AFB/PPRC.7/7
29 November, 2011

Adaptation Fund Board
Project and Programme Review Committee
Seventh Meeting
Durban, 12 December, 2011

PROPOSAL FOR COOK ISLANDS

I. Background

1. The Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, adopted by the Adaptation Fund Board, state in paragraph 41 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the approval by the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would finally require Board's approval.

2. The Templates Approved by the Adaptation Fund Board (Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, Annex 3) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

> *For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:
   1. Country Eligibility,
   2. Project Eligibility,
   3. Resource Availability, and
   4. Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:
   5. Implementation Arrangements.

5. Based on the Adaptation Fund Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Adaptation Fund was sent out on April 8, 2010.

6. According to the paragraph 41 of the operational policies and guidelines, a project or programme proposal needs to be received by the secretariat not less than nine weeks before a Board meeting, in order to be considered by the Board in that meeting.

7. The following fully developed project titled "Akamatutu'anga i te iti tangata no te tuatau manakokore ia e te taui'anga reva - Strengthening the Resilience of our Islands and our Communities to Climate Change (SRIC - CC)" was submitted by the United Nations Development Programme (UNDP), which is a Multilateral Implementing Entity of the Adaptation Fund. This is the third submission of the project. It was first submitted as a project concept, using the two-step proposal

process, for the 12th Adaptation Fund Board meeting, and was endorsed by the Board. It was then resubmitted as a full proposal at the 15th meeting of the Adaptation Fund Board in September 2011 and the Board decided to:

(a) Not approve the project document, as supplemented by the clarification response provided by the United Nations Development Programme (UNDP) to the request made by the technical review;

(b) Request that UNDP reformulates the proposal taking into account the following issues:

(i) The proponent should ensure that proper EIA is undertaken for each of the water retention projects to avoid any risks of maladaptation. This should be clearly specified in the text. In addition, for several of the described projects, the sustainability measures are the same, which implies that the projects types and environment are all similar along the different islands;

(ii) More specific information on the expected economic, social and environmental benefits should be provided;

(iii) Some risks rated as "low" risks, such as land disputes among community members, access and communications, and cooperation and commitment within the target communities, should be reconsidered or the rating clearly justified. Moreover, the proponent should provide adequate measures to mitigate each distinct risk, since "Maintaining proactive outreach" seems to be a very general mitigation measure;

(iv) Partnerships with Universities and research centres in the implementation of some project activities, if any, should be formalized, since this will have an impact in the project budget; and

(v) For the climate change adaptation and disaster risk reduction measures identified under component 3, the proposal should specify as much as possible the activities planned for each island. This will help in the estimation of the economic, social and environmental benefits of the project and will provide tangible indicators (size of community impacted by the activity, number of hectares covered etc.) of achievement of this outcome.

(c) Further request UNDP to transmit the observations referred to in paragraph (b) above to the Government of Cook Islands, on the understanding that a revised project document might be submitted at a later date.

(Decision B.15/13)

8. The current submission of a fully-developed project document was received by the secretariat in time to be considered in the 16th Adaptation Fund Board meeting. The secretariat carried out a technical review of the project proposal, assigned it the diary number COK/MIE/Multi/2011/1/PD and filled in a review sheet, with no further clarification requests to UNDP.

9. The secretariat is submitting to the Project and Programme Review Committee the summary of the project, prepared by the secretariat, in the following section. The secretariat is also submitting to the Committee the technical review sheet, in an addendum to this document.

Project Summary

Cook Islands – Akamatutu'anga i te iti tangata no te tuatau manakokore ia e te taui'anga reva - Strengthening the Resilience of our Islands and our Communities to Climate Change (SRIC - CC)
Implementing Entity: *UNDP*

Project/Programme Execution Cost: USD 460,000
Total Project/Programme Cost: 4,960,000
Implementing Fee: USD 421,600
Financing Requested: USD 5,381,600

Programme Background and Context:

The Cook Islands are located in the Pacific and are highly vulnerable to the adverse effects of climate change.

This programme's **objective** is to strengthen the ability of all Cook Island communities, and the public service, to make informed decisions and manage anticipated climate change driven pressures (including extreme events) in a pro-active, integrated and strategic manner.

To achieve its objective the programme proposes a 3-pronged approach, with the implementation of on-the ground adaptation and disaster risk reduction measures at the community level in the Pa Enua, including through the implementation of a small grant programme. To ensure the sustainability of CCA and DRR integrated approach and measures for the islands, the programme will be supported by island-level (including communities) capacity building and will ensure integration of CCA-DRR planning into wider development processes, also supported through enhanced national policy, institutional and knowledge management capacities.

In achieving this objective, the programme will support, at the national, sectoral, and island levels, implementation of the Cook Islands' new National Action Plan for Disaster Risk Management and Climate Change Adaptation.

The programme presents four components:

Component 1: Strengthening and implementing climate change adaptation and disaster risk reduction at national level (USD 400,000)

Activities and outputs in this component will ensure there is a strong enabling environment for the successful inclusion of CCA and DRM considerations in development initiatives in the Pa Enua. One focus will be institutional strengthening to enhance coordination of efforts at the national level and ensure more effective delivery of national initiatives at island and community level. Another focus will be human resources development, to ensure that staff in the relevant national agencies and organisations have the ability to support island and community development initiatives that reduce vulnerabilities and build resilience to climate change.

Access to reliable, targeted and user-friendly information is another key element of the enabling environment for successful CCA and DRR. Hence this component will also deliver a framework for the delivery of reliable and targeted information on the impacts of climate change on terrestrial, marine, and coastal ecosystems in the Pa Enua. This and related work under Outcome 1, will build on the knowledge held by

the University of the South Pacific, research institutes in New Zealand and Australia and by regional NGOs. It will also utilize the expertise that exists in these institutions to advance current understanding where gaps are identified.

Component 2: Strengthening capacities for climate change adaptation and disaster risk reduction in the Pa Enua (USD 785,000)

A prerequisite to enhancing the resilience of the Pa Enua is to build the adaptive capacity of communities, enterprises, families and individuals, as well as the island ecosystems on which they depend. The on-the-ground measures in this component will provide the foundation for implementation of the climate change adaptation and disaster risk reduction measures in the Pa Enua. For example, it will result in integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited Pa Enua. These will be harmonized with the respective island development plans. The action plans will be used to guide and prioritise the implementation of the climate change adaptation and disaster risk reduction measures in the Pa Enua, and ensure their sustainability and contributions to island development and resilience.

Component 3: Implementing climate change adaptation and disaster risk reduction measures in the Pa Enua (USD 3,215,000)

This component is the principal focus of the SRIC programme, and meets the priority of Pa Enua stakeholders for practical interventions that will result in tangible reductions in the vulnerabilities of islands and communities. The DRR and CCA measures will be supported by the strengthened enabling environment at national level (Component 1) and will utilise the enhanced capacity for DRR and CCA in the Pa Enua, including at community, enterprise and individual levels (Component 2). Component 3 is the means by which the NAP for DRM and CCA will be implemented at island level, enterprise and community levels.

Community-based CCA and DRR measures will be implemented in relation to crop production, coastal protection, fisheries, tourism, and health and water resources management. These measures will have been identified and prioritised during implementation of Component 2, as part of preparing integrated island- and community-level DRR and CCA action plans consistent with the island strategic development plans.

Component 4: Climate change adaptation knowledge management (USD 100,000)

In this component, lessons learned and best practices will be collated to improve the effectiveness of initiatives to enhance the resilience of Pa Enua and other vulnerable communities

Date of Receipt:
Adaptation Fund Project ID:
(For Adaptation Fund Board Secretariat Use Only)

PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY:	Regular Programme
COUNTRY/IES:	Cook Islands
TITLE OF PROJECT/PROGRAMME:	Akamatutu'anga i te iti tangata no te tuatau manakokore ia e te taui'anga reva - Strengthening the Resilience of our Islands and our Communities to Climate Change (SRIC - CC) (UNDP ID 4569)
TYPE OF IMPLEMENTING ENTITY:	MIE Implementing
IMPLEMENTING ENTITY:	United Nations Development Programme (UNDP)
EXECUTING ENTITY/IES:	Climate Change Coordination Unit and Emergency Management Cook Islands (both in the Central Policy and Planning Unit, Office of the Prime Minister)
AMOUNT OF FINANCING REQUESTED:	USD 5,381,600

PROGRAMME BACKGROUND AND CONTEXT:

Problem the proposed programme is aiming to solve

The Cook Islands is subject to highly destructive cyclones, intense rainfall events, and devastating droughts. The isolated populations in the Pa Enua (sister islands to the capital island of Rarotonga) are especially vulnerable to the anticipated changes in climate, including increased frequency and intensity of rainfall and tropical storms; rising and extreme sea levels and changing wind patterns; and hotter, drier weather. The aim of the SRIC programme is to strengthen the ability of all Cook Island communities, and the public service, to make informed decisions and manage anticipated climate change driven pressures (including extreme events) in a pro-active, integrated and strategic manner. The Cook Islands' new National Action Plan for Disaster Risk and Climate Change Adaptation will guide the activities in this programme.

Geographic and socio-economic context

The Cook Islands consists of 15 small islands scattered over 2 million km^2 of the Pacific Ocean. They lie in the centre of the Polynesian Triangle, flanked by Fiji 2,300 km to the west, Tahiti 1,140 km to the east, Hawaii 4,730 km north and New Zealand 3,010 km southwest. The islands became a British protectorate in 1888. By 1900, administrative control was transferred to New Zealand. In 1965 residents chose self-government, in free association with New Zealand. As a result, the Cook Islands is fully responsible for internal affairs, while New Zealand retains responsibility for external affairs and defence, in consultation with the Cook Islands. About 70% of the population of 20,000 lives on the largest island of Rarotonga, which has a land area of 67 km^2. Rarotonga is the capital and main commercial and government centre, and hence the country's dominant driver of economic growth. Around 20% of the population lives in the eight islands of the Southern Group. Five are elevated fertile volcanic islands, while the rest are atolls, except Mitiaro, which is raised coral. These Pa Enua are within 300 km of Rarotonga. The remote Northern Group of Pa Enua, more than 1,250 km from the capital, is made up of seven low-lying, sparsely populated, coral atolls and sand cays, with little arable land. Some of these islands benefit from large, productive lagoons that support pearl farming. They are also the main base for the country's fishing industry.

The climate of the Cook Islands is sub-tropical to tropical oceanic, moderated by trade winds. The South Pacific Convergence Zone (SPCZ), the largest and most persistent extension of the Inter-tropical Convergence Zone, usually lies between the two main island clusters (the Northern and Southern Groups) of the Cook Islands. This, and the wide latitudinal separation between the island groups, means that the current climates of the two Groups are somewhat different. The SPCZ is associated with a belt of extensive cloudiness and high rainfall. The position and intensity of the SPCZ varies considerably. The weather at any location in the Cook Islands is largely dependent on the position and intensity of the South Pacific Convergence Zone (SPCZ). Any major changes in the SPCZ strongly affect the climate of the Cook Islands. There are two dominant seasons - a wet season from November to April and a dry season from May to October. During the dry season the country is affected predominantly by the dry southeast trades as the SPCZ is generally to the north of the Cook Islands. However, in the wet season, the SPCZ is more active and can lie over the whole island group, bringing unsettled weather and heavy rain. Tropical cyclones, forming on the SPCZ between November and April, are major weather events that can cause significant devastation. An average of 1.6 cyclones occurs annually for the Southern Group. The value is much higher for the Northern Group. The maximum number of cyclones in one season is six. Table 1 presents the return periods for given maximum wind speeds. These are based on an analysis of the observed maximum hourly wind gust data and the adjusted global climate model wind speed data.

Table 1: Estimates of Return Periods (RP) for Given Maximum Wind Speeds (Source: ADB, 2006)[1]

Wind Speed (m/sec)	Observed Data (1972-1999)	GCM Based Maximum Wind Speed Data		
		1961-1990	1991-2020	2021-2050
28.5	2	1	1	1
33.9	5	2	2	2
37.5	11	3	4	4
38.8	14	5	5	6
41.9	29	18	16	14
44.9	57	60	45	31
47.8	113	120	95	64

There is evidence that the intensity of tropical cyclones in the vicinity of the Cook Islands is increasing, as indicated by the increase in the open water wave heights associated with tropical cyclones recently affecting Rarotonga (Table 2).

Table 2: Open Water Wave Height (Average of Top Ten Percent) Associated with Tropical Cyclones Recently Affecting Rarotonga (Source: ADB (2006)[2]; Dorrell, pers. comm.)

Cyclone (Name and Year)	Open Water Wave Height (m)
Charles (1978)	11
Sally (1987)	10
Val (1991)	14
Pam (1997)	14
Dovi (2003)	17
Heta (2004)	17
Meena (2005)	17
Nancy (2005)	22
Olaf (2005)	17
Percy (2005)	19

There is also large inter-annual variability in the climate of the Cook Islands, especially in relation to the El Niño/Southern Oscillation (ENSO) and the Inter-decadal Pacific Oscillation (IPO). The SPCZ lies furthest to the southwest during La Liña years and negative IPO and furthest to the northeast when El Niño and positive IPO occur. During El Niño (La Liña), above (below) average rainfall occurs in the Northern Cook Islands and in the area mainly north of 10S, while drier conditions (above average rainfalls) occur in the area between 15-35S, including the Southern Cook Islands. During neutral conditions the mean wet season rainfall resembles the long-term rainfall pattern.

A statistically significant relationship exists between tropical cyclone occurrence and the Southern Oscillation Index. In the Cook Islands region cyclone numbers are higher than normal cyclone during El Niño years and lower than normal during La Liña years. The ENSO weather pattern has changed its behaviour noticeably since 1976, with more El Niños, fewer La Niñas, the two biggest El Niños on record (1982–83 and 1997–98), and the longest El Niño on record. All events had a significant

[1] ADB, 2006: Climate Proofing: A Risk-based Approach to Adaptation. [prepared by Hay, J.E., R. Warrick, C. Cheatham, T. Manarangi-Trott, J. Konno and P. Hartley] Asian Development Bank, Manila, 191pp.

[2] ADB, 2006: Climate Proofing: A Risk-based Approach to Adaptation. [prepared by Hay, J.E., R. Warrick, C. Cheatham, T. Manarangi-Trott, J. Konno and P. Hartley] Asian Development Bank, Manila, 191pp.

impact on the Cook Islands. Statistically, these changes are unusual, causing some researchers to speculate they could be related to recent global warming.

High sensitivity and quality sea-level monitoring in the Cook Islands began when a gauge was installed at Rarotonga in 1993. As at December 2009 a rate increase in sea level of +5.3 mm per year had been observed. Accounting for the inverted barometric pressure effect and vertical movements in the observing platform, the actual sea-level rise is +4.6 mm per year. Additional sea level records for the Cook Islands are available for Rarotonga (21 year record ending 1998) and Penrhyn (30 year record). These observations reveal sea level trends of +4.3 and +2.0 mm/year, respectively.

As with many other South Pacific island nations, the Cook Islands' economic development is hindered by the isolation of the country from foreign markets, the limited size of domestic markets, lack of natural resources, periodic devastation from extreme weather events, and inadequate infrastructure. The agriculture sector is considered to be made up of a large informal sector and thus its total contribution to the economy is difficult to quantify. The supply and demand for produce is predominantly based in Rarotonga. Available data suggests that the contribution of the agriculture sector to the economy in real terms is NZD7.3million in 2009, 2% of GDP. The majority of produce is consumed in country with only a minor volume being exported overseas. In 2009-10 NZD1 million worth of agricultural products consisting of fruits and vegetables (taro, pawpaw and noni) and foliage (maire eis) was exported to overseas markets. This accounted for 18% of the total goods exported out of the country for the year, but 15% less than 2008-09 agricultural exports.

Black pearls are the Cook Islands' leading export. Manufacturing activities are limited to fruit processing, clothing, and handicrafts. Trade deficits are offset by remittances from emigrants and by foreign aid, overwhelmingly from New Zealand. In the 1980s and 1990s, the country lived beyond its means, maintaining a bloated public service and accumulating a large foreign debt. Subsequent reforms, including the sale of state assets, the strengthening of economic management, the encouragement of tourism, and a debt restructuring agreement, have rekindled investment and growth.

In general, the Cook Islands economy has returned to positive growth following a period of contraction in 2009, however there are increased risks to sustainability of solid growth given recent natural disasters and oil price rises beyond our control. The heavy reliance on global markets for imported products and tourism demand causes the Cook Islands to be vulnerable to slight shifts in global markets. Therefore any negative impacts flowing through the global markets will see the Cook Islands revisit its projections to adjust accordingly.

Climate change scenarios

Adaptation planning in the Cook Islands is benefitting from increasingly detailed studies of the changes in climate anticipated to occur in the coming decades. For example, in 2007 the IPCC Fourth Assessment Report presented temperature and rainfall scenarios for the Southern Pacific (see Table 3).

Table 3: Projected increase in air temperature (°C) and precipitation (%) for the Southern Pacific, relative to the 1961–1990 period (Source: IPCC, 2007)[3]

[3] IPCC, 2007: Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L.

	2010-2030	2040-2069	2070-2099
Air Temperature	0.5 to 0.8	0.8 to 1.8	1.0 to 3.1
Precipitation	-3.9 to +3.4	-8.2 to +6.7	-14.0 to +14.6

The large uncertainties in these and other projections represent a major challenge for adaptation planning in the Cook Islands. This is especially the case for precipitation, where even the direction of future changes in mean annual rainfall is often unclear. Figure 1 shows how well 12 Global Climate Models (GCMs) used to estimate changes in the mean rainfall in the Pacific Region agree on future trends. The models validate well for the South Pacific. There is general agreement that the mean rainfall will increase along the tropical belt in the 21st century, but for the remainder of the South Pacific, including the Cook Islands, the certainty of change is much less.

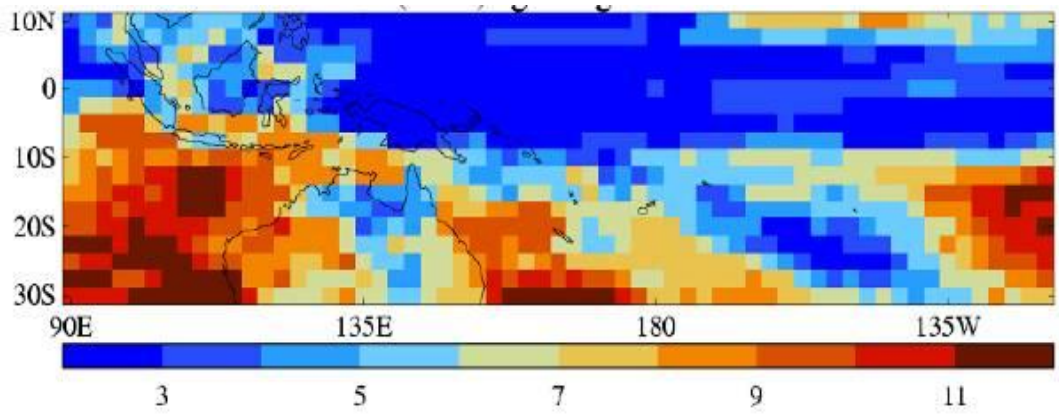


Figure 1. Number of models, out of 12, that show a decrease in mean annual rainfall between 1980-1999 and 2080-2099. *Source*: NIWA (2008)[4].

A more recent study by NIWA (Baldi et al., 2009) developed separate temperature and rainfall projections for the Northern and Southern groups, using baseline data for Penrhyn and Rarotonga, respectively. Results for an ensemble of GCMs and for a range of greenhouse gas emission scenarios are summarized here. Warming is likely to be larger for the Northern Group, relative to the Southern Group (between about 1.6C and 3.1C for Penrhyn and 1.4C to 2.7C for Rarotonga for 2071-2100, relative to 1971-2000.

As noted above, precipitation projections reported by the IPCC (Table 3) are unclear as to the direction of future changes in mean annual rainfall. However, in the NIWA study the ten best validating GCMs show a reasonable consensus (about ¾ of the models) that annual rainfall in Rarotonga will increase. There is also reasonable consistency among the GCMs in projections of an increase in the strength of the southeast trade winds.

With increased global warming, the rate of sea level rise is likely to accelerate. Observed data show that, globally, the rate of sea-level rise has increased from 1.6mm/yr in the period 1961-2003 to 3.1mm/yr in the period 1993-2003. Since 1960,

Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK.

[4] NIWA. 2008. Kiribati Adaptation Programme. Phase II: High Intensity Rainfall and Drought. NIWA Client Report: WLG2008 – 12, NIWA Project GOK 08201.

thermal expansion of the ocean and the melting of glaciers and ice caps are the largest contributions to sea-level rise. There has also been an increasing contribution from surface melt from the Greenland Ice Sheet and Antarctica over this period. This means that sea-level rise is currently tracking at or near the upper limit of the IPCC projections.

Since the last IPCC report, updated trends in surface ocean temperature and heat content show that the ocean has warmed significantly in recent years - about 50% more than had been previously reported by the IPCC2. Projections based on the observed relationship between global average temperature rise and sea-level rise over the past 120 years; suggest a sea-level rise of at least a metre by 2100. This is of great concern to the Cook Islands, where most habitation is less than a few metres above sea level.

