/SCF)	1.03	1.02	1.07
Standard conversion factor = $(M + X)/(M + T_M + X - T_X)$			

Sources: Government of Kiribati, Ministry of Finance and Economic Development

5. For this analysis a SWRF of 0.8 has been adopted to adjust the price of unskilled labour to its economic value. The appropriate value for Kiribati is uncertain and therefore this rate is tested in the sensitivity analysis to check its impact on the overall result for the project.

6. **Labour**. The hourly wage rate for labour is AUD1.35, which is rate paid by local councils when employing local labour in the outer islands. However, the project has been paying AUD2.50 for labour (e.g., for the installation of water systems) so this rate is used for direct project activities only.

7. **Opportunity cost of capital.** The opportunity cost of capital used for the analysis is 9%.

III.Interventions

A. Project benefits

8. The successful implementation of the project will result in both quantifiable and non-quantifiable benefits. The main benefits will accrue from:

(a) Increased food availability through the adoption home gardening and poultry activities

(b) Reduced household dependence and overall expenditure on imported foods as a result of increased availability of local foods and changes in dietary habits introduced by the project.

(c) Income generation opportunities for poor households, who will be able to sell occasional production surpluses.

(d) Time savings for households being able to access drinking water close to the house rather than from wells that are often further away.

(e) Reduced incidence of water-borne diseases as a result of better access to safe water sources.

9. In addition, the project will create some employment opportunities (e.g. community youth trained in basic plumbing and water supply system maintenance, community and school plant nursery workers), and is likely to result in reduced medical expenditures for the government of Kiribati, although the extent of these savings is not easily quantifiable at present due to a lack of up-to-date data.

10. Of the above, the main benefits that can be quantified are the valuation of production from home gardens and the gardens established at each primary and secondary school, but without detailed field data the estimates are based on observed typical gardens with typical productions. Time savings for collecting drinking water are also quantified.

11. In the longer term it is intended that the project will result in reduced dependence on imported food (such as rice), which will have financial implications for island households. Recent monitoring reports suggest that this transition is already starting to occur for some households in some locations. But this is not yet a quantifiable result.

12. The sale of vegetables from home gardens certainly occurs on the islands where the project is already being implemented, but this is somewhat sporadic and is in no way general. Further information is presented in the section on Financial Analysis below.

13. Recent data from the Ministry of Health indicates that there have been significant reductions in the number of households reporting cases of diarrhoea and dysentery on the islands where the project is currently being implemented. Since the water systems are only completed on one of the islands, Beru, these reductions, which will be the result of multiple factors, are not a result of project interventions. It is reasonable to assume, however, that the project will in due course have a positive impact on the health of islanders. For this reason, the economic analysis a small benefit from health improvements is included.

B. Project Beneficiaries

14. The first phase of the project is being implemented in 43 communities in four islands with a total population of 12,011 – representing around 25% of the total outer island population. Under the additional financing phase the project will be extended to the five southernmost islands in the Gilberts group, which had a population, at the last census, of 67 communities (see Table 2). Together this represents 35% of the total Outer Island population.

15. Direct beneficiaries: The project aims to reach all households on each island. While households in the central government village on each island may be excluded from the provision of water systems, since they usually have access to adequate clean water, all households have been included in the activities of Components 1 and 2 and this will continue to be the objective during the second phase.

16. Some individuals, such as the Island Water Technicians, agriculture and nursery assistants, and other MELAD and local government staff participating in training and capacity building activities will benefit in their professional capacities, as well as island householders.

Table 2: Population and Beneficiaries

Island	Population	No. of villages	No. of HHs	Average HH size
Phase One:				
Abemama	3262	14	602	5.4
Beru	2051	9	458	4.5
Tabiteuea Meang	3955	12	706	5.6
Nonouti	2743	9	532	5.2
Sub-total:	***12011***	***43***	***2298***	***5.2***
Phase Two:				
Arorae	1,101	2	217	5.1
Nikunau	1,789	6	356	5.0
Onotoa	1,393	7	323	4.3
Tabiteuea Maiaki	1,306	6	253	5.2
Tamana	1,104	3	187	5.9
Sub-total:	***6,693***	***24***	***1336***	***5.0***
Total	**18704**	**67**	**3643**	**5.1**

Source: Population Census 2015

C. Home Gardening

17. Home gardening is a key element of Component 2 and it has been promoted by the project as one of the ways to promote nutritionally better diets. Recent monitoring reports show that it has become quite widespread in the 4 first phase islands. However, it is also clear that there is a considerable range in the size and quality of home gardens – from carefully tended and productive rehabilitated taro pits to just a few vegetables planted near the house.