Importantly, changes in sea level are not expected to be uniform around the world. There are regional variations, due largely to differential rates of oceanic thermal expansion. These variations are modelled by GCMs. Based on the median value of an ensemble of 11 GCMs; the regional pattern of sea-level change (relative to the global-mean change) for the Pacific region is shown in Figure 2. For most of the Cook Islands region the multiplier is 0.85-0.95, indicating that the rate of sea-level rise is between 5-15% smaller than the global average.

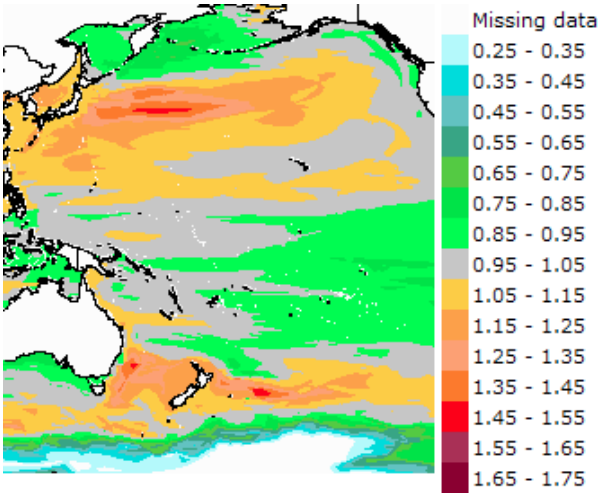


Figure 2. The regional pattern of sea-level change (relative to the global-mean change) for the Pacific region. A value of less (more) than 1.0 indicates a rate of rise that is less (more) than the global mean rate of thermal expansion. *Source:* Simpson et al. (2009)[5].

There is growing evidence that the early impacts of climate change will result from an increase in the frequency, intensity and duration of extreme events such as tropical cyclones, floods, droughts and storm surges. Thus it is important that adaptation planning consider not only changes in mean climatic conditions but also changes in the characteristics of extreme weather and climate events. The most recent IPCC assessment indicates that, as a result of the warmer climate, peak wind and

[5] Simpson, M.C., Scott, D., New, M., Sim, R., Smith, D., Harrison, M., Eakin, C.M., Warrick, R., Strong, A.E., Kouwenhoven, P., Harrison, S., Wilson, M., Nelson, G.C., Donner, S., Kay, R., Geldhill, D.K., Liu, G., Morgan, J.A., Kleypas, J.A., Mumby, P.J., Palazzo, A., Christensen, T.R.L., Baskett, M.L., Skirving, W.J., Elrick, C., Taylor, M., Magalhaes, M., Bell, J., Burnett, J.B., Rutty, M.K., and Overmas, M., Robertson, R.7 (2009): An Overview of Modelling Climate Change Impacts in the Caribbean Region with contribution from the Pacific Islands, United Nations Development Programme (UNDP), Barbados, West Indies.

precipitation intensities will increase and the number of intense cyclones is likely to increase. Wind intensities could increase between 5-10% by 2050, while precipitation peaks could increase up to 25%.

Recent analyses undertaken for the Cook Islands highlight the increasing risks from weather- and climate-related hazards. For example, the likelihood of occurrence (LO) in one year and return periods (RP) for observed and projected (using GCM results) daily rainfall for Rarotonga is shown in Table 4 while Table 5 shows similar information for hourly rainfall for Rarotonga.

Table 4: Return Periods (RP) (yr) and Likelihood of Occurrence (LO) in One Year[6], for Daily Rainfall in Rarotonga (Source: ADB, 2006)[7]

Rainfall (mm) (at least)	**Present (1970-2003)**		**2025**		**2050**		**2100**	
	RP	LO	RP	LO	RP	LO	RP	LO
100	1	0.78	1	.81	1	0.83	1	0.87
150	3	0.34	3	.38	2	0.44	2	0.56
200	7	0.14	6	.16	5	0.20	3	0.31
250	18	0.06	13	.08	10	0.10	6	0.17
300	38	0.03	26	.04	19	0.05	11	0.09
350	76	0.01	47	.02	35	0.03	19	0.05
400	141	0.01	81	.01	59	0.02	31	0.03
450	248	0	130	.01	95	0.01	50	0.02
500	417	0	201	0	148	0.01	78	0.01

Table 5: Return Periods (RP) (yr) and Likelihood of Occurrence (LO) in One Year, for Hourly Rainfall in Rarotonga (Source: ADB, 2006)[7]

Rainfall (mm) (at least)	**Present**		**2025**		**2050**		**2100**	
	RP	**LO**	**RP**	**LO**	**RP**	**LO**	**RP**	**LO**
25	1	0.93	1	0.92	1	0.93	1	0.93
50	3	0.29	3	0.36	3	0.39	2	0.45
75	18	0.05	12	0.08	8	0.12	6	0.18
100	91	0.01	57	0.02	25	0.04	13	0.08
125	384	0	246	0	67	0.01	25	0.04
150	N/A	N/A	980	0	159	0.01	46	0.02

The trend of increasing likelihood of extreme weather and climate events that was apparent in the historic data for the Cook Islands for much of the last century is projected to continue in a consistent manner, through the present century[8]. An

[6] A likelihood of 0 equals zero chance while a likelihood of 1 equates to a statistical certainty that the event will occur within a year.

[7] ADB, 2006: Climate Proofing: A Risk-based Approach to Adaptation. [prepared by Hay, J.E., R. Warrick, C. Cheatham, T. Manarangi-Trott, J. Konno and P. Hartley] Asian Development Bank, Manila, 191pp.

[8] It is important to note that this consistency does not prove the existence of a global warming signal in the observed data. More detailed analyses are required before any such attributions might be made.

example of this trend is shown in the plotted observed and projected likelihoods of at least 250 mm rain falling in a day for Rarotonga (Figure 3).

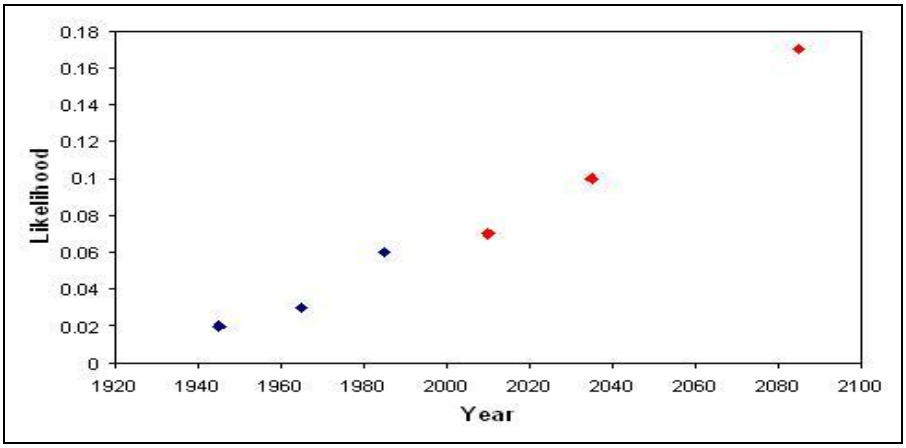


Figure 3. Observed (black symbols) and projected (red symbols) likelihoods of a daily rainfall of at least 250 mm occurring in a year using data for Rarotonga. *Source*: ADB, 2006[9].

Table 6 provides return periods for given sea level elevations for Rarotonga, for both the present day and projected into the future. The indicated increases in sea level over the next century are driven by global and regional changes in mean sea level as a consequence of global warming.

Table 6: Return Periods (yr) and Likelihood of Occurrence (LO) in One Year for Extreme High Sea Levels, Rarotonga (Source: Hay et al., 2005)[9]

Sea Level (m)	**Present Day**		**2025**		**2050**		**2100**	
	RP	LO	RP	LO	RP	LO	RP	LO
2	2	0.51	2	0.59	2	0.65	1	0.75
4	4	0.25	3	0.31	3	0.35	2	0.45
6	10	0.10	8	0.13	7	0.15	5	0.21
8	30	0.03	23	0.04	18	0.05	12	0.08
10	112	0.01	80	0.01	62	0.02	39	0.03
12	524	0	349	0	258	0	149	0.01

Adaptation planning in the Cook Islands already reflects the important implications of increasing risks associated with extreme weather and climate events. This includes taking an integrated approach to adaptation and disaster risk reduction, at institutional, policy and practical levels.

[9] ADB, 2006: Climate Proofing: A Risk-based Approach to Adaptation. [prepared by Hay, J.E., R. Warrick, C. Cheatham, T. Manarangi-Trott, J. Konno and P. Hartley] Asian Development Bank, Manila, 191pp.

Work continues on refining climate projections for the Cook Islands, as well as for the Pacific Islands Region as a whole. The results emerging from the Pacific Climate Change Science Programme, funded by Australia, are important in this respect. While the projections have yet to be released, they will be available by the time of SRIC programme inception, and will therefore be reflected in the implementation of the project.

Vulnerability of the Cook Islands

Geographically, the Cook Islands faces major challenges: the habitable islands are widely scattered over a vast ocean space and simply maintaining contact with the communities that live in them, to say nothing of supplying them with essential services and integrating them closely into the national economy, is difficult and expensive. To avoid obliteration of many of these communities altogether, either in a sudden disaster or by slow attrition due to out-migration, strenuous efforts are required to provide basic sustenance and physical protection.

In common with many other Pacific island countries, the Cook Islands are still working out an affordable, yet effective Community Service Obligation strategy that will ensure that all Cook Islands residents enjoy a basic standard of living wherever they reside in the country. In the meantime, the climate is changing and the difficulty of meeting this challenge is growing. As discussed below, there is much that is being done, albeit in a piecemeal and somewhat uncoordinated fashion, to contain the extra costs to the communities as a result of living and remaining in their land in the face of climate change. Even with an improved and much more closely integrated national effort, the expense involved in keeping the islands productive and habitable will be high, notwithstanding that the populations that live in many of the islands are quite small, particularly in the Northern Group.

As is the case for other countries that are influenced by the SPCZ, the Cook Islands are subject to highly destructive cyclones, intense rainfall events, and devastating droughts. The isolated populations in the Pa Enua are especially vulnerable to the impacts of climate change, including:

- Increased frequency and intensity of rainfall and tropical storms;
- Higher risk of coastal erosion and flooding as a result of rising and extreme sea levels and changing wind patterns;
- Loss of water resources from hotter, drier weather and/or contamination of groundwater due to saltwater intrusion;
- Resurgence of dengue fever and other tropical and water-borne diseases;
- Reduced productivity of food crops due to soil degradation and increased salinity; and
- Loss of local biodiversity from habitat changes, extreme events, sea level rise, and ocean warming.

The Northern Group is particularly hard hit by drought and by cyclones and storm surges, due to their low relief and critical dependence on rainfall for day-to-day water supply. In the Northern Group, vulnerabilities to natural disasters exacerbated by climate change have become so acute that people are steadily migrating southwards and overseas, as mentioned above. Not only are living conditions in the northern islands becoming less tolerable and secure, livelihood opportunities are declining as the environment becomes less productive due to climate change.

The Southern Group is also affected by natural disasters in a life-threatening way, since most human habitation and infrastructure is concentrated along coasts which are vulnerable to floods, sea surges, and rapid erosion, and the water supply is predominantly from surface sources which are affected immediately by fluctuating rainfall patterns. These effects will be exacerbated by climate change: as the Earth warms, droughts are expected to increase in frequency and severity, rainfall is expected to become more concentrated in fewer but more intense (and destructive) rainfall events that will result in higher runoff to the sea, cyclones are likely to increase in frequency, and variability will increase as El Nino-related oscillations become more extreme.

The Cook Islands has already experienced severe climate events, including having had to cope with five strong cyclones over a one month period in 2005. The increased frequency and intensity of cyclones is one of the most urgent risks faced by the Cook Islands, its small islands and fragile coastal ecosystems. Table 7 shows estimates of the anticipated average losses for tropical cyclones of differing intensity, as reflected by their return period (50, 100 or 250 years). Importantly, these damage estimates do not indicate the severity of any one event. By way of an example, in 1987 Cyclone Sally (a Category 1 cyclone, considered at the time to be an event with a 20 year return period) caused damage losses estimate to be between USD 25 to 50 million at that time. This exceeds the losses of 19 million given in Table 7 for an event with a 250 year return period. In Avarua, the main town on Rarotonga, 80% of buildings were destroyed or severely damaged, the harbour was completely blocked, water supply was disrupted in half of the town, and radio and telephone services were disrupted.

Table 7: Direct and Emergency Losses in the Cook Islands for Tropical Cyclones with a Given Return Period (Source: Air Worldwide Corporation, 2006[10])

Mean Return Period (years)	50	100	250
Direct Losses			
USD million	12	15	19
% GDP	6	8	10
Emergency Losses			
USD million	3	3	4
% GDP	5	5	7

The coastal zone and coral reefs are currently vulnerable to sea-level rise, increases in sea surface temperature, and increases in extreme weather events. The impacts of these threats will almost certainly include accelerated coastal erosion, saline intrusion into freshwater lenses, and increased flooding from the sea. In some areas of the coastal plain there are low lying areas behind the beach ridge which are prone to flooding from storm surges. In addition, there are areas of intensive infrastructure development with poor water drainage systems that are prone to flooding during rainstorms. These factors make the coastlines the islands increasingly sensitive to variations in sea level, and to storm events.

As shown in the island vulnerability and adaptation studies carried out under the Initial and Second National Communications to the United Nations Framework Convention on Climate Change (UNFCCC), the different island types which make up

[10] Air Worldwide Corporation. 2006. Country Risk Profiles. General Methodology, Pacific Catastrophic Risk Financing Initiative. 6pp.

the Cook Islands result in different coastal vulnerability profiles. Even the high *makatea* islands (raised atoll formation) are not as resilient to sea level rise as might be expected. Despite limestone cliffs seemingly protecting the agricultural growing areas, sea storm surges and cyclones still lead to salt-water intrusion into the low-lying swampy areas.

Coral reefs support fish and shellfish which are very important in the diet of Cook Islanders. The reefs also provide protection of the shoreline from wave energy and erosion. The coastal zone and coral reefs are vulnerable to the effects of increases in seawater temperature; most notably this leads to 'coral bleaching', as seen in past El Niño events. During El Niño's, surface temperatures frequently exceed the temperature tolerance level of coral species (25°C – 29°C). The coastal protection provided by such stressed reef habitats is reduced, while opportunities for *ciguatera dinoflagellate* organisms to colonize the coral surfaces are increased, making the reef fish that feed on it poisonous for humans. Coral death and bleaching also threaten marine biodiversity, reduce fish supplies for local communities, and diminish the attractiveness of reefs to tourists.

Tourism development, and the infrastructure investment on which it depends, are significantly affected by increased storm surge and cyclonic events which undermine investor confidence and threaten insurability. There is a clear need for both island and country authorities and the private sector, among others, to take a planned and integrative approach to responding to climate change in the context of continued socioeconomic growth.

The agricultural sector is highly vulnerable to climate change and will be damaged by the increasing incidence of cyclones (which cause crop and tree damage), floods (which wash out and rot crops, and waterlog soils), droughts (which reduce or stop crop growth) as well as temperature increases (which can effect pests, diseases and which crops will grow) and sea-level rise (which contributes to salination of water lenses and exacerbates storm surge damage). During a cyclone in 2005 the entire taro plantation areas on Pukapuka were inundated by salt water as the result of a storm surge. It took 3 years before *taro* could again be grown on the island. In the same incident, many rainwater tanks lost their roof catchments and the few freshwater wells in existence were polluted by seawater. Coconuts could not be used as an emergency measure as most had been torn from trees and lay rotting on the ground. The combined effect of these consequences left the island with no fresh water source until aid arrived. One study tracked the recovery of the freshwater lens on the Island and found it took 11 months to recover. Variations in rainfall patterns affect yield, in particular of the main export crops of pawpaw and *taro*.

Droughts induce salt water intrusion, which kills crops. Moreover, a reduction in land area, resulting from sea-level rise, is likely to substantially reduce the thickness of the freshwater lens on atolls. On some smaller atoll islands there is concern that groundwater lenses may shrink or even disappear with a 45cm increase in sea level. This effect is particularly acute in the Northern Group, but has also been identified as a problem on Aitutaki. Increases in air temperature and other climatic changes can also lead to increased incidence of pests and disease which are likely to threaten agriculture. An example of this is the potato white fly which has become a concern in the Cook Islands, most likely as a result of periods of wetter conditions.

During El Nino periods the Southern Group often has decreased rainfall levels, while higher rainfall is experienced in the northern atolls. During La Niña, however, the North becomes more susceptible to dry periods, with rainfall becoming more plentiful in the Southern islands. The strong La Niña of 1998 to 2000 was responsible for

acute water shortages in many islands in the Pacific Ocean, as was the previous El Niño in 1997. Periods of heavy rainfall can also cause problems to the water supply. Heavy downpours often cause flooding in the inland streams, which causes debris to be washed downstream and disturbs sediment at the bottom of the streams. During such periods of heavy rainfall it is not uncommon for households to find that their water turns a 'muddy brown' colour and incidences of gastric illnesses become more common, as the quality of water is compromised due to water pollution from soil erosion, herbicide and pesticide runoff, livestock waste, sewage and solid waste disposal. In relation to human health, recent changes in the climate result in more suitable environments for many diseases, particularly those borne by mosquitoes and other vectors which require higher temperatures to survive.

In the past there has been a strong link between the incidence of ENSO events and dengue fever outbreaks (and malaria, cholera and other emerging infectious diseases) in the South Pacific. In addition extreme weather events present an increased risk of physical injury and death to the population.

Vulnerability of the targeted sectors and areas

Disaster risk management and climate change adaptation need to be built up into an integrated development process in all islands in order to allow communities to transform lives from reacting to an increasing series of devastating, unforeseen events, to taking control, actively managing risks, sustaining livelihoods and maintaining the islands as liveable places. In general, climate change projects in the islands are currently implemented with a relatively narrow sectoral focus, or as demonstration projects that need to be considerably up-scaled to benefit entire islands, and the country as a whole. This proposed programme can build upon this very useful experience and will be a vehicle for quickly applying the lessons learned to a replicable nation-wide effort.

The Northern Group in particular can expect to be hit by more cyclones in the future. With the increase in frequency and severity across the country, adaptation projects and cyclone recovery projects are struggling to keep up. For example, many of the cyclone shelters in the islands have fallen into disrepair and need to be rehabilitated. Funds have been identified for rehabilitation of the shelter on Pukapuka, for example. Such shelters will need to be *upgraded* to cater for more severe storms (at least category 4) in the future. This is an instance where the proposed SRIC programme will build upon current adaptation activities and strengthen their implementation and effectiveness: programme funds will join those already identified to allow shelters to be upgraded as needed (in conjunction with similar upgrading work on all islands).

Climate change affects the water supply in the Cook Islands through variability in rainfall and periodic droughts, with devastating results especially in islands that lack rainwater harvesting and storage facilities. At the same time there is a greater risk of contamination through sewage and other waste disposal as population pressures increase. Water is currently sourced from stream catchment and roof catchment systems, bore holes and community water tanks: the Cook Islands, in particular the Pa Enua, remain highly dependent on rainfall. About 35% of the population in the Northern Group carry or cart water to their houses from bore wells or public water tanks.

Waste has a major impact on the environment, and its also affects other sectors such as health and tourism. It therefore affects the development of small islands such as those in the Cook Islands. Disaster and climate change will also worsen the impacts of persistent organic pollutants (POPs). Increasing temperatures make these

substances more toxic and more mobile, while higher sea levels and flooding from extreme weather events results in their wider dispersal. These impacts can be lessened by better management of hazardous waste, including re-export which allows for environmentally sound disposal.

Institutional context of climate change and disaster risk management

The National Vision – Te Kaveinga Nui of the Cook Islands is "*To enjoy the highest quality of life consistent with the aspirations of our people, and in harmony with our culture and environment". A* National Sustainable Development Plan (NSDP) has been set up pursuant to this vision. All sector and government agencies planning must be aligned to the NSDP strategies, which are national priorities. While none of the Strategic Goals explicitly reference climate change, Goal 4: "Sustainable use and management of our environment and natural resources" Goal 5 "Strengthened and affordable basic infrastructure, transport and utilities to support national development"; and Goal 6 "A safe secure and resilient community"; have particular relevance. The NSDP furthermore is aligned with the nation's regional and international commitments such as the Pacific Plan, Millennium Development Goals, (MDGs), Mauritius Strategy, and multi lateral environmental agreements such as the UN Framework Convention on Climate Change, Biodiversity Convention, among others. [11]

The National Environment Strategic Action Framework 2005–2009 (NESAF) is referenced in the NSDP and provides guidance and direction for achieving the sustainable social and economic progress for the Cook Islands, utilising its natural resources and environment wisely. The third goal of the NESAF is to increase resilience by strengthening national capacities for climate change, variability, adaptation and mitigation.

In 2008 the Government of the Cook Island developed a Disaster Risk Management National Action Plan (NAP), with the support of regional and international partner organisations representing the Pacific Disaster Risk Management (DRM) Partnership Network, including SOPAC, the UNDP Pacific Centre and the Pacific Islands Forum Secretariat. In July 2010, the Office of the Prime Minister (OPM), in cooperation with key national agencies and with the assistance of SOPAC, initiated a process in to harmonize disaster risk management and climate change adaptation efforts. This was titled *"Integration of Disaster Risk Management & Climate Change Adaptation in the Cook Islands: A Way Forward for a Joint National Action Plan".* Development of this National Action Plan for DRM and climate change adaptation (CCA) has been the result of the combined efforts of the NAP Advisory Committee (NAPAC) and the National Climate Change Country Team (NCCCT), supported by the National Environment Services (NES) and with funding from the Government of Italy.