18. Some households are able to sell small quantities of vegetables, but this appears to be sporadic and sales are made when a grower is approached to sell a cabbage (or part of a cabbage), capsicum, tomatoes or other produced. There are no formal market places and there is no estimate of total sales for any location. Prices can be surprisingly high, suggesting few households have surpluses they are willing to sell. For example, in Nanouti a large (Chinese) cabbage might sell for $3, a small one for $2 and an individual leaf for 50c. On Beru recent prices were $5 for a big cabbage and capsicums were sold for $3 if large and $2 if small. Pumpkins, if large, sell for around $5. These vegetable prices may be compared with the usual price for bananas on these islands of 20c each and for coconuts, also 20c. These vegetable prices are similar to those reported in 2017 during the mid-term review, suggesting that demand remains quite high for any vegetables growers are prepared to sell. At the time of the mid-term review one or two women on Abemama mentioned that they had received up to $70 or so in a month – but that was clearly exceptional. So far, it can be concluded that the sale of vegetables provides some supplementary cash income for some households only.

19. For the second phase islands it is assumed that a similar pattern for home gardens as on the existing 4 islands will develop, but with faster adoption based on the experience of the last few years. The analysis is based on a "typical" small home garden growing a small selection of vegetables. Production is basically for home consumption but with the possibility of sales should a household have a surplus at any time and assuming coinciding demand.

20. The characteristics of the typical home garden used in the analysis are shown in the following table. In practice there will be many variations in the crops grown and as households become more used to growing their own vegetables the range of crops is likely to become more diverse and include at least some edible local plants. Inputs for the gardens are seedlings purchased from the community nurseries, compost (which should

be produced by the households themselves), some neem based organic pesticides and household labour, which is estimated at 1 hour per day for 6 days per week.

Table 3: Crops, Yields, Production

Vegetables	Yield (kg)	Cycles/ year	Plants WoP	Plants WP	Production	HH
Pumpkin	40	1	0	5.0	200	50%
Sweet potato	2	2	0	25.0	100	90%
Chinese cabbage (plants)	1	2	0	20.0	40	90%
Tomatoes	8	2	0	4.0	64	90%
Eggplant	6	2	0	4.0	48	90%

21. For each garden, production, measured as percent of full yield achieved, is assumed to be phased in as indicated in the table.

Table 4: Home Garden Production Phasing

Vegetables	Year 1	Year 2	Year 3	Year 4	Year 5
Pumpkin	40%	80%	100%	100%	100%
Sweet potato	33%	66%	100%	100%	100%
Chinese cabbage	40%	80%	100%	100%	100%
Tomatoes	0%	25%	50%	100%	100%
Eggplant	0%	25%	50%	75%	100%

22. On the 5 southern islands, there are 1,336 households (at the 2015 census). Between the 2010 and 2015 censuses these islands, with the exception of Tabiteuea Maiaki which had a very small increase in population, experienced an average annual population decline of about 0.7% (see Table 13, below). The total number of households is now probably a little less than the 2015 total. For the analysis, it is assumed that 90% of households will adopt home gardening. This percentage accommodates population decline, the reality that there will always be some households that won't adopt home gardening (or will do so only for a short period and then give up) and the fact that in practice there will be a range of home gardens, big and small, successful and not so successful. These home gardens are phased with 35% in the second year, 45% in the third and 20% in the final year of the project. If some home gardens are already established during the first year of the project in the southern islands, this would be a bonus benefit. A total of 2,592 home gardens (90% of the total 2,880 HH) have been assumed to be supported by the project.

23. While the project will continue in consolidation mode on the four phase 1 islands for the first 18 months of phase 2, no benefits from home gardens on these islands has been included in order to avoid recounting benefits already included in assessments for phase 1.

D. School Gardens

24. The project supports the establishment of school gardens at all the schools on the participating islands. The characteristics of school gardens are the same as home gardens but are 3 to 4 times larger. The production of these gardens is usually used for school meals, certainly for those schools that have boarding establishments. On the original islands there are 20 schools and on the southern island there would be another 20 schools supported by the project.

E. Drinking Water

25. On these islands, the usual sources of water for domestic use are wells that may often be brackish, especially during the dry season. The rainwater harvesting systems provide households with good quality drinking water during the wet season and for at least part of the dry season, depending upon rainfall and how well supplies are managed by the

user groups. In an average year, with good management by the respective water user groups, it is expected that the systems can provide water for drinking and cooking for member households for most of the dry season.

26. The water collection systems are designed to supply water to groups of 6 households. On the 4 first phase islands of Abemama, Nonouti, Beru and Tabiteuea Meang the 61 systems planned would therefore serve 366 households. In practice, households did not want to be left out and user groups with more than 6 households were formed in many cases. The situation for the completed and under construction systems in these islands is summarised in the table, below. To rectify this situation, under the second phase of the project 270 additional water systems will be provided for these islands, which will ensure that no water system serves more than 6-8 households. Abemama and Tabiteuea Meang will each have 17 addition systems while Nonouti and Beru will each have 13.

Table 5: Existing Water User Groups on Four Islands

Island	WUG <= 6 HH	WUG >6 HH	Total Systems/WUG	#HH in largest WUG	Average HH/ WUG
Abemama	24	50	74	13	7.4
Nonouti	21	45	66	10	7.5
Beru	19	35	54	10	7.4
Tabateuea Meang	29	56	85	12	7.2

27. For the 5 southern islands, one system for 6 households, on average, is proposed but for several villages Nikunau which will have supplementary systems provided by the KiriWatSan project, one system for each 7-8 households has been planned.

Table 6: Water Systems for 5 Southern Islands

Island	Number of Households	Water Systems
Tabateuea Maiaki	253	43
Nikunau	356	75
Onotoa	323	63
Tamana	187	40
Arorae	217	49
Total	1336	270

28. The benefits for all these systems (i.e. the additional systems on Abemama, Nonouti, Beru and Tabiteuea Meang and all the systems on Tabiteuea Maiaki, Nikunau, Onotoa, Tamana and Arorae) are estimated primarily based on the time saved for collecting water, which varies between wet and dry season months. A small provision is included for reduction in water borne diseases, although recent data suggests that in the four original islands there has recently been a significant reduction in the incidence of dysentery although the project's systems are still under construction. Clean water is one factor, but not the only one, in the reduction of these types of diseases.

The key parameters used to estimate the water benefits are shown in

29. Table 7 and Table 8. Because the five southern islands are considerably drier and have more dry months than the more northerly original islands, the factors used to estimate benefits differ between the two groups. Details of the estimates are shown in the tables at the end of this Appendix.

Table 7: Water System Benefits – trips & time

	Without Project			With Project		
	Trips	**Time (mins.)**	**Months**	**Trips**	**Time (mins.)**	**Months**
Phase 1 islands						
Wet months	2	10	7	2	5	7
Dry months	2	20	5	2	10	5
Phase 2 islands						
Wet months	2	20	5	2	5	5
Dry months	2	35	7	2	10	7

Table 8: Water System Benefits – other factors

	Phase 1 Islands	**Phase 2 Islands**
Average household size	5.0	4.9
Economically active persons/HH	3	3
Wage rate (financial) ($/hour)	1.35	1.35
Daily water consumption/person (l)	4	4
Collection days saved /HH/year	18.6	26.2
Reduction in illness days/year	30%	30%
Illness days avoided /HH/year	2.7	2.7

30. The cost of the systems in the two groups of islands differs because 1) the cost of transport is higher for the 3 southern-most islands than for the other islands, and 2) because the 5 southern islands are drier than the original group, a larger rain collection roof is proposed for the former. The average system costs are A$7,180 for the original group and A$7,572 for the southern group.