National-level coordination for CCA is quite well developed in the Cook Islands, under the NCCCT. Water, Agriculture, Health, Energy, Marine Resources, Environment Services, Meteorological Services, Foreign Affairs, and Disaster Management agencies are represented, among others. On some islands Climate Change Community Teams have been established, related to project implementation (in Aitutaki for CBDAMPIC, in Mangaia for PACC).

The NCCCT was recently merged with the NAPAC. The strengthened NCCCT provides a sound basis for inter-ministerial coordination. Until recently the secretariat

[11] Second National Communication [draft]

has been provided by NES, but this has been on an ad-hoc-basis, without any clearly mandated and adequately staffed support unit. NCCCT has been serving principally for advisory functions (e.g. to the SNC process). A recent Functional Review for the Public Service Commissioner proposed a change in the institutional arrangements. The recommendations, which include establishing a Climate Change Coordination Unit in the Office of the Prime Minister, are currently being implemented.

Preferred solution for climate change adaptation (normative situation)

Ideally, adaptation measures are implemented systematically throughout the Cook Islands' 11 inhabited islands, treating in an integrated way the villages' marine, coastal and land areas in order to modify current agricultural, sanitation, coastal, marine, and land use practices in light of current and expected climate change risks. The planning and implementation of the adaptation measures are undertaken in the framework of the National Action Plan on DRM and CCA, with specific Action Plans established for each of the inhabited islands. These processes are fully informed through climate information services tailored to different sectors and communities and packaged in user-friendly ways for community practitioners who have the capacity to understand and use them.

Communities also have the capacity to collaborate in monitoring impacts of climate change in coastal, marine, and terrestrial ecosystems and related natural resources use, and can plan and implement effective community-based CCA projects and DRM measures. The integration of climate risks and resilience into coastal development, agriculture, fishery, health, biodiversity, and tourism is dealt with comprehensively through appropriate water use and storage, coastal protection, and other relevant practices, harnessing traditional knowledge. Vital infrastructure and services (such harbours, cyclone shelters, and water supply) are designed and upgraded to withstand cyclones and storm surges with increasing intensity and frequency. The implementation of community-based adaptation measures is supported by an enabling environment at the national policy level, with line departments and the Meteorological Service having sufficient capacity to generate climate information, assess climate risks and support communities to translate these to livelihood and ecosystem protection practices.

Policies and related legal frameworks, instruments, corporate plans and budgets in the agriculture, water supply, fishery, infrastructure, and tourism sectors are strengthened to integrate climate risks and resilience. They are supported through enhanced coordination with national entities linking effectively to village councils and community stakeholders.

The experience and lessons learnt generated through CCA and DRM activities in different sectors are systematically captured, analysed and disseminated in the local language, using different communication channels and media suited to the technical capacity and needs of different user groups (e.g. government officials, community leaders, councils, farmers, educators, and businesspeople). Past and ongoing climate change awareness and education projects are updated using the latest information on climate change science and lessons learnt from climate change risk management practices, and their outreach is expanded across all communities of Cook Islands. Lessons learnt from the process of adaptation are also widely shared cross the Pacific region and amongst other SIDS, and within the broader international adaptation community.

Current barriers to climate change adaptation, needs and gaps in adaptive capacity

Though many projects and policy frameworks have introduced participatory planning processes, mobilized communities, and have supported improved resource management and policy development at local and national government levels, they do not adequately integrate climate change risk considerations and adaptation responses. Adaptation implementation at the island level throughout the country is severely constrained by the pursuit of distinct, as opposed to an integrated national strategy for climate change, land degradation, disaster prevention, preparedness and management; shortage in resource and key national assets to systematically monitor changes from various actions that are taking place over time; limited understanding and monitoring of environment in health issues such as vector-borne, water quality, skin and respiratory problems; limited capacity to assess the impact of both technological and policy measures for climate-related concerns; and lack of adequate legislation covering key areas such as resource management, water supply, hazardous waste disposal, and sanitation (treatment and disposal of liquid and solid wastes).

The Second National Communication, currently in draft form, identifies several key gaps and constraints to successful adaptation to climate change in the Cook Islands. These have been identified as a result of numerous consultations with local stakeholders over a significant period of time, in particular since the Initial National Communication was prepared. The key gaps and constraints are:

- Comprehensive vulnerability and adaptation assessments need to be completed for all Islands; this will improve understanding of the extent of island vulnerability and hazards and provide a basis for systemic action to manage climate change risks; increased awareness of the risks will occur if the assessments are undertaken using local systems and with engagement of local stakeholders and systems;
- Capacity building around the implementation of climate change risks on renewable energy technologies is needed to ensure long-term operational effectiveness;
- The national response to climate change should be better integrated into development processes, especially in terms of mainstreaming current and emerging climate issues into existing socio-economic projects, and into programmes and governance frameworks for future initiatives;
- The financing of climate change risk management related activities and budget constraints are closely linked, and requires continued international assistance at the national level, with national participation;
- Enforcement of climate policy and regulations in place to facilitate and promote behavioural adjustments towards risk management practices in the Cook Islands needs substantial improvement, within the capacity and capability of national human resources; and
- Land tenure issues which impede sustainable development require addressing at national and local levels.

Lack of integration of climate change risk and resilience into island level and sectoral development processes

Geographically, the Cook Islands faces steep challenges: the habitable islands are widely scattered over a vast ocean space. It is difficult and expensive to simply maintain contact with the communities that live on these islands, to say nothing of supplying them with essential services and integrating them closely into the national

economy. To avoid demise of many of these communities, either in a sudden disaster or by slow attrition due to out-migration, strenuous efforts are required to provide basic sustenance and physical protection.

A set of different assessment and planning processes have been carried out in the past in the different islands, such as the Community Vulnerability and Adaptation (CVA) Assessments (carried out during INC and SNC and the CBDAMPIC project), the Island Strategic Plans, the Community-Centred Sustainable Development Project (UNDP-supported), or the establishment of Island Profiles (ADB supported). These initiatives establish a sound basis for participatory processes in the island communities, but have been carried out in fragmented way, not covering systematically all inhabited islands, and some of them are rather outdated (Island Profiles dating 2003, various CVA assessments from the INC process, early 2000). As understanding of the science of climate change, and methodologies underpinning vulnerability and impacts assessments as well as ways to address climate change risk management have advanced, there is a need to go beyond the coarse understanding of issues from those early assessments and inform decision-making with systematic climate risk assessments and integrated planning for adaptation and disaster risk management. Systems for generating this information continuously and iteratively are required including rolling out the National Action Plan for DRM and CCA at the island level, while engaging and building the capacity of Island Councils and Administrations for making informed decisions on climate risk management.

The Cook Islands is currently undertaking some national and island-level development and disaster response activities, supported by assistance from ADB, SOPAC, SPREP, UNDP-GEF, NZAid/AusAid. Various projects have been generated to respond to urgent cyclone recovery needs, and many have been designed as climate-proofing projects. In the main, these projects are sector- or island-specific, and are designed as discrete responses to particular events or to island-specific threats. There is an urgent need to now take a step forward to integrate climate risk and the requirements for building up resiliency of communities in all islands to climate change-related threats in a integrated fashion.

An effort to fully integrate climate risks into fundamental project and programme design processes, with associated budgeting, manpower planning, training, and other activities is needed to ensure that future risks are systematically and cost-effectively addressed and that all islands remain habitable and continue to support livelihoods. Such integration will require a sustained effort to instil awareness of climate related risks to all households, businesses, social service organisations including non-governmental organisations (NGOs), public- and private-sector planners and investors, and government agencies and provide them with the tools to respond to such risks effectively.

Through practical adaptation work (much of it investment-intensive, including climate-proofing of major assets such as harbour facilities, water supply systems, sanitation, protective shelters, etc) on the ground in all islands, integrative policy development work, training and awareness raising, the proposed SRIC programme will support the ‘mainstreaming’ of climate risk into development processes in the Cook Islands, at the island level, sectoral level, and national policy level.

The Cook Islands participates in regional initiatives, such as the Pacific Adaptation Strategy Assistance Programme (PASAP) funded by AusAid and the Preparation of the National Adaptation Prioritisation for Climate Change project funded by Italy. Both are being implemented to provide assistance for national and community-level adaptation planning, and on which the SRIC programme can build. In addition, a 2-

year project funded by GEF has commenced to build capacity for Sustainable Land Management in the Cook Islands, the results of which will be very useful to successful implementation of the proposed SRIC programme.

The Ministry of Works (MOW) and the Office of the Minister of Outer Island Administration (OMIA) were merged in November 2009 as the Ministry of Infrastructure and Planning (MOIP). This young Ministry needs considerable capacity building in climate risk assessment, related adaptation planning and policy processes. MOIP is currently developing a water policy under a IWRM initiative, and furthering a draft Water Bill, both of which lack comprehensive integration of climate change risks and resilience aspects.

Currently, there is no national Coastal Zone Management Policy; coastal development is regulated to some extent by the Environment Act through its reference to construction above the high water mark. The UNDP-GEF supported Pacific Adaptation to Climate Change (PACC) project, financed by the Special Climate Change Fund, intends to support the development of such policy. However, while this initiative provides capacity support and technical know-how on climate risk assessments, it is limited in scope to one demonstration activity and site (climate proofing the Mangaia harbour). Further capacity and field experience is needed to inform the development of a solid Coastal Zone Management Policy that takes into consideration the variety of community services and infrastructure in the diverse settings of island communities.

The National Agriculture Policy recognizes climate change in a rather broad manner, but climate risks and resilience are not spelt out clearly. New varieties of important crops, including pest and climate tolerant varieties of taro, cassava, sweet potatoes, banana, and plantain are being introduced by the Ministry of Agriculture (MoA). Following evaluation, the MoA plans to distribute these plants to interested farmers on all islands. Farmers will be encouraged to report-back on the performance of these varieties under their respective conditions. However, agriculture technical capacity is limited to a few staff at the MoA.

Capacity building is highly needed within the MoA, the primary source of technical assistance to farmers, particularly to assist the outer islands in integrating climate change and disaster risks into agricultural practices and in related advisory services to farmers. For example, there is currently minimal utilization of fruit and nut trees (jackfruit, tamarind, Polynesian chestnut, hardwood trees) in most islands as windbreaks, with combined livelihood benefits. It is widely believed by local communities and government officials that better integration of climate resiliency into MoA activities would contribute towards encouraging such practices. Some Island Agricultural Officers are being trained in Rarotonga, but some islands have critically limited capacity. In order to revitalize agriculture in the outer islands, there is a need for better-trained and capable extension officers and field technicians.

Provision of information and other technical assistance to farmers is provided through the research staff of the MoA, and such capability is limited to a few staff. Some outer islands lack staff capacity and experience to assist farmers, particularly in pest management and nutrition, in addition to the lack of financial resources to assist the outer islands.

A soil map for the Cook Islands was prepared in 1975 and 1981. An FAO Technical Cooperation Project is expected to soon provide crop suitability information to assist with farmer decision making in crop production activities. However, this project is

limited in scope and is not expected to integrate information on climate change and climate risks to farming activities. It is also limited to the Southern Group of islands.

The Cook Islands also participates in an FAO regional project, the Food Security for Sustainable Livelihoods Project (FSSLP). A Food Security Assessment is currently being compiled for the Cook Islands. However, the project does not fully incorporate climate risks and is focused in the Southern Group of islands only.

Absence of information and capacity to assess climate risks and implement climate change adaptation measures and appropriate coastal protection, land use, and water supply management practices, in order to safeguard livelihoods, maintain access to essential services, and protect the quality of life in all islands

As underscored in the vulnerability assessments that have been prepared so far with direct input from island residents, communities in the islands throughout the country feel that they are fighting a losing battle with climate change. There is general awareness that the climate is changing and that living conditions are getting harder, securing income from livelihood options is becoming more difficult (e.g., agricultural land is eroding away or becoming saline, fish are declining in unhealthy reef systems), and providing adequate nutrition, clean water, and housing is becoming more challenging. This has driven a strong out-migration trend from the islands, particularly from the Northern Group, over a number of years.

A number of projects and programmes have aimed at implementing demonstrations at the island level to rehabilitate infrastructure damaged by cyclones and other severe events, and to improve land use, water storage, and agricultural production practices, but without integrating information and responses to address the additional risks caused by climate change. These include, in the Northern Group, cyclone shelter rehabilitation and water harvesting projects funded by NZAid/AusAid; island-level strategic planning for agriculture and water supply; upgrades of cyclone-damaged harbours and other infrastructure; installation of seawalls and other coastal protection works; water storage projects; sanitation projects; and community awareness projects for biodiversity, health, and food security issues.

In the Southern Group, projects and projects include a pilot project on Aitutaki for addressing sea-level rise and storm surges, providing safe drinking water, preventing loss of biodiversity, and improving sanitation, for replication on other islands; water supply monitoring and supply of storage tanks; reconstruction of cyclone-damaged public infrastructure; reconstruction of housing; preparation of disaster management, food security and agricultural support projects; climate-proofing the Mangaia harbour facilities through the regional PACC project as a demonstration of integrated coastal management, for replication elsewhere; and others.

As previously discussed, past and ongoing projects have successfully mobilized communities and have supported improved resource management, but do not adequately integrate climate change risk considerations and adaptation responses, and thus are not comprehensive solutions to climate change risks in the Cook Islands. This shortcoming is evident at the national level, but is especially telling at the island level, where residents perceive an eroding quality of life due to an environment that is becoming more difficult to survive in. National authorities and island communities lack capacity for assessing, evaluating and developing mechanisms for transferring technologies and adaptation measures or dealing with specific climate-related issues. They lack expertise and capacity for adaptation assessment and implementation of necessary risk management practices.

National agencies face difficulties in coordinating and enforcing policies and regulations due to limited knowledge and resources, while islands face communications difficulties (e.g., lack of access to computers and the internet) and a lack of expertise in effective communication strategies to induce behavioural change. There is a need to improve local capacity to undertake research, analysis and dissemination of information to local communities and to introduce and strengthen community education on the environment in general and adaptation in particular, and how to relate this knowledge to sectors such as tourism through locally-appropriate mechanisms and language.[12]

DRM and CCA need to be integrated into the development policy and planning processes in all islands in order to allow communities to transform lives from reacting to an increasing series of devastating, unforeseen events to taking control, actively managing risks, sustaining livelihoods and maintaining the islands as liveable places. In general, climate change projects in the islands are currently implemented with a relatively narrow sectoral focus, or as demonstration projects that need to be considerably up-scaled to benefit the country as a whole. The proposed SRIC programme can build upon this very useful experience and will be a vehicle for quickly applying the lessons learned to a replicable nation-wide effort.

Limited technical resources and human capacities to provide tailored information on climate change trends and associated risks, as well as monitoring of climate impacts on the natural resource base, in order to support informed decisions by policy makers, planners and the communities in key development sectors

National agencies, such as the Cook Islands Meteorological Service (CIMS), are currently under-staffed and lack adequate technical capacity (e.g. data bases, hardware and software, Automated Weather Stations (AWS) in only six locations) to provide sector-tailored climate information services for policy makers and island communities. CIMS receive reports from 6 AWSs every three hours and adding the report from the main office, this compiled report is sent to larger and more advanced Meteorological Services that can use the data in models that produce sophisticated weather products. The Australian-funded Pacific Climate Science Support Programme (PCSSP-ICCAI) provides capacity building to Pacific Meteorological Services, including the Cook Islands. Assistance provided includes information on general regional climate projections. These need to be further specified and customized for sectoral applications in country.

CIMS operates a webpage (www.cookislands.pacificweather.org) where it produces climate predictions for both the Northern and Southern Groups of the Cook Islands. Data can be provided to farmers, upon request. A workshop was held with the Titikaveka Growers Association in Rarotonga, to discuss climate information needs and potential climate information products. The SRIC programme can build on these incipient initiatives. The early warning information disseminated by the CIMS is derived or obtained from different sources with the region. The hazards included in these early warnings are strong winds, tropical cyclones, heavy rain and flooding, thunderstorms, storm surges and tsunami. Cyclone warnings are provided by the Fiji-RSMC, as well as the other weather-related warnings. These warnings are relayed to the community via the radio stations as well as via internet and by telephone, a system which needs to be further enhanced to adjust to the specific communication constraints of each island.

[12] Ibid.

There is a need to enhance monitoring and surveillance systems on climate change impacts in the marine, coastal and terrestrial ecosystems of the Cook Islands, including those related to crops, infrastructure, and water resource management practices. In particular, there is a need to overlay past and current monitoring and information systems related to the communities and ecosystems of each island with climate change information, in order to inform policy makers and community workers on climate risks. In order to do this, the monitoring capacity of relevant line departments needs to be strengthened as well. For example, there is a need to update existing vegetation and soil type maps, link with land and vegetation type inventory data in order to overlay with climate information and guide land use planning and management option decisions. NES undertakes coral monitoring and beach profiling intermittently. Methodologies have been inconsistent and analysis of trends has not been undertaken. Since 2007 NES has intended to prepare a State of Environment Report, but this has never materialized due to inadequate capacity at NES to identify measurable indicators for monitoring and evaluation. At present, data collection is not sufficient to support the reliable monitoring of environmental change (such as coastal erosion) in the islands, due to a lack of human and institutional capacity in project management and coordination to implement key climate change related policies and projects.[13]

Lack of systematic capturing and disseminating cross-sectoral adaptation experience in order to support integrated adaptation measures at the national level and in communities

While ongoing projects related to adaptation or sustainable natural resource use do have knowledge management components (e.g. IWRM, PACC), they mainly deal with single-sector applications, without addressing experience on climate change adaptation assessments and measures. National awareness raising projects have been carried out by NES, through organizing the National Environmental Forum, on a biannual basis. There is a need to capture, analyse and disseminate DRM and CCA good practices and lessons learnt in the setting of integrated island development processes. There is also a need to make available the country's CCA and DRM experience on the policy and implementation front more broadly in the Pacific and other SIDS regions.

PROGRAMME OBJECTIVES

The objective of the programme is to strengthen the ability of all Cook Island communities, and the public service, to make informed decisions and manage anticipated climate change driven pressures (including extreme events) in a pro-active, integrated and strategic manner. In achieving this objective, the programme will support, at the national, sectoral, and island levels, implementation of the Cook Islands' new NAP for DRM and CCA.

The proposed programme will also contribute to all outcomes listed within the 2 objectives of the Adaptation Fund Strategic Results Framework (AFB/EFC.2/3 from 31 August 2010), and corresponds particularly to the following higher order fund-level outputs:

Output 1.1. Risk and vulnerability assessments conducted and updated at national level;
Output 1.2 Targeted population groups covered by adequate risk reduction systems;

[13] Ibid.

Output 1.3 Targeted population groups participating in adaptation and risk reduction awareness activities; and
Output 2.2 Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability.
Output 2.4. Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability

PROGRAMME COMPONENTS AND FINANCING

As indicated in Figure 4, the programme has a 3-pronged approach, ultimately focusing on the implementation of on-the ground adaptation and disaster risk reduction measures at the community level in the Pa Enua. This will be, integrated with sustainable island capacity building and wider development processes, and supported through enhanced national policy, institutional and knowledge management capacities.

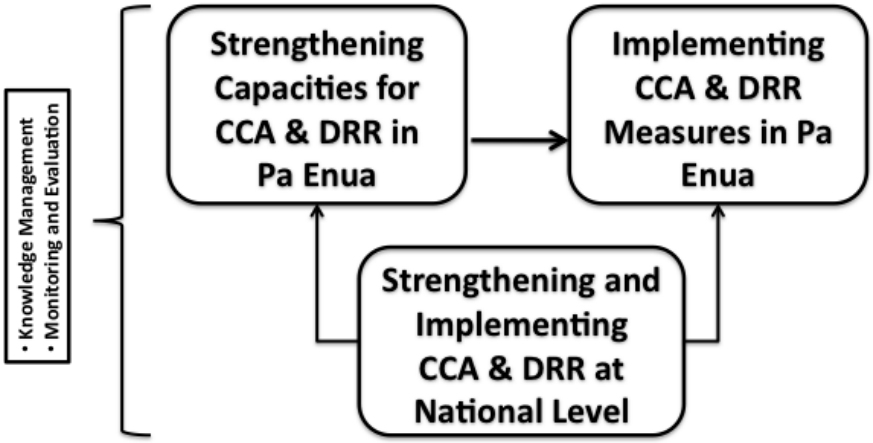


Figure 4. The SRIC programme components.

The planned activities directly address the barriers and intended project outputs listed above. Through implementation of integrated and climate-resilient island development plans targeting all 11 inhabited Pa Enua, and at least 2000 households and over 100 enterprises in the Pa Enua, it aims at:

- National level - strengthening policy and institutional capacity and public awareness on climate change and disaster risk reduction, through conducting and updating climate risk assessments, enhancing climate early warning systems tailored to vulnerable sectors, training policy makers and technicians in the relevant government departments;
- Pa Enua - increasing the adaptive capacity of households and businesses and affected sectors, such as agriculture, water supply, tourism, health, fisheries, coastal management, and enhancing the adaptive capacity of local communities through engagement in island level CCA-DRM planning process linked with Island Development Plans and the National Joint Action Plan, and targeted training and awareness-raising activities using different media;
- Pa Enua - strengthening livelihoods through diversifying food production, processing and related subsistence and income-earning activities amongst local communities, improving protection of household and business assets, reducing the risks of disease and death associated with climate-related extreme events,

and enhancing the resilience of terrestrial, coastal and marine ecosystems on which the communities, businesses and sectors depend.