F. Non-Quantified Benefits

31. The project generates a number of important benefits which cannot be quantified. Among these are the benefits that will accrue to communities from the community planning activities under project Component 1. The objective of these activities is to develop the skills within each community to identify local problems and issues as well as how to address these issues and seek solutions. For the longer term, this may be one of the most important project benefits.

32. Home gardens have the potential to provide nutritional benefits for project households. So far, such benefits are probably slight, but in the longer term, provided the home garden initiative is sustained by households these benefits should become more significant and more likely to be quantifiable.

33. For drinking water, the analysis captures only a limited aspect of the overall benefits. On most of the islands the water from shallow wells is often brackish for some of the year, especially during extended dry periods. For this reason the population greatly appreciate the ability to capture more rainwater and store it for later use. These qualitative benefits are clearly large, but would be complex and time consuming to bring into the quantitative analysis.

34. Overall, the benefits of the project that cannot be quantified, or not easily quantified, are more important and almost certainly larger than those can be quantified.

IV. Economic and Financial Analysis

A. Project Costs

35. The total project costs included in the analysis, in economic prices, are shown in Table 9.

Table 9: Project Economic Costs

	2019	2020	2021	2020	Total
Economic costs					
Total costs (A$ 1000)	1,723	2,900	1,234	828	6,685
Total costs (US$ 1000)	1,286	2,164	921	618	4,989

B. Results of the Economic Analysis

36. The economic internal rate of return for the project is estimated at 13.9%. Significant increases in project costs or decreases in project benefits over the project life of 20 years would still result in EIRRs above the discount rate of 9.0%. The switching values confirm the relative robustness of the result to changes in these key variables. Furthermore, a delay of one year in achieving benefits would reduce the EIRR only to 12.5% but with a 2 year delay the EIRR would be almost equal to the discount rate. It is also noted that upward variations in the SWRF have almost no impact on the EIRR.

Table 10: EIRR & Sensitivity Analysis

	EIRR	NPV (AU $)	Switching Value: Cost	Switching Value: Benefits
Base case	13.9%	2,599,893	15%	13%
All Costs +10%	11.3%	1,240,630	7%	6%
All Costs +20%	8.8%	-118,633	-1%	-1%
All benefits -10%	13.0%	1,989,828	12%	11%
All benefits -20%	11.9%	1,379,763	8%	9%
Home garden benefits -20%	12.7%	1,819,113	11%	11%
Drinking water benefits -20%	12.4%	1,797,369	11%	10%
Benefits delayed 1 year	12.5%	1,846,137	11%	9%
Benefits delayed 2 years	11.3%	1,154,617	7%	6%
Costs +10%, benefits -10%	10.5%	766,492	4%	4%
SWRF = 0.7	15.3%	3,387,647	21%	18%
SWRF = 0.9	12.4%	1,812,140	10%	9%

37. Furthermore, for this project non-quantifiable benefits are in many respects more important and probably much greater than the benefits that it has been possible to quantify for this analysis.

Risks and Sustainability

38. The switching values in the table above indicate that the results of the economic analysis are quite stable to significant changes in project costs and benefits and the risk of the project not being economically viable is low.

39. For the four islands in the first phase of the project, risks to the project's achieving the expected outcome are limited, provided all the water systems are completed to design specifications. Home gardens are now widespread on these islands and with increasing experience among householders of their benefits are reasonably expected to become entrenched with enough households to justify the project outcomes. Given the experience and successes in these islands, it is expected that very similar results can be achieved in the five southern islands of the Gilberts group and that the risks to achieving project outcomes may be regarded as low.

40. In the longer term, a potential source of risk to a positive outcome for the project relates to the sustainability of outputs from all three project components. Home gardens with their benefits for family health and nutrition, as well as sometimes providing supplements to household income, will need to become a regular part of household activities. For the rainwater collection systems long term ongoing management and maintenance will have to be sustained by the households in each water user group.

C. Financial Impacts on Households

Household Incomes

41. The return to family labour for a typical home garden is estimated, in the medium term after the initial establishment period, at $1.60 per hour. This is based on the estimated value of total production and a labour input of one hour per day for six days per week for each home garden. All labour inputs are from the respective households; there is no hired labour.