Component 2 of the proposed programme, focusing on island-level capacity building and CCA-DRM planning processes in the Pa Enua, have been adjusted in response to the capacity needs identified by Pa Enua leaders during the proposal formulation phase. This component is seen as strategic in the programme design, in order to enable the effective implementation of the concrete adaptation measurers proposed at island and community level under Component 3, in tandem with the national level institutional strengthening and knowledge management components.

Table 8 presents the relationships the four project components and the expected concrete outputs and outcomes, and the corresponding budgets.

Table 8: The Project Components Expected Outputs and Outcomes, and Corresponding Budgets

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (USD)[14]
1. Strengthening and implementing climate change adaptation and disaster risk reduction at national level	• Staff of national agencies and organisations on the NCCCT trained and working in ways that improve coordination and delivery of CCA and DRM initiatives on the ground in the Pa Enua • National and sector policies, related instruments, and work programmes enhanced in ways that support CCA and DRM in the Pa Enua, consistent with island development plans • Fully operational climate early warning and information systems	• Capacity developed for efficient and effective support at national level for disaster risk reduction and adaptation initiatives in the Pa Enua	400,000
2. Strengthening capacities for climate change adaptation and disaster risk reduction in the Pa Enua	• Integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited Pa Enua, including harmonization with island development plans • In each of the 11 inhabited Pa Enua, island councils, administrators, technical officers, farmers, fishers, households and business owners trained in planning and undertaking integrated	• Key players in Pa Enua development have the capacity to reflect disaster risk management and adaptation considerations when planning, making decisions and during operations	785,000

[14] Project Budget Summary by Outputs is included in Section D under Implementation Arrangements

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (USD)[14]
	climate change adaptation and disaster risk reduction initiatives, consistent with the island development plans		
3. Implementing climate change adaptation and disaster risk reduction measures in the Pa Enua	• Small grants delivered to the 11 Pa Enua and their communities, to implement CCA and DRR within the framework of integrated island- and community-level DRR and CCA action plans and the island strategic development plans • Climate-resilient agricultural and fisheries practices implemented in at least 5 Pa Enua • Water capture, storage and groundwater management capacities are enhanced in at least 7 islands, through community based actions and infrastructure climate-proofing projects • Coastal protection enhanced in at least 3 Pa Enua • Resilience of tourism enterprises to climate change enhanced in at least 3 Pa Enua • Health support and vector-borne disease control techniques introduced in at least 5 Pa Enua to address climate-induced health risks	• Enhanced resilience to climate change, including weather- and climate-related disasters, for all 11 inhabited Pa Enua	3,215,000
4. Climate change adaptation knowledge management	• Lessons learned and best practices are generated (case studies, photo stories, short videos, posters, brochures, etc) and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms • Training materials incorporating climate change issues developed and used for training of field staff, students and other key	• Lessons learned and best practices improve the effectiveness of initiatives to enhance the resilience of Pa Enua and other vulnerable communities	100,000

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (USD)[14]
	players		
5. Programme Execution cost			460,000
6. Total Programme Cost			4,960,000
7. Project Cycle Management Fee charged by the Implementing Entity			421,600[15]
Amount of Financing Requested			5,381,600

PROPOSED CALENDAR

Table 9 presents the proposed milestones and timelines.

Table 9: Proposed Programme Milestones and Timelines

MILESTONES	EXPECTED DATES
Submission to AF of a Full Project Proposal	July 2011
Start of Programme Implementation	October 2011
Mid-term Review	October 2014
Programme (Phase 1) Closing	October 2016
Terminal Evaluation	December 2016

[15] At the request of the Government of the Cook Islands, the programme will be implemented by UNDP using the MIE modality. UNDP is able to provide the following implementation services through its country office, regional and headquarters networks: programme identification, formulation, and appraisal; determination of execution modality and local capacity assessment of the national executing entity; briefing and de-briefing of programme staff; oversight and monitoring of AF funds, including participation in programme reviews; receipt, allocation and reporting to the AF Board of financial resources; thematic and technical capacity building and backstopping; support with knowledge transfer; policy advisory services; technical and quality assurance; and troubleshooting assistance to the national programme staff. Further details on the types of specialized technical support services which may be provided are articulated in the table provided to the AFB Secretariat on 14 May 2010 (as annexed).

PART II: PROGRAMME JUSTIFICATION

A. Description of the Programme Components

The programme has a three-pronged approach, focusing on the implementation of on-the ground adaptation and disaster risk reduction measures at island and community levels, integrated with sustainable island development processes and supported through enhanced national institutional and knowledge management capacities and initiatives. The four components of the Programme (Figure 4) are strongly integrated. Figure 5 highlights how the strengthening, engagement and coordination of key institutions at national, island and community levels will combine with the integration of both DRR and CCA in national, island and community policies, plans and work programmes, and with training of key players at national, island and community levels, to ensure the success of interventions designed to enhance island and community resilience to climate change, including climate-related disasters. These actions will be supported by, and contribute to, knowledge management initiatives.

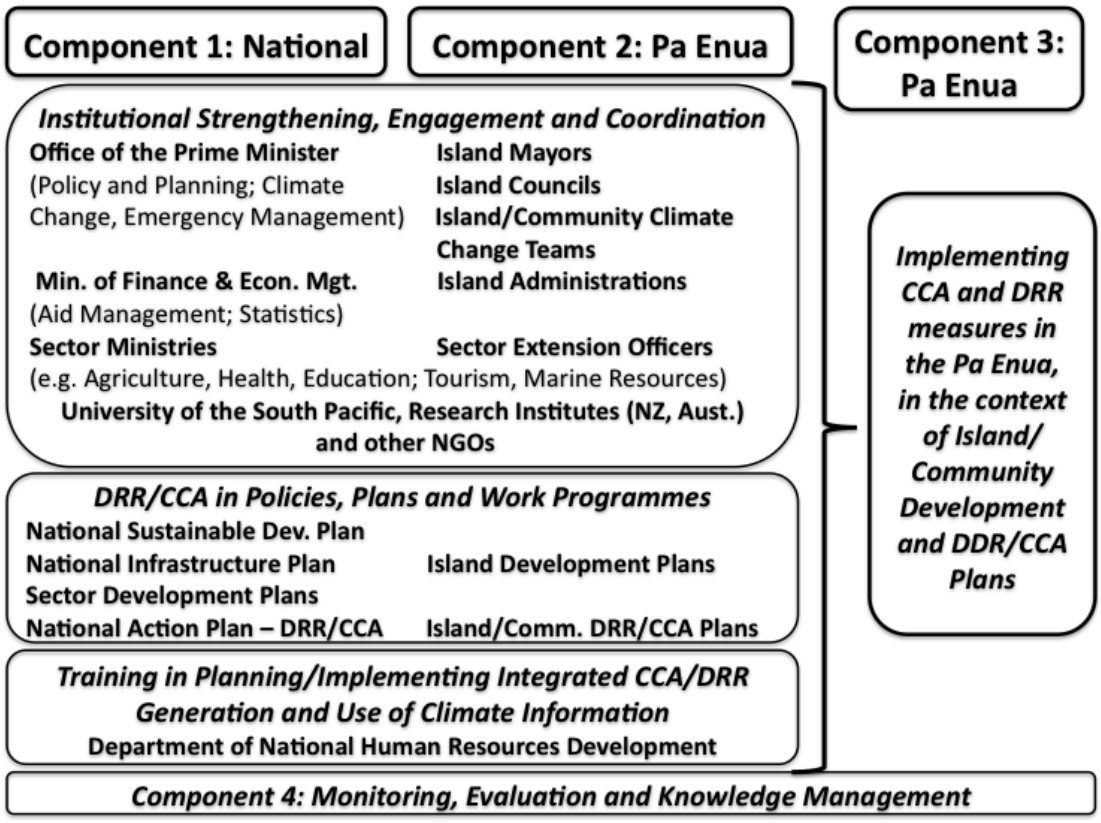


Figure 5. Examples of the national level (Component 1) and island level (Component 2) institutions, policies, plans and work programmes that will be strengthened in order to ensure effective implementation of DRR and CCA interventions in the Pa Enua (Component 3). All these activities will be supported by, and contribute to, knowledge management activities (Component 4).

The programme will implement those aspects of the new National Action Plan for CCA and DRM that are consistent with the Island Development Plans of the Pa Enua. Particularly, actions under Output 1.2 (National and sector policies, related

instruments, and work programmes enhanced in ways that support CCA and DRM in the Pa Enua, consistent with island development plans) will support the integration of climate change considerations into national and sectoral policies and related instruments. These will, in turn, guide preparation and implementation of island level climate-change adaptation and disaster risk management action plans under Output 2.1 (Integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited Pa Enua, including harmonization with island development plans).

Component 1. Strengthening and implementing climate change adaptation and disaster risk reduction at national level

Outcome 1. Capacity developed for efficient and effective support at national level for disaster risk reduction and adaptation initiatives in the Pa Enua

Activities and outputs in this component will ensure there is a strong enabling environment for the successful inclusion of CCA and DRM considerations in development initiatives in the Pa Enua. One focus will be institutional strengthening to enhance coordination of efforts at the national level and ensure more effective delivery of national initiatives at island and community level. Another focus will be human resources development, to ensure that staff in the relevant national agencies and organisations have the ability to support island and community development initiatives that reduce vulnerabilities and build resilience to climate change. As elaborated below, the proposed training activities will also help enhance the role of the restructured NCCCT and the new Climate Change Coordination Unit in the Office of the Prime Minister.

Access to reliable, targeted and user-friendly information is another key element of the enabling environment for successful CCA and DRR. Hence this component will also deliver a framework for the delivery of reliable and targeted information on the impacts of climate change on terrestrial, marine, and coastal ecosystems in the Pa Enua. This and related work under Outcome 1, will build on the knowledge held by the University of the South Pacific, research institutes in New Zealand and Australia and by regional NGOs. It will also utilize the expertise that exists in these institutions to advance current understanding where gaps are identified.

Currently gender is not mainstreamed into national development policy. However, gender considerations play an important role in the successful integration of climate and disaster risk considerations into national development priorities. Understanding and addressing gender-differentiated consequences of climate related hazards and disaster is critically important. The equitable participation of both men and women in implementing climate change policies and interventions helps ensure the long-term sustainability of both adaptation and disaster risk reduction measures. The Gender Division of the Ministry of Internal Affairs, along with the National Council of Women, is currently engaged in reviewing the National Gender policy. This includes consideration of the implications of climate change and how best to address them in a gender aware manner. The SRIC programme provides an important opportunity to bring a Pa Enua perspective to these initiatives at national level.

The activities described below will be supported through partnerships with regional education and research institutions. The National Institute of Water & Atmospheric Research (NIWA) of New Zealand will be engaged in the establishment of climate early warning and information system and related capacity building, based on ongoing collaborations with UNDP, in order to support the Cook Islands Meteorological Service (CIMS) and sectoral stakeholders in its application. The

University of the South Pacific will be engaged in supporting policy, planning and training activities on climate change and disaster risk management.
Output 1.1 Staff of national agencies and organisations on the NCCCT trained and working in ways that improve coordination and delivery of CCA and DRM initiatives on the ground in the Pa Enua.

This output contributes to the systematic capacity building of government officials and other key players at the different levels, supporting top-down and bottom-up and cross-sectoral linkages, to enable effective development and implementation of climate-sensitive policy frameworks in the longer term. For this output the focus is on national agencies and organisations. The output involves activities related to human resources development, leading to the strengthening of institutions that play key roles in supporting implementation of climate resilient policy frameworks for all affected sectors in the Pa Enua, including climate-aware land use, water resource management, and disaster prevention and recovery processes. Resources will be used to implement a set of activities that lead to the strengthening of technical capacities within the ministries, departments and organisations represented on the NCCCT, as required for successful implementation of the NAP for DRM and CCA. Thus individuals working at national level in the water, agriculture, health, tourism, energy, and marine resources sectors, and in the Environment Services, Meteorological Services, Foreign Affairs, Office of the Prime Minister, the Ministry of Finance and Economic Management and the Ministry of Infrastructure and Planning will be the targeted recipients of training in the preparation and implementation of policies, plans and work programmes that include the management of climate change risks in the context of island and community development initiatives. Specifically, the training will focus on making effective use of climate information services, climate risk assessments, and climate resilience management techniques. The knowledge and expertise of the University of the South Pacific, research institutes in New Zealand and Australia and regional NGOs will augment that of national institutions in the Cook Islands.

Consultations, as well as discussions at the National Adaptation Planning Week (see Annex 6), highlighted the urgent need for a Learning and Teaching Advisor based in Ministry of Education. This person will have a focus on national activities related to education for sustainable development (ESD), including supporting climate change and disaster risk management education programmes in the Pa Enua. This activity will go a long way towards supporting two actions included in the new NAP for DRM and CCA, namely:

- Provide vocational guidance in DRM and CCA to high schools and other interested institutions; and
- Strengthen the incorporation of DRM and CCA into the school curriculum.

The proposed training activities will also help enhance the role of the restructured NCCCT as an institution for coordinating whole-of-government and whole-of-country initiatives related to CCA and DRM, thereby implementing relevant recommendations of the recent Functional Review undertaken for the Public Service Commissioner, including strengthening the new Climate Change Coordination Unit in the Office of the Prime Minister. The planned activities include specific actions proposed in the new NAP for DRM and CCA, namely:

- Initiate a national dialogue (including CSOs and NGOs) of ways to improve joint DRM programming;

- Strengthen capacity of the Office of the Prime Minister (including EMCI and the new CCCU) to monitor and facilitate coordination and partnerships (including communication flow and sharing of resources);
- Establish and strengthen a central agency to coordinate climate change activities;
- Strengthen institutional arrangements for decision making (e.g. climate change team/council:
- Assess the technical capacity and needs of development planning agencies to effectively enforce the DRM and CCA provisions within their regulations;
- Strengthen technical capacity of the Agriculture Department, Tourism Corporation, NES, Ministry of Infrastructure and Planning and Public Health and other responsible agencies to systematically apply disaster risk assessment and vulnerability assessments measures and tools in development planning and decision making processes; and
- Conduct appropriate awareness programmes for developers including property and infrastructure developers on DRM and CCA requirements of the regulations.

Output 1.2 National and sector policies, related instruments, and work programmes enhanced in ways that support CCA and DRM in the Pa Enua, consistent with island development plans

The enhanced institutional capacities, including the knowledge and skills of staff in ministries, departments and organisations represented on the NCCCT, will be utilised by way of the activities designed to strengthen national policies and related instruments in the agriculture, health, water, energy, marine resources and land management sectors in ways that better support climate change adaptation and disaster risk reduction in the Pa Enua, consistent with island development plans. The policies and plans that will be strengthened include the National Sustainable Development Plan (2011-2015 Plan currently under preparation), the Medium Term Budgetary Framework, the NAP for DRM and CCA, the National Environment Strategic Action Framework 2005-2010 (currently being updated), the Sustainable Energy Action Plan, the Education Master Plan (2008-2017), the Public Health (Sewage) Regulations (2008), the Food Regulations (2008), the Animal Health Emergency Response Plan, the Climate Change and Health Adaptation Plan, and the Tourism Master Plan (2005-2015).

This strengthening will in turn ensure that resilience to climate risks is integrated into the sectoral strategies, related policy instruments and the work programmes of relevant government agencies represented on the NCCCT. Corporate, business and budget plans for the agriculture, health, water, energy, marine resources, tourism and land management sectors will be strengthened based on a thorough analysis of existing frameworks and related institutional capacities, through consultative processes and through systematic training of policy makers and planners (as described under Output 1.1), supported by climate change and policy specialists.

The above activities will address many of the actions proposed in the new NAP for DRM and CCA, including:

- Review and strengthen relevant national policy, legislation, organisational and decision making arrangements for DRM and CCA;
- At each sector level, develop and strengthen DRR and CCA programmes and activities, including identifying priority hazards requiring attention and measures to deal with them, and incorporate in Corporate, Business Plans and Budgets of sectors such as agriculture, health, water, energy, marine resources, tourism and land management sectors;

- Review and strengthen existing development planning regulations, in view of incorporating DRM and CCA provisions;
- Adoption of Strategic Environmental Assessment (SEA) in all planning regulations;
- Develop and adopt relevant DRM and CCA by-laws to address sustainable development in the Pa Enua; and
- Incorporate risk-reduction measures in the land use policy currently being developed and legislation for tourism and agriculture developments.

Output 1.3 Fully operational climate early warning and information systems

Capacity enhancement activities will target all main components of climate early warning systems, starting from data recording and processing, analysis and communication processes. Climate and weather reports and information products will be tailored to the specific needs of different stakeholder groups and sectors, supporting outputs and activities outlined under Outcome 2 (risk and vulnerability assessments that inform the island- and community-level DRM and CCA plans), Outcome 3 (enhanced resilience to climate change, including weather- and climate-related disasters, for all 11 inhabited Pa Enua), and the policy mainstreaming processes under this Outcome.

There is a need to enhance monitoring and surveillance systems on climate change impacts in the marine, coastal and terrestrial ecosystems of the Cook Islands that can affect crop, infrastructure, and water resource management practices. The planned activities to address this need will enhance the capacities to more systematically gather, analyse and disseminate sector tailored climate information, including the monitoring of climate impacts of terrestrial, marine, and coastal ecosystems that constitute the economic and social base of the country.

Such activities will be possible only if the monitoring capacities of relevant line ministries are strengthened. Activities under this output will especially target the NES and the Ministries of Marine Resources (MMR) and Agriculture (MA) in order to enhance data recording, processing and reporting capacities to provide information on the status of key ecosystems and likely impacts of climate change. Given the heavy reliance of economic activities on the natural resource base of the country, it is expected that these activities will effectively support sectoral decision-making processes.

Training will be provided to allow data from past and current monitoring efforts related to the changes in the form and functioning of the communities and ecosystems of each island to be overlain with climate change information. Such information can be used to inform policy makers and community practitioners on current and emerging climate risks. For example, training will be provided to allow existing vegetation and soil type maps to be updated, linked with land use and land cover inventory data, and then overlain with climate information and finally made available in format that will guide land use planning and land management decisions.

Officers in the Cook Islands Meteorological Service, as well as users in the relevant line departments (e.g. agriculture, health, water resources, energy, marine resources and land) and community members, will receive training in the preparation and use of climate and weather information products. The capacities of Meteorological Service will be enhanced in climate data observation, analysis (including short term seasonal forecasts and longer term projections), and dissemination in order to provide tailored climate information services and establish Climate Early Warning Systems designed to meet the specific needs stakeholders resident in the Pa Enua.

The observational and related data management capacity of the Meteorological Service will be enhanced by upgrading the climate and synoptic observing stations on the 11 inhabited Pa Enua and by installing climate monitoring equipment on Suwarrow, Manuae and Takutea. A GIS-based early warning and climate information system will be developed by overlaying climatic variables with sector-relevant information, such as agro-meteorological information (e.g. soil, moisture holding capacity, land cover, topography, land use and relevant climate variables), water availability and health related information. This will be operationalised as a crop production and water resources and health planning decision support tool. Enhanced climate and weather information products and services will be developed, including monthly outlooks, seasonal forecasts, and longer term indications. These products will be tailored to the needs of users (e.g. national and island level government officials, extension officers, farmers, communities, local businesses) in sectors such as agriculture, tourism, health, and water. Where relevant, materials will be prepared in Cook Islands Maori. Communication and distribution systems will be established and maintained. Training workshops for Meteorological Service staff and end user groups will be held. These will cover the provision and interpretation of the products and services described above.

The above activities will address many of the actions proposed in the new NAP for DRM and CCA, including:

- Establish a framework for a monitoring and surveillance system on climate change impacts in near-shore, coastal and terrestrial ecosystems;
- Undertake more detailed monitoring of weather/water quality/water temperatures, through weather stations;
- Improve local weather monitoring system;
- Install Automatic Weather Stations (AWSs);
- Improve the use of GIS mapping and of satellite images;
- Monitor beach erosion; and
- Conduct assessments to determine causes and solutions for coastal erosion, sea water inundation and salt water intrusion on freshwater and soil.

Component 2. Strengthening capacities for climate change adaptation and disaster risk reduction in the Pa Enua

Outcome 2. Key players in Pa Enua development have the capacity to reflect disaster risk management and adaptation considerations when planning, making decisions and during operations

As has already been highlighted, the ability of communities and individuals in the Pa Enua to reduce their vulnerability to climate change, including weather- and climate-related disasters, is severely constrained. A prerequisite to enhancing the resilience of the Pa Enua is to build the adaptive capacity of communities, enterprises, families and individuals, as well as the island ecosystems on which they depend.

Thus a large investment is required in Component 2, along with that to be made Component 1, in order to guarantee the success of Component 3. Although the US$785,000 cost of Component 2 represents almost 16% of the total cost of the SRIC programme, it can be justified because the on-the-ground measures in Component 2 provide the foundation for implementation of the climate change adaptation and disaster risk reduction measures in the Pa Enua. For example, it will result in integrated climate change adaptation and disaster risk reduction action

plans for each of the 11 inhabited Pa Enua. These will be harmonized with the respective island development plans. The action plans will be used to guide and prioritise the implementation of the climate change adaptation and disaster risk reduction measures in the Pa Enua, and ensure their sustainability and contributions to island development and resilience.

The proposed activities under this outcome will also be carried out in a methodological framework based on analysis and experiences with past island level vulnerability and adaptation assessments and development planning processes, through participatory consultation processes building on existing island governance and community leadership structures, and supported through systematic capacity building linked with the implementation of on-the-ground adaptation measures outlined under Outcome 3.

Output 2.1. Integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited Pa Enua, including harmonization with island development plans

As called for in the NAP for DRM and CCA, integrated climate change adaptation and disaster risk reduction action plans will be prepared for each of the 11 inhabited Pa Enua. These will be the means by which the NAP for DRM and CCA will be implemented at island, enterprise and community levels. The action plans will complement and add value to existing island development plans. When the latter are revised the intention will be to integrate the island CCA and DRR action plan into the island development plan, so they form a single, coherent planning instrument.

The 11 island-level action plans will involve a stocktaking and analysis of past island and community-level assessments and plans including those related to the Initial and Second National Communications, the CBDAMPIC, Island Strategic Plans, CCSDP, Island Profiles and the WWF-CBA-SGA. This will be followed by an analysis of the implications of the island-level sectoral plans and work programmes, especially in terms of consequences for island resilience and vulnerability in the face of climate change. These outputs will inform the initial consultations with Island Councils, administrations, communities and other stakeholders. The results of the consultations will in turn inform development of an integrated DRM-CCA method and planning framework for the preparation of the island-level DRR and CCA action plans. Training will be provided to island leaders and other stakeholders on risk assessments and DRR-CCA planning processes (linked with Output 2.2). These training activities will be followed by participatory DRR-CCA planning activities, employing innovative techniques such as participatory mapping. The final activity will be preparation of integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited Pa Enua. These will include implementation and resource mobilization schedules. When existing island development plans are revised, the opportunity will be taken to integrate the island CCA and DRR action plan into the island development plan, so they form a single, coherent planning instrument.

Output 2.2. In each of the 11 inhabited Pa Enua, island councils, administrators, technical officers, farmers, fishers, households and business owners trained in planning and undertaking integrated climate change adaptation and disaster risk reduction initiatives, consistent with the island development plans

To ensure continuity and rigour in undertaking both the capacity building (Component 2) and CCA/DRR measures (Component 3), a SRIC Focal Point will be appointed for each of the 11 inhabited Pa Enua. This action is consistent with the NAP for DRM

and CCA, which proposes that a focal point for disaster risk reduction be established in each Pa Enua. The Focal Points will be trained and funded so they have the capacity to lead, coordinate and administer the SRIC programme on their respective islands. The enabling environment for the DRR and CCA activities in the Pa Enua will be strengthened through awareness raining initiatives that target island councils and administrators, so they are conversant with climate risk assessment and management, and with adaptation planning. Technical officers providing advisory services to communities (e.g. energy, agriculture, fisheries, water, and tourism) will receive training in climate risk assessment and management, in adaptation planning, as well as in the use sector-tailored climate information.

Farmers, fishers, households, business owners and other individuals will be trained in the identification and undertaking of the climate-resilient practices that will lead to successful implementation of the island action plans. This will help ensure that the capacity exists to implement these plans in ways that enhance island and community resilience.

While some of the capacity building activities (e.g. SRIC Focal Points; preparation of action plans; training of technical officers; awareness raising for island councils and administrators) will be funded directly by the SRIC programme, other capacity building initiatives proposed by island administrations, communities and other players will be funded using a small grants modality. Thus an important activity in this component will be to establish and implement arrangements to extend the current national operation of the UNDP/GEF Small Grants Programme (SGP) to support building capacity for adaptation and disaster risk reduction in the Pa Enua. Grants will be provided to approved projects that will build the capacity for CCA and DRR in a specific Pa Enua, community or enterprise. SRIC funds will be used solely for operations within the Cook Islands. They will be used to support national administration and management of the SRIC SGP as well as for the grant making.

Grant making and other appropriate activities will be overseen by the existing National Steering Committee of the Cook Islands SGP and guided by a strengthened Cook Islands Country Strategy for the SGP. The SGP activities will also be supported by the SRIC-CC programme manager and by the SRIC Focal Points in each Pa Enua.

It is anticipated that proposals for enhancing the capacity of islands, communities and enterprises will reflect many of the capacity building needs identified by island stakeholders during consultations, including as part of the Adaptation Planning Week (see Annex 6). These capacity building needs included:

- Fisheries database for each Pa Enua, for monitoring changes in abundance;
- Prepare island specific building codes to ensure houses are built to cyclone proof standards;
- Strengthen building code guidance for each Pa Enua, to ensure construction and renovation is climate resilient (e.g. water storage tanks required; buildings designed to withstand extreme winds and rainfall, based on island data);
- Develop an integrated community water management plan;
- Public education and awareness programme concerning climate risk management;
- Build awareness of accommodation providers to ensure they are aware of the risks, and have emergency supplies for their guests;
- Water and energy conservation campaigns;
- Improved emergency warning system for island;

- Increase the knowledge of Island planners and technical officers in relation to CCA and DRM;
- Train farmers in the use of agro-meteorological information and land-use planning techniques and tools, to plan type, location, and timing of crops adjusted to changing climate conditions, and maximize productivity;
- Further development of draft environmental by-laws for integrated coastal zone management (linked with the ICZM guidance developed by PACC and piloted in Mangaia);
- Introduce community-based coastal and beach monitoring and awareness programmes (such as the Sandwatch Programme, promoted by UNESCO and now being introduced in the Pacific);
- Community awareness programme on water saving practices, to improved water demand management; and
- Community campaign on the need to boil drinking water.

Component 3. Implementing climate change adaptation and disaster risk reduction measures in the Pa Enua

Outcome 3. Enhanced resilience to climate change, including weather- and climate-related disasters, for all 11 inhabited Pa Enua

This component is the principal focus of the SRIC programme, and meets the priority of Pa Enua stakeholders for practical interventions that will result in tangible reductions in the vulnerabilities of islands and communities. The DRR and CCA measures will be supported by the strengthened enabling environment at national level (Component 1) and will utilise the enhanced capacity for DRR and CCA in the Pa Enua, including at community, enterprise and individual levels (Component 2). Component 3 is the means by which the NAP for DRM and CCA will be implemented at island level, enterprise and community levels.

The measures will be planned and implemented in the framework of the integrated island- and community-level DRR and CCA action plans and the island strategic development plans, bringing together ongoing efforts to enhance land use, water supply and land management practices, through area- and ecosystem-based adaptation and disaster risk reduction approaches to manage natural resources in a coherent way.

The selection and coordination of island-level activities for project formulation and implementation processes will follow usual Cook Islands' procedures. Determining village and island development priorities will be carried out through a participatory approach involving representatives of the national government, local government, traditional chiefs and the community at large, leading to the integrated island- and community-level DRR and CCA action plans established under Output 2.1. Development priorities are determined at grassroots levels and linked and aligned to national development aspirations. Coordination of development activities is undertaken at two levels. Firstly, there is the coordination from central government through the identification of a lead local agency/ies who work in collaboration with the Island Councils, administrations and the SRIC Focal Points. Secondly, the Island Councils (comprising local government elected members, traditional chiefs and the members of parliament for each island/community) are key coordination agents on the islands. Monitoring will be undertaken via the public service monitoring frameworks and through dialogue between lead agency/ies and the island councils.

Community-based CCA and DRR measures will be implemented in relation to crop production, coastal protection, fisheries, tourism, and health and water resources

management. These measures will have been identified and prioritised during implementation of Component 2, as part of preparing integrated island- and community-level DRR and CCA action plans consistent with the island strategic development plans.

To support the above sectoral interventions throughout the islands, technical officers under different ministries and departments providing advisory services to communities in the islands will also be trained in climate-risk assessment techniques and the use sector-tailored climate information provided by the Meteorological Service, in order to support decision-making processes in agriculture, water supply, coastal management, tourism and health practices. All programme interventions will be supported by the active engagement of Island Councils and Administrations, by the SRIC Focal Points and by communities/stakeholders. Resources will be available to organize and provide training to farmers, fishermen, households, and business owners in order to introduce and maintain the climate-resilient practices. As noted above, the measures will be planned and implemented in the framework of the island-level DRM-CCA Action Plans, to be developed through AF support within Outcome 2 of this programme. This will ensure strong and effective linkages with development processes and other related programmes, to pursue climate change adaptation and disaster risk reduction.

The actions proposed in the following outputs of this programme have been identified and prioritized by the Pa Enua leaders and representatives and government administrations during the proposal preparation consultations, including the Adaptation Planning Week workshops (see Annex 6 for list of stakeholders involved in the proposal formulation consultations). The implementation of the identified actions will be carried out based on site-specific assessments in line with the preparation of the island-level DRM-CCA Action Plans as described in Output 2.1.

Detailed island-level description of activities, along with island characteristics and vulnerabilities are presented in Annex 5 (Island Profiles) and Annex 7 (Water infrastructure projects in 7 islands).

Output 3.1. Small grants to the 11 Pa Enua and their communities, to implement CCA and DRR within the framework of integrated island- and community-level DRR and CCA action plans and the island strategic development plans

Implementation of approved DRR and CCA measures proposed by Island Councils and Administrations, as well as by communities and other players, will be funded using a the same small grants modality described in Component 2. Grants will be provided to approved projects that will enhance the resilience of Pa Enua and their communities and enterprises through CCA and DRR. Grant making for such measures will again be overseen by the same already existing National Steering Committee of the Cook Islands SGP and guided by the same Cook Islands Country Strategy for the SGP. This will be aligned with the integrated climate change adaptation and disaster risk reduction action plans prepared for each of the 11 inhabited Pa Enua (Output 2.1). The SGP activities will also be supported by the SRIC-CC programme manager and by the SRIC Focal Points in each Pa Enua.

Output 3.2. Climate-resilient agricultural and fisheries practices implemented in at least 5 Pa Enua, including Manihiki, Aitutaki, Mangaia, Atiu, and Mauke

A set of actions will address the complete cycle of food production, including the supply of crop planting materials through the establishment of nurseries, introduction of enhanced farming and crop cultivation techniques (like organic farming

techniques, soil and water conservation measures), as well as improved post-harvest (processing and storage) techniques, in order to enhance food security under changing climatic conditions. The introduction of climate-resilient crop varieties and related farming techniques will also contribute to the reintroduction of culturally significant varieties affected by past extreme climatic events, and to the diversification of crops and related food products. Climate resilient crop production techniques will be promoted through integrated land-use planning processes within the island level DRM-CCA action plans to be developed in Output 2.1. Climate-sensitive agricultural practices will be supported through enhanced and sector-tailored Climate Early Warning System developed under Output 1.3. Systematic training will be provided to the extended families and farmers owning customary land plots, through the Ministry of Agriculture, and with the support of regional organizations, such as SPC (through its Pacific Crops and Trees Programme).

Specific actions, as identified by Pa Enua representatives and government administrations during consultations, and in the JNAP for DRR and CCA, will include:

- Improvements to rain fed agriculture systems, such as installing irrigation systems for taro patches;
- Reintroduction and repatriation of culturally significant crop varieties, especially taro, that were significantly damaged or lost during past cyclones, and plant traditional famine foods e.g. puraka, ti;
- Establishing community nurseries and introducing seedling propagation techniques for the sustainable supply of climate-resilient crops;
- Improving fish storage methods;
- Undertaking clam restocking initiatives;
- Provision of nutritional supplements to improve food security;
- Eradication of wild animals (e.g. feral pigs);
- Undertaking coconut replanting programmes;
- Encouraging subsistence home gardening using composting and mulching (e.g. crushed pearl shell);
- Use of agro-meteorological information and land-use planning techniques and tools, to plan type, location, and timing of crops adjusted to changing climate conditions, and maximize productivity; and
- Households and small businesses undertake processing of crops (including value added products and island specialties like coconut, dried and preserved fruits), improvement of food storage, encourage the stocking of long lasting food products to buffer food supply shortages caused by climate-related disturbances.

Output 3.3. Water capture, storage and groundwater management capacities are enhanced in at least 7 islands, including Pukapuka, Nassau, Mitiaro, Palmerston, Aitutaki, Atiu, Mangaia and Rarotonga, through community-based actions and infrastructure climate-proofing projects

Activities will be carried out through integrated water-management approaches dealing with main sources and components of water supply in the Pa Enua (rainwater catchment and storage, and groundwater), supported by demand management and awareness raising actions, as well as the application of regulatory instruments.

Specific community-based actions, as identified by Pa Enua representatives and government administrations during the consultations, and in the JNAP for DRR and CCA, will include:

- Additional rainwater harvesting, and storage tank capacity to capture water from big community buildings (churches, halls, and administration buildings);
- Purchase water truck or truck with multiple use, including removable water tank;
- Clear waterways up stream to improve water flow;
- Use suitable rust-resistant and solar water pumps to distribute water between households;
- Improve on-going maintenance of community water tanks;
- Increase water storage capacity for households (water tanks, gutters and tubes);
- Where applicable, install a water gallery on freshwater lens, to pump it to individual household tanks or filling stations, as alternative water supply;
- Use of brackish/seawater and water recycling when appropriate for improved water efficiency;
- Establish simple monitoring devices fitted to public galleries and main water tank supplies, to monitor use of public water supplies; and
- Introduce community conservation activities of boreholes, springs and water stream banks and establish ra'ui in water catchment, where appropriate.

Aligned with the above community-based actions identified by Pa Enua stakeholders, the programme proposes to implement seven specific infrastructure projects designed to enhance water security in the face of current and projected climate change impacts. These projects have been identified by the National Infrastructure Committee, based on requests made by Island Councils and Administrations considering their infrastructure development and upgrading needs across all sectors. The following water sector adaptation projects have been proposed as priority infrastructure interventions to enhance resilience to climate change in Rarotonga and the Pa Enua:

- Pukapuka Water Gallery Improvement;
- Aitutaki Water Tanks;
- Tamarua Water Pipeline Improvement
- Atiu Emergency Water Storage;
- Atiu Water Tanks;
- Palmerston Water Tanks Upgrade; and
- Ruaau/Akaoa Village Water Upgrade.

Their implementation will be facilitated by the enhanced capacity for climate risk management at both national (Component 1) and island (Component 2) levels.

Further information on the seven infrastructure climate-proofing projects is provided in Annex 7. This includes the name of the project, the name of island, project location, background and rationale, project objectives, description of works, estimated costs, intended beneficiaries, land requirements, adaptation considerations, project preparation works, project implementation readiness, project sustainability, participation of project beneficiaries and a risk assessment.

Output 3.4. Coastal protection enhanced in at least 3 Pa Enua, including, Rakahanga, Aitutaki, and Palmerston

Proposed coastal protection activities designed to manage current and anticipated climate change risks will aim at safeguarding vital community assets. Emphasis will be in implementing soft adaptation techniques, such as vegetation planting to protect coastal land from erosion and provide windbreaks. Adaptation actions will be supported through the application of local regulatory measures and community awareness programmes.

Specific actions, as identified by Pa Enua representatives and government administrations during the consultations, and in the JNAP for DRR and CCA, will include:

- Conserve existing coastal trees and vegetation;
- Additional planting of vegetation effective for shoreline protection;
- Plant windbreaks using strong trees (tamarind, ironwood, chestnut, coconut) and implement regular pruning, trimming and coastal vegetation maintenance, especially before the cyclone season.
- Install sand trap technologies that have proven to be effective in other small island situations;
- Implement measures to reduce sand mining, including alternative sources of sand and of livelihoods;
- Upgrade seawalls in harbor access areas and, emergency shelters to ensure they are capable of withstanding stronger storm surges and category five cyclones;

Output 3.5. Resilience of tourism enterprises to climate change enhanced in at least 3 Pa Enua, including Manihiki, Aitutaki, and Atiu

Tourism Cook Islands has prepared a new Tourism Destination Development Strategy. It recognises the imperative that the Pa Enua leverage their natural assets (i.e. pristine, natural environment with an abundance of flora, fauna and sea life as well as local culture), and that tourism will stimulate agriculture, fisheries, construction, arts, craft and cultural development as well as contributions to community organisations such as the Church and the development of public infrastructure (e.g. power, water, sewage). It is recognized that the natural assets Pa Enua communities rely on for tourism activities are high vulnerable to direct and indirect impacts of climate change.

While the actions proposed in other outputs of this outcome will be important to enhance resilience of community assets vital also for tourism purposes, a set of complementary and tourism-specific actions have been identified by Pa Enua representatives and government administrations in the consultations and in the JNAP for DRR and CCA:

- Water conservation awareness programme for tourists;
- Increase the volumes and varieties of fresh local organic produce available (linked to Output 3.2); and
- Reflect climate change considerations when upgrading of public facilities such as visitor information centres, markets and public conveniences.

Output 3.6. Health support and vector-borne disease control techniques introduced in at least 5 Pa Enua to address climate-induced health risks, including Pukapuka, Mangaia, Mauke, Mitiaro and Palmerston

Health support activities will be addressed in an integrated way, combining enhanced prevention, control and response measures, supplemented by enhanced water safety and food security measures closely linked to other outputs in Components 2 and 3, above.

Specific actions, as identified by Pa Enua representatives and government administrations in the consultations and in the JNAP for DRR and CCA, will include:

- Expand the use of vector-borne disease control techniques and vector control (fly

reduction before mosquito reduction), with focus on prevention activities through health education and awareness;
- Strengthen community cleanup programmes (tutaka) to control areas of stagnant water;
- Encourage balanced nutrition and food storage (linked with Output 3.2);
- Encourage increased drinking of fluids amongst local population in order to avoid dehydration, including the use of traditional sources of fluid, such as coconut (linked with Output 3.2;
- Increased response by health staff to diagnose and treat climate-related illnesses; and
- Modify cultural and behavioural practices in order to reduce stress in hot weather, and to counteract the health effects of poor water quality, including filtration and boiling of water at critical times when there is poor water quality.

Component 4. Climate change adaptation knowledge management

Outcome 4. Lessons learned and best practices improve the effectiveness of initiatives to enhance the resilience of Pa Enua and other vulnerable communities

Activities in this component will focus on codifying lessons learned in the form of case studies, photo stories, short participatory videos, posters (in local languages) by communities and the project team. A programme communication strategy and plan will be established and implemented to disseminate the experience and knowledge generated in each island, to other communities, civil society and policy makers in government within the country, regionally, and globally through appropriate mechanisms for sharing information such as the Adaptation Learning Mechanism (ALM) and national and local media, the National Environment Forum (biannual), and government websites and global platforms. Activities such as national workshops and exchange site visits will also be undertaken to ensure that communities/ stakeholders actively participate in a Pacific knowledge platform/ ALM to interact with peers and policymakers on a range of relevant topics including formulating and implementing effective adaptation policies, setting up planning processes for climate change risk management, and tracking and documenting vulnerability reduction. It is expected that the project will be a source of vital information on climate change adaptation in a user-friendly way to all relevant local communities, sector stakeholders, and authorities.

The programme will build on past successful awareness-raising, media and school activities undertaken by the government, and will support their continuation and enhancement. School programmes and curricula and community awareness programmes will incorporate climate change issues; while professional development programmes (training of teachers) will be carried out, based on the adaptation and disaster risk reduction experience generated through the programme.

The activities will capture, analyse and disseminate programme experience at the national and regional levels in a systematic way, from early stages of the programme from the assessment, adaptation planning, implementation, monitoring phases, as well as throughout the policy mainstreaming processes. A range of knowledge management products will be developed, tailored to different user groups and disseminated through specific channels and means, including local schools, and supported by a programme communication action plan. It is expected that integrated knowledge management activities will significantly contribute to the replicability and sustainability of the programme results, reaching out to broad layers of society and to different generations.

B. Economic, social and environmental benefits

Annex 5 presents a summary profile for the 11 inhabited Pa Enua that are the focus of the adaptation interventions under SRIC. For each island information is provided on the resident population, gender, number of dwellings, distance to the capital island of Rarotonga, land and lagoon areas and use, length of the barrier or fringing reef, issues and vulnerabilities related to the key development sectors, and the focus of SRIC interventions. Besides this, Annex 7 specifies range of beneficiaries for the main water-infrastructure-related projects to be carried out in 7 islands.

It is anticipated that the programme will deliver livelihood benefits, resilience to the effects of severe events (droughts, cyclones) that are increasing in risk due to climate change, and create an enabling environment for planning and adaptation to longer term creeping impacts of climate change. The programme aims to directly involve and benefit over 1600 households and 100 public officers engaged in sustainable development of the 11 inhabited Pa Enua. Given that the programme will develop integrated island- and community-level DRM-CCA Action Plans, communities will be intimately involved and will benefit from awareness raising and training activities, through participatory consultation processes engaging community governing and social institutions, such as village councils, church, youth, or women's groups, through gender-aware processes. The communication and awareness raising activities will engage local and national media, and will also target the primary and secondary schools in the island communities, reaching out to different generations of the country.