42. Increasing household incomes is not an expected outcome of the project, except in so far as some people with home gardens will be able to sell surplus vegetables from time to time. These sales are likely to be to those with special functions to cater for or perhaps to schools with boarding establishments in need of additional supplies. Prices for various vegetables have been noted previously (see para. 12, above). A few growers have mentioned that they have received up to US$70 in one month, but this is not general. A productive home garden can certainly provide some cash income from time to time, but to estimate what the income potential might be in the longer term, in a situation where all households are encouraged to have their own home gardens and where the market for any producer is effectively limited to their own island, would be fruitless task.

43. The impact of the project on households will be through improved and more varied diets and more reliable access to clean, safe water for drinking and cooking.

Income from Copra

44. Copra is currently a major source of income for island households. Government pays $2 per kg for copra, while the current international price of US$692 (May 2018 average price)[3] implies a market price in the outer islands of perhaps $0.70 or so. The copra subsidy represents an important transfer of income to the outer islands and provides an incentive for people to remain there and not move to South Tarawa.[4]

45. Table 11 shows copra production on the project islands between 2012 and 2017. For the years prior to 2017 the data source was Kiribati Copra Mill Ltd but for 2017 the data is from the Ministry of Finance Copra Unit and is more closely related to subsidy payments. For the period 2012 to 2016 productions on individual islands were variable and the longer term series from 1993 also shows annual variations and overall decline, at least until 2017.

Table 11: Copra Production - Project Islands (tons)

	2012	2013	2014	2015	2016	2017
Abemama	1,197	885	777	521	847	1,280
Nonouti	892	427	581	245	954	1,010
Tabiteuea	1,762	943	794	746	635	1,161
Beru	919	470	579	362	434	642
Onotoa	499	229	277	170	166	527
Nikunau	612	764	501	624	551	851
Tamana	104	290	214	140	713	1,075
Arorae	70	278	144	184	224	450

Source: Government Statistics Office

46. In Table 12 an estimate is made of the average household income from copra on

[3] World Bank Commodities Price Data (The Pink Sheet), June 2018
[4] In the 2018 Government Budget, an amount of $31,100,000 is allocated for the copra subsidy.

each of the project islands. Considering the period before 2017, the estimated average income for the project islands has been over $2000 in recent years, suggesting average per household production of about 2 bags of copra each month. (A bag of copra usually weighs about 50 kg.) However, there is significant variation in copra production among households and corresponding variation in household income since copra is the most important source of cash income for most island households. During visits to Abemama and Nonouti during the mid-term review in 2017, households reported selling anything from no copra to 7 or 8 bags per month.

47. The data for 2017 tell a somewhat different story, with island average income per household varying between $2,422 for Tabiteuea to $11,500 for Tamana. Because this data comes from the ministry responsible for subsidy payments this should be a better indication of actual household incomes from copra than the data for the earlier years, which perhaps tends to underestimate actual production on the islands. Either that or production in 2017 really was 55% higher than in 2016.

Table 12: Estimates of Copra Payments to Project Islands

		2017		2016		2014-2016 average	
	HH	total $	$/HH	total $	$/HH	total $	$/HH
Abemama	602	2,560,312	4,253	1,693,900	2,814	1,429,711	2,375
Nonouti	532	2,020,132	3,797	1,908,854	3,588	1,187,169	2,232
Tabiteuea	959	2,322,962	2,422	1,270,538	1,325	1,450,011	1,512
Beru	458	1,283,915	2,803	867,904	1,895	916,867	2,002
Onotoa	323	1,053,627	3,262	332,484	1,029	409,165	1,267
Nikunau	356	1,702,868	4,783	1,102,212	3,096	1,117,266	3,138
Tamana	187	2,150,669	11,501	1,425,584	7,623	711,080	3,803
Arorae	217	899,369	4,145	447,694	2,063	368,195	1,697
Project islands total	3634	13,993,855	3,851	9,049,170	2,490	7,589,465	2,088

Note: Project estimates based on Statistics Office copra production data and 2015 Census; copra production data from Ministry of Finance for 2017 and from Kiribati Copra Mill Ltd for all earlier years.