The programme is expected to deliver a range of benefits through the sectoral interventions and outputs under Outcome 3, as specified in the Strategic Result Framework:

- Water storage capacity is increased by at least 14 M L in affected communities as a result of the water infrastructure adaptation projects implemented in at least 7 islands (Aitutaki, Atiu, Mangaia, Mitiaro, Palmerston, Pukapuka and Nassau and Rarotonga)
- Climate resilient shoreline protection measures are introduced on at least 20 Km of coastline in at least 3 islands (Aitutaki, Palmerston and Rakahanga)
- At least 750 households have increased capacity in applying climate resilient agriculture and fisheries practices in at least 5 islands (Aitutaki, Atiu, Manihiki, Mangaia and Mauke)
- At least 400 households have access to enhanced health services and practices in at least 5 islands (Mangaia, Mauke, Mitiaro, Palmerston and Pukapuka)
- At least 50 local tourism enterprises applying climate resilient adaptation techniques in at least 3 islands (Aitutaki, Atiu and Manihiki)

Security of livelihoods at the community level will be supported by reducing vulnerability of households and businesses to droughts and cyclones, water scarcity, pests and disease, coastal erosion, land loss, and other climate-induced problems which, without this programme, will continue to adversely affect the populations of the islands. The production climate-resilient crops, enhanced food processing and storage techniques coupled with realization of proper business strategies at all levels will create buffers to endure extreme situations and conditions, reducing dependence on imported food. Through enhancing food and water security, nutrition and related

health conditions are expected to improve as well. Linkages will be created with water management that is used for both household and agricultural production purposes to regulate and ensure sustainable supply of water resources.
The policy changes introduced in sectoral plans and capacity building components of the programme will be designed in a way to create an enabling environment that will secure the long-term sustainability of the adaptation measures to be introduced by the programme in the different islands. The national capacity in the provision of climate information services, technical capacity of line departments and their extension/advisory services will be enhanced to provide support to communities in their on-the-ground adaptation measures in the long run. Linkages with other policy processes and related initiatives and projects will ensure an effective maintenance and replication of the adaptation techniques introduced to support livelihood activities of villagers.

In summary, the expected main benefits of the programme are increased resilience to damage from climate change-induced extreme events (including reduction of disease and fatality rates associated with such events), protection of vital community assets (both natural and man-made), enhanced food and livelihood security, and social benefits (enhanced awareness of climate change, empowered communities and public institutions through the participatory planning and implementation process, including the involvement of women and youth), and nutrition benefits (quality and consistency of food supply).

The programme is expected to deliver the following environmental benefits, among others: enhanced soil fertility, improved coastal zone stability, reduction of pest/disease risks to crops and humans, and conservation of coastal, inland and reef ecosystems. The programme result framework quantifies the socio-economic and environmental benefits, to the extent possible.

Gender Differentiated Benefits. Experience from a number of Pacific island countries, and elsewhere, show that women, and their families and communities, are undergoing increasing hardships in their daily lives as a result of climate change impacts on agriculture, land availability, water resources, fishing, and other sectors. Climate change and associated natural disasters, such as floods, droughts, cyclones and storms, affect women differently from men, and often more severely. This is largely because men and women are bound by distinct socio-economic roles and responsibilities that give rise to differences in both vulnerability and the ability to cope with these consequences of climate change, including disasters. As a result, vulnerable groups – especially poor women – are likely to be faced with problems such as food insecurity, loss of livelihood, hardships due to environmental degradation that lead to displacement and a host of other potentially devastating economic and social consequences.

Gender perspectives on climate change, in terms of agriculture, fisheries, food and water security and livelihoods, have been considered in the design of SRIC, and will be considered further in its implementation. Understanding how division of labour and differences in the social and economic status of men and women, affect their vulnerability to climate change is improving actions taken to reduce this vulnerability and any unintended gender biases in measures to increase community resilience.

Gender-aware, participatory processes will be used in the preparation of the integrated island- and community-level DRM-CCA Action Plans. All members of the communities, including vulnerable, disadvantaged and minority groups, will be intimately involved and will benefit from awareness-raising and training activities, through participatory consultation processes engaging community governing and

social institutions, such as village councils, church, youth, and women's groups. Implementation of specific activities will pay particular attention to identifying and minimizing the gender-differentiated consequences of climate change, including those related to extreme events and disasters. Internationally recognized principles of gender equity will be applied, through the use of gender analysis tools during implementation of the programme and its individual activities. The participatory community-based consultation processes will ensure that specific interventions are accepted and owned by communities, are gender sensitive and equitable, and are clearly understood outputs or targets are communicated.

Every effort will be made to ensure that women were adequately represented in both individual and general meetings with stakeholders, including meeting with women's organizations. SRIC includes specific activities to ensure that the outcomes will provide equitable benefits for women, men, girls and boys. A key aspect of the work programme is assessing and integrating gender considerations and promotion of women's participation in the Island Climate Change Community Teams and in implementation of gender-sensitive CCA and DRR measures.

C. Cost effectiveness and sustainability of the proposed programme

An urgent priority in all islands is the climate-proofing of critical access, water supplies, coastal protection, disaster response facilities (shelters) and other assets on which residents' lives depend. Due to the remoteness of many communities, climate-proofing of essential community infrastructure and services will be investment-intensive and will serve relatively small populations; but the alternative (leave facilities in a degraded, sub-standard condition and do nothing) is to witness the possible demise of some of the communities and immense hardships suffered by individual members of the population.

The programme will draw on experiences of past and ongoing initiatives; examples are the climate-proofing of Mangaia harbour now undertaken by PACC, using climate change finance to complement current harbour repair work to higher standards. Similar approach and assessments will be used in the programme, for example for the case of strengthening cyclone protection shelters which require additional upgrading, to withstand at least category 4 cyclones (i.e. stronger than the original designs). The climate resilient crop production techniques and associated crop processing and storage practices to be introduced by the programme to island communities will support reducing the decency on imported food, which is a costly and for various communities unaffordable alternative solution to counteract food supply shortages, caused by climate related hazards and disturbances.

Alternative project approaches have been considered, but deemed less cost-effective and beneficial in enhancing resilience to climate change, including climate-related disasters than is the proposed course of action. The programme could have focussed on implementing either DRR or CCA measures, rather than taking a fully integrated approach, consistent with the newly prepared NAP for DRR and CCA. Had this approach been taken there would have been a high risk of DRR interventions not accommodating increased risk levels due to climate change. On the other hand, with a exclusive focus on CAA, there is a high risk of benefits from such interventions being cancelled out by an extreme event, such as a cyclone or drought.

The programme could have concentrated activities in the capital island (Rarotonga) rather than in the Pa Enua. However, there are already several projects underway, or planned, that are designed to enhance the resilience of Rarotonga to climate change. It would have been extremely difficult to identify DRR and CCA interventions that

could be implemented without a high risk of duplication and redundancy. Alternatively, the programme could have focussed on undertaking DRR and CCA interventions in only a subset of the Pa Enua. Assessments and stakeholder consultations highlight the high vulnerability of all 11 inhabited Pa Enua. As a result, all Pa Enua will, especially through the strengthening and scaling up of the existing SGP, have the opportunity to build capacity for CCA and DRR and undertake measures to reduce climate-related risks. However, the sector-specific interventions will be undertaken in Pa Enua where studies have shown an urgent need to undertake resilience building initiatives, or where the Government's Infrastructure Committee has identified a priority for infrastructure investments that will enhance the climate resilience of a specific Pa Enua.

Another alternative was for the programme to have focussed solely on implementing DRR or CCA measures on the ground, without investing in the strengthening of the enabling environment at national level or in building capacity at Pa Enua and community levels. The National Capacity Self Assessment and other studies have shown that low adaptive capacity is a major barrier to successful implementation of CCA and DRR initiatives. Only when capacity is built can there be reasonable confidence that the benefits of CCA and DRR interventions can be sustained, scaled up and replicated. Hence the SRIC proposal has three major components, rather than simply focussing on implementing on-the-ground measures.

The proposed interventions under this programme have been outlined in close collaboration with national entities of the Cook Islands, coordinated by NES and the NCCCT, and are based on key national and sectoral policies, project documents and technical studies and assessments (such as the SNC, Infrastructure Sector Forum Report 2010, Climate Change Technology Assessment, island level vulnerability and adaptation assessments and plans, PACC, IWRM, and the UNDP-supported CCSDP). Given remoteness and lack of access, especially in the Northern Group, operational costs are high in Cook Islands and inter-island coordination of activities is difficult. In the past, remoteness has been serious impediment to carrying out development work in the islands, as to various islands (especially in the Northern Group) there are no regular shipping service or flights, and the only access is by (expensive) charter vessel. The elevated operational costs have been considered in the definition of the different budget items of the programme.

The cost of Component 2, and especially its high cost relative to Component 1, can be explained by three major factors. While both components are designed to enhance adaptive and related capacities, Component 1 will be implemented on the capital island of Rarotonga, while Component 2 involves activities in the 11 inhabited Pa Enua. Adaptive capacity in Rarotonga is already high when considered relative to the capacities of the Pa Enua. Thus more and sustained effort is required in the latter. Moreover, as Annex 5 shows, some of the Pa Enua are located over 1300 km from Rarotonga. Travel to these islands is both costly and time consuming. Thus the larger budget for Component 2 reflects the relative level of effort required, the larger number of islands involved, and the much higher transportation and logistical costs.

The cost effectiveness of Component 2 can be demonstrated by the extent to which it will address the barriers it will address through capacity building. Table 10 lists the barriers identified in Part I and shows the importance of the barrier at national and Pa Enua levels. This corresponds to the level of effort between Components 1 and 2. As shown in the table, much of the capacity building effort is focused on the Pa Enua, where the barriers are greater. Thus give the level of effort, along with the higher implementation costs, it is clear that Component 2 will be at least as cost effective as Component 1, if not considerably more so.

Table 10. Relative importance of barriers to adaptation at national and Pa Enua levels, and the relative effort involved in Components 1 and 2 (H represents high barrier and high effort in the component; HH represents very high barrier and very high effort)

Barrier	National Component 1	Pa Enua Component 2
Absence of information and capacity to assess climate risks and implement climate change adaptation measures	**H**	**HH**
Lack of comprehensive vulnerability and adaptation assessments	**H**	**HH**
National response to climate change not well integrated into development processes - lack of integration of climate change risk and resilience into island level and sectoral development processes	**H**	**HH**
The close link between the financing of climate change risk management related activities and budget constraints, requiring continued international assistance at the national level, with national participation	**HH**	**H**
Lack of enforcement of climate policy and regulations, to facilitate and promote behavioural adjustments towards risk management practices	**H**	**HH**
Land tenure issues impede sustainable development	**H**	**HH**
Limited technical resources and human capacities to provide tailored information on climate change trends and associated risks, as well as monitoring of climate impacts on the natural resource base	**H**	**HH**
Lack of systematic capturing and disseminating cross-sectoral adaptation experience	**H**	**HH**

Considering the particular national and sub-national circumstances described above, at the operational level, overall cost effectiveness of the programme concept is reflected through the following considerations:

- Throughout the programme, programme resources will be aligned with the financing and delivery of programme outputs that have competitive procurement components to ensure best value for money. In this regard, the programme will apply best practices identified by other, ongoing climate change and development adaptation projects in the country (e.g. PACC, IWRM);
- This programme will utilize existing government structures and processes for implementation in the main and outer islands (such as Island Councils, extension services), which is essential considering the remoteness and communication difficulties with various islands. By building on existing government and institutional structures, the programme will also harnessing in-kind support and contributions from offices at the national and island levels (office space, staff time, communications, etc.);
- The programme builds on existing baseline programmes of line agencies, and harness existing delivery mechanisms, where appropriate;

- The bulk of programme financing will be directed to community- and island-level activities in the Pa Enua and connect directly to local opportunities for the procurement of goods and services;
- The integrated approach of the programme is designed to address a broad set of CCA needs and DRR opportunities for island communities, across a variety of interrelated sectors. As a result, resources will be used in more efficient ways to cover operational costs in a coordinated fashion (e.g. organizing joint island visits, trainings and consultations in a coordinated way between different departments and organizations involved); and
- Operational costs will be shared also as much as possible through coordinating with other projects on-going in the islands.

The Government of the Cook Islands has established a Climate Change Coordination Unit within the Office of the Prime Minster. It is co-located with the longer established Emergency Management Cook Islands (EMCI), which is responsible for all aspects of disaster risk management, including disaster risk reduction. This new initiative is tangible evidence of the Government's commitment to deal with climate change at the national level, on an on-going basis. The CCCU is responsible for coordinating climate change activities on a national level as well as overseeing policies related to climate change. The new NAP for DRM and CCA also brings climate change adaptation and disaster risk management considerations together as an integral part of development planning. Under this new arrangement, climate change activities will be directed and coordinated by an influential arm of Government. The Office of the Prime Minister is responsible for preparing, implementing and monitoring the overall development plan of the Cook Islands, namely the National Sustainable Development Plan. Climate change and disaster risk reduction considerations are highlighted in the Plan. Sector plans align with the National Sustainable Development Plan as it guides the sectors on how they should address the country's development priorities.

Communities and islands that have not been studied in terms of disaster risks, vulnerabilities and adaptation capacities and needs will be assessed and baseline data collected to guide future activities. Risk, vulnerability and adaptation assessments will be updated for those islands/communities that have already been assessed, but for which information is now considered out of date. These studies will do much to ensure the sustainability of the programme as they will establish a sound knowledge base for monitoring and evaluating the success, or otherwise, of the interventions. This will allow for a high level of adaptive management within the programme.

The programme has a strong capacity building and training component, designed to increase the adaptive capacity of island administrations, households and enterprises to promote effectiveness and sustainability of communities in the Pa Enua. This includes undertaking interventions that result in individuals increasing their awareness and making better informed decisions.

In regards to climate early warning systems, the training to be received by Meteorological Service staff, and the resulting increase in capacity, will result in increases access to targeted information and sound advice for key players in vulnerable sectors such as health, agriculture and tourism. This will support the integration of climate change and disaster risk management into relevant sector plans and activities.

The sustainability and maintenance of early warning system such as that proposed under the SRIC is a matter of concern, and every effort needs to be made to ensure

that the system is cost effective and fully functional over its life time. This is another reason why the SRIC places significant emphasis on training and institutional strengthening at national level (Component 1). In addition, emphasis in Component 2 is placed on ensuring that those in the Pa Enua who are responsible for providing information inputs to the early warning system, as well as end users in the Pa Enua, are all empowered through training and other initiatives to ensure the successful operation and application of the early warning system.

The programme will integrate climate change risk considerations and adaptation responses into plans from the community level up to the national level. As most of the activities will be implemented at community and island levels, there will be considerable capacity building in the form of training, education and awareness raising activities. Capacity building of government officers, the private sector as well as community members will ensure that communities become stronger and can cope. This will help ensure greater sustainability of the programme outcomes, especially at Pa Enua level. Furthermore, through the integration of climate change and disaster risk management considerations into Ministry of Education activities for schools, pupils will become more aware of their environment and carry this forward in their adult lives.

Knowledge management is an integral part of this programme. Awareness materials produced during this programme will be useful outside the programme, including highlighting lessons learnt and good practices. Media is a very important sector that has power in providing information to the masses. Through the implementation of a communications plan, the programme will have a major impact into the future, further helping to ensure its sustainability.

As part of the programme sustainability strategy, AF resources will be used to ensure that infrastructure works are climate proofed by building to standards informed by current and anticipated risks, so that they can withstand higher intensity and frequency of cyclones and other extreme events. This approach will reduce future cumulative costs for maintenance and repair.

The government will ensure the sustainability of the project results by integrating climate resilience and adaptation-related activities in the work programming and budgetary planning processes of the relevant sectors, as part of the climate change mainstreaming aims under Component 1, supported through capacity building of policy makers and planners on climate risk assessments and adaptation planning processes. The sustained adaptation efforts at the island level will be pursued through the local level institutional strengthening and awareness raising activities in the process of developing the island- and community-level DRM-CCA Action Plans. These Action Plans will serve as vehicles for replication of the adaptation measures and experience delivered in the Pa Enua, as well as for further resource mobilization to secure additional funds in the future. Measures to enhance the sustainability of the water-infrastructure projects are detailed in Annex 7 of the proposal.

Over the past three years the Government of the Cook Islands has undertaken various initiatives to strengthen its delivery of service, particularly in the infrastructure sector. These improvements are being implemented in a phased approach, including a review of the infrastructure sector. An asset management system for all public assets is being implemented. Complimenting this will be the implementation of the medium term budgeting process. These initiatives will allow for more robust planning and anticipation of use of both financial and human resources in the medium to long term to ensure that asset maintenance is not compromised. Additionally, the past three years has seen a significant improvement in the linkages

between planning and budgeting and alignment of development assistance to the country's development priorities. The Government has completed a review of the institutional arrangements for implementation of climate change and disaster risk management activities with the view of strengthening processes, coordination mechanisms and delivery of all activities relating to climate change. The recommendations arising from this review are now being implemented, including establishing the CCCU within the Office of the Prime Minister. The changes in the institutional arrangements for climate change and DRM will improve coordination, implementation and monitoring significantly.

The programme integrates a specific output on knowledge management (Output 4) as key part of the sustainability and replicability strategy of the initiative, through systematically documenting and disseminating good practices, linking with school and other educational programmes, in order to secure broad dissemination of project results and the transmission of know-how and experience to next generations of community practitioners, government planners and policy makers.

To ensure effective coordination of the programme with related initiatives, existing coordination and institutional mechanisms will be harnessed at the national and island level, such as the National Climate Change Country Team, the Office of the Prime Minister and its Central Policy and Planning Division. The SRIC programme will also coordinate with the Ministry of Finance and Economic Management, including its Aid Management and Statistics Divisions. The former Division has a development assistance coordination function. Island Councils and Island Climate Change Community Teams (where in place) will also be used to improve coordination and sustainability of the outcomes.

Delivery of AF resources will be through existing national and sub-national mechanisms, and in a manner that will enable cost-effective reporting on expenditures to the Adaptation Fund Board.

D. Consistency with national sustainable development strategies

The programme directly addresses the climate risk related priorities identified in the Cook Islands' Initial and Second National Communications, the Disaster Risk Management National Action Plan and the new NAP for DRM and CCA. All are fully aligned with the National Sustainable Development Plan (NSDP - Te Kaveinga Nui) 2007–2010. The SRIC programme represents a means to roll out the NAP for DRM and CCA at the island level, aligned with the Island Strategic Development Plans and related assessments. As detailed in the section on barriers, a thorough overview of existing relevant national and sectoral policies and instruments (agriculture, land use, water resources) and corporate plans and related technical studies (including the INC and SNC vulnerability and adaptation assessment) have been analysed to assess current gaps and needs in capacities in order to outline the programme objectives and outcomes to best respond to national and island-level priorities.

Building on existing government institutions at the different levels, and working closely with NES and the NCCCT, the programme will foster inter-ministerial and cross-sectoral coordination on CCA and DRM actions, in line with aim of the new NAP for DRM and CCA. Cross-sectoral climate change coordination mechanisms will be created and strengthened for climate change resiliency in all islands, with lessons learned in each island applied nation-wide and globally.

The proposed programme will contribute particularly to the following specific goals and strategies of key national development, policy and planning frameworks:

National Sustainable Development Plan 2007 – 2010:

- Strategic Goal 1: Equal opportunities for education, health and other social services towards maintaining an inclusive, vibrant, resilient and productive society in harmony with our culture.
- Strategic Goal 4: Sustainable use and management of our environment and natural resources
- Strategic Goal 5: A strong basic infrastructure base to support national development
- Strategic Goal 6: A safe, secure and resilient community
- Strategic Goal 8: Strengthened National Coordination and Institutional Support Systems for Development Planning, Evaluation and Monitoring

The next NSDP 2011-2015, currently under formulation, will have climate change mainstreamed and feature more prominently, and will also draw on the policy work to be carry out through the proposed programme.

National Action Plan for Disaster Risk Management

Goal 1 - Good Governance for Mainstreaming Disaster Risk Management at all levels

Strategies:

- Mainstream DRM (including economic, social and environmental disaster risks) into key sectoral policies, legislation, plans and budgeting planning processes
- Strengthen DRM coordination and partnerships between and within Government, civil society and the private sector, at all levels
- Strengthen capacity of Outer Islands Councils and all agencies for DRM

Goal 2 – Strong Knowledge Base for more Effective Disaster Risk Management

Strategies:

- Incorporate traditional knowledge where appropriate in DRM programme
- Strengthen overall information management and specifically information required for DRM and
- information collected from DRM programme

Goal 3 – Effective Preparedness, Response and Recovery

- Strengthen the system of safety shelters and their management for times of disaster

Goal 4 – Maintain Effective Early Warning Systems

Strategies:

- Improve capacity for hazard forecasting and information dissemination
- Improve understanding of early warning systems including appropriate actions to take for different kinds of hazards

Goal 5 – Analysis and Assessment of Hazards to Reduce Underlying Risk

Strategies:

- Strengthen and improve disaster risk reduction measures and procedures in key development sectors such as Tourism and Agriculture
- Improve technical capacity to conduct disaster risk and vulnerability assessments
- Improve DRM management and decision making based on technical information from hazard mapping and vulnerability and risk assessments, including consideration of Climate Change risks

Second National Communications (draft)
The SRIC programme corresponds to the climate change vulnerabilities and impacts, as well as the future adaptation programmes and programmes identified in sections 5.2 Vulnerability and Impacts and 5.3 Adaptation for the key sectors (Coastal infrastructure, Marine Resources / Fisheries, Agriculture and food security Biodiversity, Water, Human Health).

E. Meeting relevant national technical standards

The programme will be consistent with all national social and environmental safeguards and standards. As a UNDP supported project, all programme activities must be in keeping with national and UN standards. The Cook Islands' environmental impact assessment (EIA) requirements will be followed and complied with in all relevant interventions, especially considering the water-infrastructure related adaptation projects described in Annex 7. These processes will be initiated at early stages as integral part of site-specific planning and implementation processes, so that any major difficulties that might result in delays and adversely affect project implementation will be avoided. The process of EIAs being required for specific activities has been taken into account in defining the duration of project implementation and associated costs. Many of the activities planned for this programme will be small-scale and undertaken at the local level. As a result, they will not be subject to a site-based environmental impacts assessment (EIA) process. But even in this case implementing groups will still be encouraged to plan and undertake their activities in ways that minimise any adverse environmental, social and related consequences.