Table 13: Number of Households by Island, 2010 & 2015 Censuses

Island	Census		change #	% change
	2010	2015		
Abemama	583	602	19	3.3%
Nonouti	508	532	24	4.7%
Beru	449	458	9	2.0%
Tabiteuea Meang	682	706	24	3.5%
Tabiteuea Maiaki	249	253	4	1.6%
Nikunau	365	356	-9	-2.5%
Onotoa	332	323	-9	-2.7%
Tamana	202	187	-15	-7.4%
Arorae	238	217	-21	-8.8%

Source: Censuses 2010 & 2015

Table 14: Southern Gilbert Islands – additional population data

Island	Land Area (km^2)	No. Villages	Total Population	House-holds	Pop/ HH	Density
Tabiteuea Maiaki	12	6	1306	253	5.2	110
Nikunau	19	6	1789	356	5.0	94
Onotoa	16	7	1393	323	4.3	89
Tamana	5	3	1104	187	5.9	235
Arorae	10	2	1011	217	4.7	106
Total for 5 Islands	62	24	6603	1336	4.9	107

Source: Census 2015

Table 15: Economic Assessment (A$)

Project Economic Assessment	AU $								
		2019	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
incremental Project Benefits									
Home gardens									
	0	0	907	1166	518				
Home gardens - value of production	0	0	172 441	653 682	1 289 696	1 842 850	2 174 294	2 296 222	2 314 138
- operating costs	0	0	701 362	1 362 532	1 456 372	1 324 499	1 331 394	1 577 681	1 648 097
- net benefits per home garden	0	0	-528 922	-708 850	-166 676	518 351	842 900	718 540	666 040
School gardens									
School gardens adoption	0	0	20	20					
School gardens - value of production	0	0	13 978	53 115	96 445	122 972	131 328	131 328	131 328
- operating costs	0	0	42 559	70 455	55 824	56 106	56 739	71 751	71 751
- net benefits per school garden	0	0	-28 581	-17 340	40 621	66 866	74 590	59 577	59 577
Rain water harvesting									
Additional systems on 4 original islands									
Rain water systems installed [4th Qrt of 2019]	0	38	23						
- value of time savings	0	0	16 799	43 766	53 934	53 934	53 934	53 934	53 934
- Cost of installation		242 524	146 791						
- O&M costs & labour	0	7 880	0	9 109	9 109	9 109	9 109	9 109	9 109
- Total Cost of installation & O&M		250 404	146 791	9 109	9 109	9 109	9 109	9 109	9 109
- net benefits rain water harvesting	0	-250 404	-129 992	34 657	44 824	44 824	44 824	44 824	44 824
Systems on 5 Southern Islands									

Rain water systems installed [1st Qrt of 2020]		0	224	46					
- value of time savings		0	195 617	431 404	471 576	471 576	471 576	471 576	471 576
- Cost of installation			1 507 669	309 611					
- O&M costs & labour		0	34 836	7 154	33 451	40 320	40 320	40 320	40 320
- Total Cost of installation & O&M			1 542 506	316 765	33 451	40 320	40 320	40 320	40 320
- net benefits rain water harvesting		0	-1 346 889	114 640	438 125	431 256	431 256	431 256	431 256
Total cost of activities		250 404	2 433 218	1 758 861	1 554 756	1 430 034	1 437 562	1 698 861	1 769 277
Total benefits		0	398 834	1 181 967	1 911 651	2 491 331	2 831 131	2 953 059	2 970 975
Total activity net benefits	0	-250 404	-2 034 384	-576 894	356 895	1 061 297	1 393 570	1 254 198	1 201 698
Project costs		1 419 488	1 123 841	865 930	824 226				
Total Project Cost		1 669 892	3 557 059	2 624 792	2 378 983	1 430 034	1 437 562	1 698 861	1 769 277
Project net benefits		-1 669 892	-3 158 225	-1 442 825	-467 332	1 061 297	1 393 570	1 254 198	1 201 698
	EIRR	**NPV**	**PV Cost**	**PV Benefits**	**B/C Ratio**	**Switching Value: Cost**	**Switching Value: Benefits**		
	13.9%	2 599 893	17 093 387	19 693 281	1.2	15.2%	13.2%		