The steps in the EIA process, such as scoping, identification of risks and mitigation measures and public consultations, will provide added opportunity to integrate and raise awareness on climate change considerations and will provide an important learning opportunity in terms of the use of EIA to not only avoid and reduce environmental impacts, but also as a tool for facilitating environmentally sound and sustainable CCA and DRR. Lessons learnt will be documented and will help the Government to improve environmental assessment in the future.

The programme will be consistent with all relevant national social and environmental acts and standards, such as:

- Environment Act 2003
- Disaster Risk Management Act 2007
- Ministry of Agriculture Act 1978
- Land Use Act 1969
- Pesticides Act 1987
- Biosecurity Act 2008
- Water Bill
- Building Control and Standards Act 1991 and Building Control and Standards Regulations 1991
- Development Investment Act 1995-96
- Cultural and Historical Places Act 1994-95
- Marine Insurance Act 1908
- Marine Resources Act 2005
- Meteorological Services Act 1995-96
- Ministry of Health Act 1995-96
- Ministry of Labour & Commerce Act 1973-74/ Industrial & Labour Ordinance 1964
- Ministry of Marine Resources Act 1984

There is a Land Use Act dating back to 1969. This Act is viewed as antiquated and requires review. There is currently a Land Use Policy in draft form which will be presented to the new government with the hope of influencing new legislation and regulations. All land is under customary ownership and the Land Court (except for islands Mangaia, Pukapuka, Mitiaro) and Leases Approval Committee are the sole adjudicators for administering the current complex land tenure system and must take cognizance of the intricate weave of custom law and practice in relation to land on the majority of islands. Much of the lands used for agricultural purposes in the outer islands are owned by large extended families. Therefore, the proposed programme will engage and mobilise these family groups, in order to plan, implement and maintain the climate-resilient agricultural practices in their family plots. Active family members will be empowered through capacity building and technical assistance, with oversight provided by the Island Council along regulations through island-specific by-laws.

The design and implementation of specific activities will pay particular attention to identifying and minimizing the gender-differentiated consequences of climate change, including those related to extreme events and disasters. Internationally recognized principles of gender equity will be applied, through use of gender analysis tools during design stage of the project and individual activities.

Nationally developed and applied tools and guidelines for assessments of vulnerability, and of adaptation and disaster risk reduction options, will be used and refined during the course of the programme. Lessons learned and success factors will be documented for use during project evaluation, and subsequently in other projects. Participatory community-based consultation processes will ensure that specific interventions are accepted and owned by communities and clearly understood outputs or targets are established. Establishment of new automatic and voluntary weather stations will meet the requirements of the Cook Islands Meteorological Service, and exceed the minimum standards of the World Meteorological Organisation.

All programme activities will be subjected to a UNDP appraisal process, which will ensure compliance with national standards and will be further confirmed or revised during project inception.

F. Links with other projects

The programme will be developed and implemented to create synergies with, and undertake complementary actions to, past and ongoing programmes and initiatives, as shown in Table 11.

Table 11: Synergies and Complementarities with the Proposed SRIC Programme

Initiative	**Status, results, limitations**	**Complementarities with the proposed SRIC**
The Pacific Adaptation to Climate Change (PACC) 2009-2011 (UNDP-GEF),	PACC is a regional UNDP-GEF funded programme executed through SPREP, involving 13 PICs. Carried out by Ministry of Infrastructure and Planning (MOIP), programme in the	Lessons learnt in the Mangaia harbour climate-proofing programme (including technical assessments, and climate-proof harbor design and community-engagement) will be applied to similar

Initiative	Status, results, limitations	Complementarities with the proposed SRIC
	Cook Islands is focusing on climate-proofing of the new Mangaia harbor and related policy work (aims at developing an Integrated Coastal Zone Management Policy). In the Cook Islands, PACC is currently functioning only in Mangaia as a demo, in its initial stages. Similar infrastructure climate-proofing is needed, however, throughout the Cook Islands for a range of different types of assets, and is particularly urgent in the Northern Group, with further strengthening the capacity of MOIP.	programmes supported by the SRIC programme in other islands and will be extended to other sectors and types of essential infrastructure, including roads, water supply, irrigation, and sanitation systems. The Ministry of Agriculture, MOIP, and other key agencies are represented on the National Steering Committee (the NCCCT) for these sectors, hence are well suited to incorporate lessons learnt from these programmes into the AF Programme or vice-versa.
Pacific Islands Climate Change Assistance Programme (PICCAP) – 1997-2002 (SPREP); Capacity Building for the Development of Adaptation Measures in Pacific Island Countries (CBDAMPIC) – 2002-2005 (CIDA); Comprehensive Hazard and Risk Management (CHARM) – 1998, SOPAC	The Cook Islands participated in the 10-country PICCAP, a regional programme managed by SPREP but implemented in each of the participating island countries, prior to 2002. PICCAP marked the start of climate change information gathering and dissemination activities in the Cook Islands and lead to the creation of the multi-disciplinary National Climate Change Country Team. Activities carried out under the programme included the implementation of national vulnerability assessments and national greenhouse gas inventory as well as the drafting of the First National Report to the UNFCCC. The Capacity Building for the Development of Adaptation Measures in Pacific Island Countries (CBDAMPIC) was a Canadian funded SPREP executed programme that ran from 2002-2005 with the broad aim of increasing the ability of Pacific Island people to cope with climate	The SRIC programme builds directly on the results of these three past successful programmes, in grounding its work on the results of the First and Second National Communications and the island-specific vulnerability assessments that have been prepared so far. The SRIC programme will apply lessons learned from the assessments carried out under the three programmes and their methodologies, and from those learned from the adaptation pilot programme in Aitutaki.

Initiative	Status, results, limitations	Complementarities with the proposed SRIC
	change. The CBDAMPIC programme was the first programme aimed at action to directly facilitate adaptation to have been piloted in the Pacific region. The Cook Islands pilot programme on the island of Aitutaki addressed the primary community concern of rainwater harvesting for drinking water. CBDAMPIC supported a number of island-specific vulnerability assessments carried out during the life of the programme. The Cook Islands was also included in SOPAC's (CHARM) initiative in 1998 which aimed to provide a consistent approach to risk management across the Pacific region. The approach recognised the isolation factor of the outer islands and the transportation limitations which lead to the small island's vulnerability to disaster risks. The CHARM approach to disaster management supported the shift of focus from recovery and response to preparedness and risk reduction.	
Climate Change Adaptation Programme for the Pacific (CLIMAP) 2004-2005 (ADB)	The Cook Islands was a member of ADB's CLIMAP Regional programme in 2004-2005. The Cook Islands was selected as one of two Pacific island countries for detailed climate change and adaptation case study (the other country was the FSM). This programme aimed to assist Pacific developing member countries to enhance their adaptive capacities and resilience to climate change, climate variability and extreme events. The	Detailed assessments of the effectiveness, costs, and economic impact of adapting to climate change and of 'mainstreaming' climate awareness and adaptation into land use policy, coastal development, and protection of assets from the damaging effects of extreme events was carried out under CLIMAP and the results compiled in a detailed assessment report issued in 2006. The SRIC programme will incorporate these results into the assessment, planning and

Initiative	Status, results, limitations	Complementarities with the proposed SRIC
	programme undertook risk assessment, adaptation planning and policy development and by identifying ways of "climate proofing" infrastructures, community and other development initiatives. In 2004 the CLIMAP programme assisted with the climate proofing of the design of the Avatiu Harbour and the breakwater for the newly developed Western Basin in Rarotonga.	design stages of adaptation and climate-proofing programmes in all islands of the country.
Emergency Management Unit, Cook Islands (EMCI)	Established in 2006 under the Office of the Prime Minister, EMCI conduct auditing and assessment of other departments and Ministries in terms of their preparedness to disaster events. The EMCI is also responsible for coordinating emergency response plans and to a large extent is carried out within the framework of the Cook Islands Disaster Risk Management National Action Plan (DRM-NAP). The EMU is currently conducting public awareness programmes on disaster preparedness using local media. (TV advertisements).	The SRIC programme will partner closely with EMCI in carrying out the carrying out the mandate of the Disaster Risk Management National Action Plan, in the development of early warning systems on the islands, public awareness raising in island communities and at the national level, and dissemination of lesson learned and experience with adaptation throughout the country and overseas.
The Cook Islands Red Cross (CIRC)	The CIRC have been carrying out a "Preparedness for Climate Change Programme" on the outer islands which includes the creation of a plan of activities to prepare for and reduce risks of climate change in communities in the Cook Islands. One part of the preparedness plan, for example, involves the CIRC documenting traditional methods of food preservation which could help people store food	The vulnerability assessments that exist currently are incomplete and somewhat piecemeal. In providing for island-level detailed adaptation plans throughout the islands of the Cook Islands, the SRIC programme will build directly upon the CIRC's continuing work in preparation of vulnerability assessments, adding to those already prepared, and strengthening them in terms of comprehensiveness and rigour, linking with Island

Initiative	Status, results, limitations	Complementarities with the proposed SRIC
	during times of disasters and extreme climatic events. The CIRC is in the process of undertaking Vulnerability and Capacity Community Assessments for each of the outer islands where the assessments have not been completed. Based on these assessments, CIRC aims to carry out community driven programmes, linked to Disaster Preparedness and Risk Reduction, for example emergency road access and emergency water supply.	Councils and Island Strategic Plans.
Food Security for Sustainable Livelihoods Programme (FSSLP)	Cook Islands form part of this FAO regional programme. Currently assessments are being carried out and a detailed programme proposal is expected to be drafted within the next 3 month. The programme is expected to concentrate on the Food Security situation of the Southern islands.	SRIC can build synergies with this programme, by integrating climate risk and resilience considerations, linking with the envisaged island level DRR-CCA-JNAP processes, and address the significance of food security in the northern islands through promotion of food preparation and preservation methodologies. This is very important particularly following natural disasters such as cyclones.
Managing Climate Change Risk in Cook Islands' Vulnerable Communities (ADB-SGA-WWF)	Implemented recently (August 2010) by WWF Cook Islands, supported through ADB's Small Grants Activity, this programme was a pilot in 3 communities (Arutanga-Ureia in Aitutaki, Matavera and Rua'au districts in Rarotonga), carrying out participatory climate risk assessments in order to develop methods and tools. It built upon earlier work by the NES, Red Cross, and employed map-based assessment and planning techniques. While this programme has produced very valuable experience it also identified general capacity needs (especially in GIS-related	The SRIC programme will build on the experiences generated through this programmes, further strengthening methods and capacities for participatory and map-based climate risk assessments and adaptation planning, involving WWF in supporting similar exercises and follow up implementation in other islands and communities.

Initiative	Status, results, limitations	Complementarities with the proposed SRIC
	applications), and has not have funds to actually implement the identified community adaptation priorities and actions.	
Community-centered Sustainable Development Programme	Supported by UNDP, Sustainable Village Development Plans has been developed in Pukapuka and Mitiaro islands, and similar exercises are being planned in Rarotonga. These plans created good momentum for community engagement and participatory processes, and identified community needs and plans in agriculture, water, and coastal issues, but without integrating climate risks, and providing funds for actual implementation.	The SRIC programme will build on these plans, will support their implementation through integrating climate risks.
Food security project-Te One Kura	The project, valued at $3.5 million, is aimed at boosting agriculture production. It is confined to the Southern Group islands of Atiu, Mauke, Mitiaro and Mangaia. Funding is not yet secured.	Depending on the timing of the project being implemented, the SRIC programme will either lay the foundations for the Te One Kura project, or help ensure that Te One Kura outcomes reflect disaster risk reduction and climate change adaptation considerations
NZ Aid Northern Water	It is estimated that 300 homes and 1300 people on the five islands of Pukapuka, Nassau, Penrhyn, Manihiki and Rakahanga will benefit from improved catchment systems (water tanks, guttering, and first flush) with some improved roofing. Community Water tanks will also be renovated across all islands. Homes with *rau* or *kikau* thatched (coconut fronds) roofs will be provided with equivalent water resources from community and purpose built catchments. Water security will also be fostered by supporting awareness	SRIC will build on the lessons learn and good practices from this water project and apply them in upscaling improved water management in the five target islands as well as through replication on the other six Pa Enua. The lessons learned and good practices will also be included in the training and other knowledge management materials that SRIC will produce

Initiative	Status, results, limitations	Complementarities with the proposed SRIC
	programmes in conservation and hygiene. In addition water monitoring improvements are expected to assist local government build knowledge and understanding of water resources. The combination of these activities is expected to mitigate risks related to droughts and assist local government better manage water systems in future. Major renovations to roofs will be considered on a case by case basis	
Disaster Risk Modules, NDMO	Disaster Risk Management training programmes by EMCI, the Cook Islands Red Cross Society and International partners has provided representatives from Government and Private Organisations within the Cook Islands the capability to design and exercise DRM plans and procedures within their organisations. Training courses developed by EMCI include: Emergency Operations Center (EOC); Introduction to Disaster Management (IDM); Initial Disaster Assessment (IDA); and Geographic Information Systems (GIS)	SRIC will build on the lessons learn and good practices from these activities. These will be included in the training and other knowledge management materials SRIC will produce

In addition to the specific details in Table 11 on how SRIC will draw from experiences from other initiatives, and link with them while avoiding duplication, effective coordination with other relevant initiatives will also be ensured through existing project and programme coordination mechanisms, as shown in Table 12.

Table 12: Existing Project and Programme Coordination Mechanisms

Coordination Mechanism	Function
Cabinet	Approves all projects and programme before submission to funding agencies; criteria for approval include aid effectiveness
National Climate Change	Responsible for whole of Government and whole of

Country Team (now includes the DRM NAP Advisory Committee)	country coordination of DRM and CCA
Office of the Prime Minister	Includes the Central Policy and Planning Division, which in turn includes the Climate Change Coordination Unit and Emergency Management Cook Islands – together these have oversight of all DRM and CCA projects and programmes
Ministry of Finance and Economic Management	The Ministry has a development assistance coordination function; it includes the Aid Management and Statistics Divisions – the former is responsible for advising Government on, and ensuring, aid effectiveness
Island Councils and Administrations	These constitute local government in the Cook Islands; for each island they have formal oversight of, and responsibility for, government development and related initiatives at island and community levels, including coordination with NGOs and the private sector
Island Climate Change Community Teams	Provide coordination and oversight of climate change and DRM initiatives at island and community levels
Technical Working Groups	Project and programme based entities that are responsible for implementation as well as coordination with other initiatives

G. Learning and knowledge management

Learning by doing and knowledge management is a crucial component of the proposed programme. The programme will help ensure that Cook Islanders increase their understanding of climate change, including its likely impacts on the Pa Enua, and know about the range of measures to enhance resilience to maintain food and water security, good health and coastal systems, as well as be familiar with the importance of undertaking development and other planning that integrates climate risks.

Recognizing the importance of knowledge management (KM) to enhance impacts and facilitate replication, this initiative integrates various KM related actions. Lessons will be documented by project staff with the support of the Chief Technical Advisor. These will be disseminated through a number of appropriate means to various target audiences and be guided by a project communication strategy. For example: 1) Radio and TV programmes, leaflets and posters will target the public with special attention to audio-visual presentations in DVDs using English and Cook Islands Maori; 2) training modules generated from activity case studies and demonstrations will be used well after the first phase of the programme ends; the target groups will be primary and secondary school children and students undertaking tertiary studies; 3) guidelines and manuals for vulnerability, adaptation and disaster risk reduction assessments, land use planning and other programme-related activities will be made available to field workers, communities and other relevant parties; 4) a programme website will be established, with links targeting development professionals, teachers and school children; and 4) island and national level workshops will be held to facilitate peer-to-peer exchange of knowledge. Web-based platforms such as the Adaptation Learning Mechanism at www.adaptationlearning.net will be used to share information and also promote programme findings within the country. The capturing

and analyzing of experience, success factors, good practice and lessons learnt will be systematically applied throughout the programme cycle, for example from the detailed vulnerability assessment through the adaptation planning and implementation that will underpin the design of the project as articulated in the final project proposal.

The programme will also encourage members of other Pa Enua communities in the Cook Islands to visit the programme's work sites and observe the technologies used. For example, this will be part of the extension services work in the country and will stimulate learning and sharing of practices. Towards the end of the first phase of the programme a national workshop will be convened to review the new knowledge and technologies used, mainstreaming and coordination practices implemented and to develop a strategy for on-going replication and improvement for continuing use in similar future projects in the Cook Islands as well as elsewhere in the Pacific and beyond.

The programme will identify and participate, as relevant and appropriate, in scientific, policy-based and other meetings and networks, which may be of benefit to support the diffusion of lessons learned and good practice.

H. Consultation processes

The programme builds on and serves to strengthen existing institutions and inter-ministerial coordination mechanisms. Consultations during the concept preparatory phase involved relevant national agencies and organizations represented on the NCCCT, among others. These included:

- National Environment Service;
- Office of the Prime Minister, Central Policy and Planning Division;
- Ministry of Infrastructure and Planning, including Water Supply and Energy Divisions;
- Cook Islands Meteorological Service;
- Ministry of Agriculture;
- Ministry of Health;
- Ministry of Education;
- Ministry of Marine Resources;
- Ministry of Foreign Affairs;
- Ministry of Internal Affairs
- Ministry of Finance and Economic Management, including Aid & Statistics Divisions;
- Emergency Management Unit;
- Traditional Leaders (Koutu Nui & House of Ariki);
- Civil society organisations including Red Cross, Environmental NGOs, Climate Action Network, & Tourism Industry and Chamber of Commerce representatives; and
- Island Councils and Administrations.

Many of the above are mandated to represent the interests and concerns of vulnerable community groups targeted in SRIC and were therefore directly involved in the consultations for the proposal formulation. These include the Traditional Leaders (Koutu Nui & House of Ariki), members of Island Councils and Island Administrations, and members of civil society organisations, notably the Red Cross, environmental NGOs, and Climate Action Network. Tourism industry and Chamber of Commerce representatives are also critical to reducing the vulnerability of community

members through private sector initiatives that provide economic opportunities for vulnerable individuals and community groups.

Individuals and organisations that were consulted during preparation of the full proposal are listed in Annex 6. Additional consultations were conducted during the National Adaptation Planning Week that was held in late February, 2011. The Adaptation Planning Week included a full day workshop on preparation of the current proposal. The agenda for this workshop and the list participants in the Adaptation Planning Week are also provided in Annex 6. The National Adaptation Planning Week provided an excellent opportunity for the active participation of representatives of those organisations mandated to represent the interests and concerns of vulnerable community groups targeted in SRIC. Once again these included the Traditional Leaders, members of Island Councils and Island Administrations, and members of civil society organisations, notably the Red Cross, environmental NGOs, and Climate Action Network. Tourism industry and Chamber of Commerce representatives also assisted in identifying how SRIC might best provide economic opportunities for vulnerable individuals and community groups.

Annex 6 also lists the members of the Local Programme Appraisal Committee which reviewed a draft programme proposal on March 11, 2011, as well as members of the National Climate Change Country Team who reviewed and approved the draft proposal on March 27, 2011.

Both the University of the South Pacific (including staff based at the Cook Islands Campus) and relevant research centres in New Zealand and Australia have been included in the SRIC design process. As shown in Figure 5, they will also be involved in the implementation of some of the activities, most notably in the development and operationalization of the climate early warning and information systems.

Given the community-based focus of the programme, a key message arising from the consultations is the need for assessment, planning and implementation of adaptation and disaster risk reduction measures under SRIC to be carried out using participatory processes that engage community-governance structures, such as Island Councils and the Island Climate Change Community Teams (where in place), church groups/networks, and youth and women groups. Those consulted also urged that SRIC implementation give particular attention be given to the role of women, recognizing their critical role in providing food and water supply to their families. The communication and knowledge sharing activities included in SRIC will also help ensure that villagers learn directly from each other, through the good practices analysed and disseminated in conjunction with direct exchange visits, among other means.

While agreements with universities and research centres that will contribute to the realization of project outcomes and outputs will be formalized as per usual standard procurement procedures during the inception phase, institutions have been involved in the programme design consultation processes and the costs of these partnerships (to be formalized during the implementation phase) have already been taken into account in the project budget.

The National Institute of Water & Atmospheric Research (NIWA), has been actively collaborating in a number of climate change adaptation projects with UNDP, and has been engaged also with the Cook Islands Meteorological Service (CIMS). The partnership with NIWA for this programme will be principally contributing to Output 1.3 Fully operational climate early warning and information systems. Related budget items include (as per budget notes) n. 5 Equipment to strengthen weather observing

networks and related data management systems and n. 6 Services related to development and operationalizing a climate early warning system and to strengthening weather observing networks. Based on exchanges with the University of the South Pacific (including staff based at the Cook Islands Campus), USP will be principally supporting policy, planning and training activities on climate change and disaster risk management under Outcomes 1 and 2, aligned with budget items (as per budget notes) n. 1 Transfer of international good practices and lessons learned regarding strengthening national policies and institutions; provide oversight of training, n. 2 Training services related to strengthening DRR and CCA in national policies, and in institutional coordination and support; training in preparation, dissemination and use of weather and climate information, n. 7 Training services to island councils, administrators, technical officers, farmers, fishers, households and business owners, and n. 8 Transfer international good practices and lessons learned regarding preparation of integrated CCA and DRR actions plans and oversight of training of island councils, administrators, technical officers, farmers, fishers, households and business owners. Given USP's extensive experience in community-based adaptation processes, their expertise will be harnessed also to support the community interventions under Outcome 3, linked with the island-level adaptation planning processes.

I. Justification for requested funding, focusing on the full cost of adaptation reasoning

AF resources will be used to expand on, and complement existing baseline programmes and projects, and will be aligned with national, island and community development priorities.

Component 1: Strengthening and implementing national climate change adaptation and disaster risk reduction policies

Baseline (without AF resources)

A recent study[16] found that the present administrative system with the existing institutional arrangements is inadequate to meet the current and expected demands on the country's response to the consequences of climate change impacts. The institutional structures in their present form accentuate the fragmented implementation of climate change-related activities amongst government and non-government agencies. The National Environment Service (NES), as a natural progression of its mandate for the administration of the Environment Act that does not include climate change, has been regarded as the referral point for matters relating to climate change amongst both the government and non-government agencies. The National Climate Change Country Team (NCCCT) is underutilized as a coordinating mechanism for inputs into significant, externally funded projects. Meanwhile, the non-government sector, including island councils, plays an integral yet understated role in addressing climate change matters, while looking to government to take the lead and coordinate the national approach to climate Change at all levels.

[16] Mangoes in July. Report on Cook Islands Public Service Climate Change Functional Review and Institutional Structure Development. Christina Newport and Tamarii Tutangata. Cook Islands Office of the Public Service Commissioner, March 2011, 117pp.

There is no designated post for climate change activities within government except for the Director and Education and Training Officer in EMCI. Their primary focus is directed to emergencies, such as those related to tropical cyclones and other disasters. There is limited capacity to mobilize resources through preparing proposals for funding, negotiating delivery through nationally led funding mechanisms and coordinating aid flows. However, the study found the presence of small pool but high level of climate change related expertise, and increasing climate change related experience in the public service and civil society.

In relation to providing an enabling environment for climate change adaptation and disaster risk reduction the study found an absence of legislative and policy direction to guide climate change related efforts at national level, innovation to develop the JNAP, continuing heavy reliance on external resources for almost all climate change related activities in-country as a result of there being no climate change-specific national budget allocations. The study also found a need for continued capacity building across all sectors and extending to the delivery of activities. Capacity constraints are being highlighted as focus the focus of activities shifts towards implementation.

Additionality (with AF resources)

Policies and related instruments in the agriculture, water supply, and land management sectors will be strengthened in ways that support climate change adaptation and disaster risk reduction in the Pa Enua, consistent with island development plans. Institutional coordination mechanisms at the national, sectoral and island levels will also be improved in ways that enhance decision making processes in the context of current and emerging climate risks. This will be further enhanced by policymakers and technical officers at the central and island level offices of government agencies represented on the NCCCT being trained in policies and strategies to manage climate change risks, and make good use of climate information services, climate risk assessments, and climate resilience management techniques. Educational and related initiatives will be undertaken under the guidance of a Learning and Teaching Advisor in Ministry of Education with ESD focus. The incumbent will support climate change and disaster risk management education programmes in the Pa Enua.

National capacities to gather, analyse and disseminate sector tailored climate information, and monitoring of climate impacts of terrestrial, marine, and coastal ecosystems. This will be supported by strengthened weather observing networks in areas that currently lack weather and climate data of critical importance to the Pa Enua, and the country as a whole, and by establishment and operation of a Climate Early Warning System tailored to the needs of specific stakeholders resident in the Pa Enua. In addition, officers in the Cook Islands Meteorological Service, and other relevant individuals, will be trained in the preparation, dissemination and use of climate and weather information products.

Component 2: Strengthening capacities for climate change adaptation and disaster risk reduction in the Pa Enua

Baseline (without AF resources)

Without AF resources the adaptation needs identified in recent assessments will not be followed up systematically and local capacities will not improve towards this end. Given the serious and increasing risks of climate change related hazards, this situation will further erode livelihood of island communities, especially in the smaller and low-lying atoll islands, continuing to damage vital community assets, and pose

threat to lives. Agricultural yields will continue to decline, and this combined with water shortages will escalate health risks, also exacerbated by climate change. Above all, the very subsistence of some island communities will depend on the implementation of successful and unscaled adaptation and disaster risk reduction measures. Without the capacity to implement integrated sectoral measures, national officers and extension services and island level representatives will not be able to develop the needed experience and capacity to advise and support island communities.

Additionality (with AF resources)

Island councils, administrators and technical officers will have the ability to participate in climate risk assessment and management and in adaptation planning. This will help facilitate the preparation of integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited islands. To support implementation of these action plans, consistent with the island development plans, technical officers will provide advisory services to communities and community stakeholders while will in turn be trained in the use sector-tailored climate information. This training to farmers, fishermen, households, and business owners will focus on implementation of climate-resilient practices. Small grants programme will be established to support activities designed to building capacity for adaptation and disaster risk reduction in the Pa Enua.

Component 3: Implementing climate change adaptation and disaster risk reduction policies and plans in the Pa Enua

Baseline (without AF resources)

A limited number of Pa Enua have been the focus of risk, vulnerability and adaptation assessments. However, many of these studies are now out of date. Moreover, there has been little or no follow up to these assessments, including implementing their recommendations. Expectations of follow up implementation are often raised, but seldom fulfilled. Meanwhile, island and community vulnerabilities increase and resilience levels decline. Initiatives that have been implemented with the aim of reducing climate-risked (e.g. PACC) have been at a pilot scale while others have been piecemeal or do not integrate systematically both CCA and DRR.

Additionality (with AF resources)

AF resources will facilitate the detailed design and implementation of a set of interventions in identified priority sectors in all of the 11 inhabited Pa Enua, and at least 2000 households and over 100 enterprises. As noted above, the programme could have concentrated activities in the capital island (Rarotonga) or in only a subset of the Pa Enua. There are already several projects underway, or planned, that are designed to enhance the resilience of Rarotonga to climate change. Assessments and stakeholder consultations highlight the high vulnerability of all 11 inhabited Pa Enua. The most appropriate design for the SRIC programme is for all Pa Enua to have the opportunity to build capacity for CCA and DRR and undertake measures to reduce climate-related risks, with sector-specific interventions being undertaken in Pa Enua where benefits for communities and islands will be greatest.

The proposed interventions in all 11 Pa Enua will enhance livelihood resilience of the entire island communities, through safeguarding essential community assets and services (access, coastal protection, cyclone shelters, food and water supply) from

anticipated climate-related hazards. Resilience of livelihoods will be enhanced by securing more reliable supplies of water and food, in light of climate variability and longer-term climate change. The establishment (as applicable) of nurseries, introduction of climate resilient species, irrigation and cultivation techniques, as well as conservation methods will aim at enhancing food security. This is already being compromised in various islands in periods of major climate disturbances (e.g. extended drought, cyclones, and floods). The improvement of water and food supply will contribute to enhanced health conditions, combined with the introduction of vector-borne disease control techniques.

Some of the proposed interventions may have been undertaken in the more distant future. However, in the mean time island and community vulnerabilities are already increasing at an alarming rate, in large part due to increased climate and weather extremes and inter-annual variability. Currently significant portions of the national budget, donor support, and even family financial resources are spent on disaster relief and recovery. SRIC is designed to reduce this wasteful use of hard won financial and other resources and ensure that national expenditures, donor contributions and family resources are used more productively.

PART III. IMPLEMENTATION ARRANGEMENTS

A. Arrangements for project implementation

The Project will be implemented through UNDP's **National Execution Modality (NEX),** with the Office of the Prime Minister (OPM) and its recently established Climate Change Coordination Unit (CCCU) serving as the designated national executing agency ("*Implementing Partner*") of the project. OPM will have the technical and administrative responsibility for applying AF inputs in order to reach the expected Outcomes/Outputs as defined in this project document. OPM is responsible for the timely delivery of project inputs and outputs, and in this context, for the coordination of all other responsible parties, including other line ministries, local government authorities and/or UN agencies.

Upon the request of the Government of the Cook Islands, UNDP will serve as the Multilateral Implementing Agency (MIE) for this project. Services that UNDP will provide to the Implementing Partner in support of achieving project Outcomes are outlined in Annex 1. UNDP's services will be provided by staff in the UNDP Multi-Country Office in Samoa, UNDP Asia Pacific Regional Centre in Bangkok (with a Regional Technical Advisor on Adaptation out-posted in Samoa) as well as UNDP Headquarters (New York).

A **Programme Board** (PB), responsible to approve key management decisions of the project and will play a critical role in assuring the technical quality, financial transparency and overall development impact of the project, will be established as soon as this project is approved. The PB will be composed of designated senior-level representatives of the OPM, a sub-committee of the National Climate Change Country Team involving key Ministries and agencies (such as MOIP, MoA, MMR, CIMS, NES), and Island Council representatives of the Pa Enua. A complete list of PB members and their designated alternates will be provided in the inception report.

The OPM will appoint a **National Project Director** (NPD), who will be designated over the course of the project inception phase. The costs of the NPD role will be borne by the Government of the Cook Islands as in-kind contribution to the project.

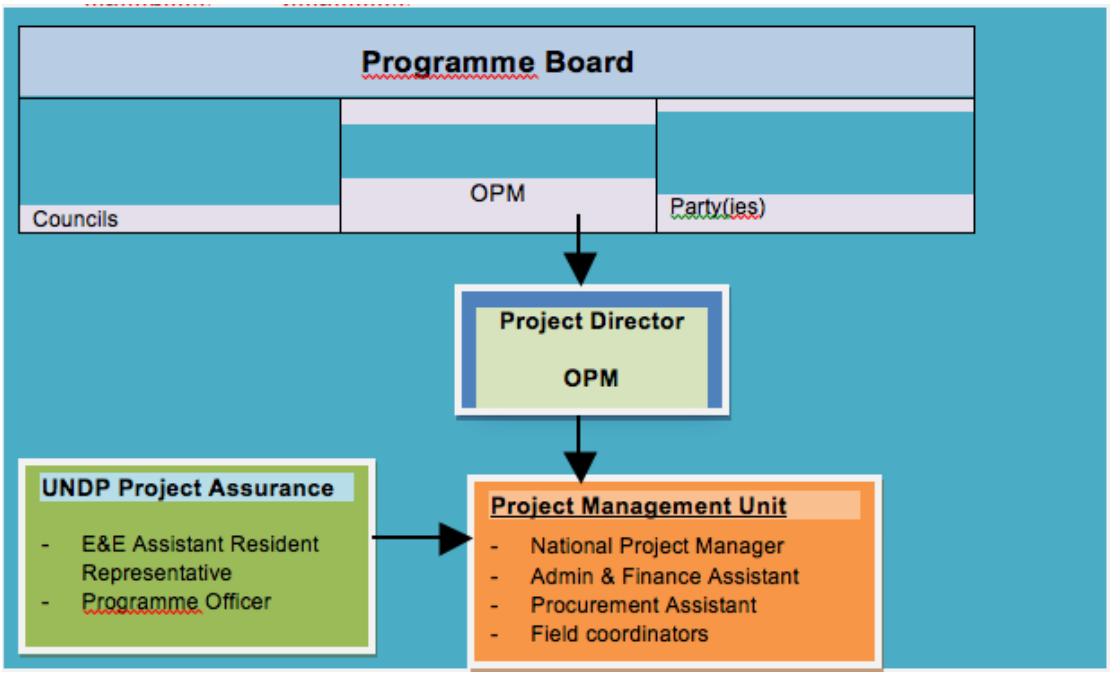
National Project Manager (NPM): He/she will be a dedicated professional designated for the duration of the project. The PM's prime responsibility is to ensure that the project produces the results specified in the project document to the required standard of quality and within the specified constraints of time and cost.

Project-Support: The NPM will be supported by a core team of technical and support staff forming the **Project Implementation Unit** (PIU) located at the OPM to execute project activities, including day-to-day operations of the project, and the overall operational and financial management and reporting. Local coordinators will be recruited to oversee progress of technical project components in the Pa Enua.

Project assurance: UNDP Samoa will support project implementation by assisting in the monitoring of project budgets and expenditures, contracting project personnel and consultancy services, and subcontracting and procuring equipment at the request of the OPM. On the technical side, UNDP Samoa will monitor progress of project implementation and achievement of project outcomes/outputs as per the endorsed project document. A designated Programme Officer will be assigned in the Country Office in Samoa to provide financial and technical monitoring and implementation support services.

To deliver specific Outputs as outlined in the logical framework, OPM can delegate such responsibilities to external partners (to be referred to as *Responsible Parties*) through direct contracting. OPM will bear responsibility for the delivery of those Outputs and put in adequate place measures to oversee such work. Such institutions will be contracted through appropriate modalities (as advised by UNDP). The corresponding Letters of Agreement (LoA) will be annexed to the project document that will be signed between UNDP and the Government of the Cook Islands after the AF project document has been endorsed.

The organigram of the programme is as follows:



Programme implementation will be fully aligned with national institutional structures as illustrated in Figure 6.

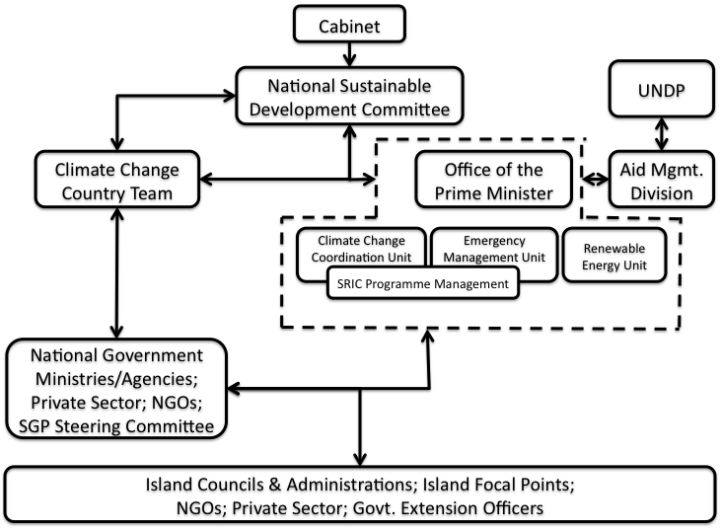


Figure 6. National institutional arrangements for programme implementation

Details of programme execution costs are included in Annex 2

B. Financial and programme risk management

Key risks to successful implementation of SRIC are presented in a matrix of programme risks and risk mitigation measures (Table 13). Strong commitment from the Government of the Cook Islands exists, with well functioning national coordination mechanisms (see Table 12 and Figure 6), which limits the risks faced by the proposed programme.

Furthermore, linkages to ongoing and planned baseline development activities implemented by government, as well as local acceptance, will minimize these risks. The most serious risks are related to limited qualified staff and high staff turnover, which are common issues in Pacific island countries. The mitigation strategy to address this risk involves early and consistent engagement of senior government decision makers on programme progress and monitoring, the application of an awareness programme for policy makers, and the involvement of a group of core technical officers in relevant line departments, as well as village councils and leaders. The appointment of island level programme coordinators will ensure effective coordination with island-level administrations and stakeholders. During regular programme review meetings, in which UNDP will be an active participant, all risks and mitigation measures will be reviewed and updated as per established practices.

Table 13: Matrix of Programme Risks and Risk Mitigation Measures.

Risk	Level	Mitigation measures	Responsibility
Extreme climatic events and geophysical hazards damage or negate programme results, or cause major disturbances resulting in delays due to needed emergency and recovery processes	M	Close monitoring of any developing climate events over the duration of the programme and ensuring responses are effected within the national DRM response framework.	CIMS, OPM, MFEM, NES and NPC
Poor collaboration between programme partners	M	Inception workshop to clarify roles and responsibilities and establish and implement programme stakeholder collaboration and team building approaches	NPC
Finalization and implementation of the NAP for DRM and CCA loses its momentum, and a national consensus on the institutional management of different sectors and related priorities within the Plan and the needed collaboration of key government agencies in the programme is hindered by unforeseen influences.	L	There is strong commitment from Government, civil society and development partners to ensure successful finalization and implementation of the NAP. Ongoing and effective relationships will be maintained between the NPC and stakeholders in Government, civil society and development partners, to ensure there is good understanding of how SRIC is implementing the NAP	NPC, OPM, MFEM
Land disputes amongst community members adversely affect implementation of CCA and DRR intervention.	L	Programme technical team members will inform and encourage communities, and devise community lead solutions through participatory consultations to secure commitment and	NPC, Island Councils and Administrations

		minimize disputes. Programme activities will be delivered with the active engagement of local institutional mechanisms (Island Councils, Climate Change Community Teams, local associations, Water Committees, etc.) as well as NGOs present in the islands to prevent and resolve any land-disputes.	
Limited human resources in Government ministries and agencies to contribute to the activities.	M	Secure participation of key Ministries and Agencies during programme inception phase and use positions to be recruited in the project to provide technical backstopping. Project monitoring process to identify any problems at an early stage and NPC to arrange for alternative measures including use of NGOs and community members.	NPC and OPM
There is sufficient coordination between Island Councils and national authorities to scale up the island-based integrated CCA and DRR actions in an effective manner	L	Schedule project activities to avoid and/or respond to such occurrences. Use of existing coordination mechanisms, linking island level and national institutions (e.g. the National Infrastructure Committee responding to requests made by Island Councils and Administrations), extension officers and representatives of national institutions based on the islands, to strengthen coordination. Active involvement of Island Council representatives in the Programme Board's work, as well as in the process of devising and implementing the Joint CCA-DRM action plan at the national and island levels. The experience during the National Adaptation Planning Week that was held in late February 2011 resulted in active collaboration and dialogue between Pa Enua leaders and national authorities.	NPC
The methods, tools and technologies developed are not gender aware – i.e. they increase inequity between men and women or change the social roles of men and women in a way that reduces self reliance.	M	Conduct training on gender analysis for project team and partners, and use guidelines during selection of methods, tools and technologies	NPC and MIA
The government is no longer supportive, politically and financially, of a cross-sectoral and integrated approach to the management of climate risks	L	Reinforce mutual obligations for project implementation at programme outset and during annual and mid-term reviews	NPC, OPM

and opportunities.			
Stakeholders are not able to perceive reductions in vulnerability over the time-scale determined by programme duration.	M	Focus on priorities of Pa Enua communities linked with the Island Development Plans, providing combined benefits of immediate and perceivable livelihood support, while building long-term resilience to climate change. Maintain awareness raising and tailored communication activities targeting specific community groups and intervention areas.	NPC
Stakeholders are not able to distinguish vulnerability to climate change from baseline weaknesses in land, coastal, and water resources management.	M	Conduct detailed and in-depth assessments specifying climate-driven impacts and impacts due to unsustainable use of natural resources, coupled with the application of sector-tailored climate information services, monitoring programmes, and continuous awareness raising and education activities.	NPC
Communication, access and community coordination difficulties delay timely implementation of the planned programme activities at the target community level.	L	Active engagement of Island Climate Change Community Teams, Technical Working Groups, extension officers, programme field coordinators and NGOs present in the field to support communication and coordination with communities. Establishment of community-level coordination mechanisms (such as local water committees). Devise a multi-level communication strategy and outreach programme targeted to island-specific conditions in each Pa Enua.	NPC, OPM
Political or security complications in programme sites limit implementation of programme activities.	L	Project monitoring process to identify any problems at an early stage and NPC to arrange for alternative measures.	NPC, Island Councils and Administrations, OPM, Cabinet NPC, Island Councils and Administrations

Selection and implementation of adaptation and disaster risk reduction measures in the Pa Enua do not form part of the integrated island development plans, do not allow for vulnerability considerations, do not follow established criteria and are derailed due to political processes and influence.	M	Address adaptation planning and actions through a sectoral and integrated manner, adjusted to the procedures and status of Island Development Plans and focusing on priority needs of each Pa Enua community. As part of the adaptation planning process, maintain proactive outreach communications strategy and capacity building activities for duration of programme, involving Island Councils, community leaders and local NGOs.	NPC, Island Councils and Administrations, OPM, Cabinet

C. Monitoring and evaluation and budgeted monitoring and evaluation plan

Project monitoring and evaluation (M&E) will be in accordance with established UNDP procedures and will carried out by the Project team, verified by the OPM and the UNDP Country Office in Samoa. Dedicated support by the technical adaptation teams in the UNDP Asia-Pacific Regional Centre and UNDP New York will be provided on a regular basis. The Results Framework of the project defines success indicators for project implementation as well as the respective means of verification. A Monitoring and Evaluation (M&E) system for the project will be established, based on these indicators and means of verification. It is important to note that the Results Framework in Section F, including its indicators, targets and means of verification, will be reconfirmed during the inception phase of the project. Any changes to the Results Framework require approval by the Project Board.

A Project **Inception Workshop** will be conducted within four months of project start up with the full project team, relevant government counterparts, national stakeholders, partners, and UNDP. The Inception Workshop is crucial to building ownership for project results and to plan the first year annual work plan. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and execution, document mutual agreement for the proposed executive arrangements amongst stakeholders, and assist the project team to understand and take ownership of the project's goals and objectives. Another key objective of the Inception Workshop is to introduce the project team which will support the project during its implementation. An Inception Workshop Report will be prepared and shared with participants to formalize various agreements decided during the meeting.

A UNDP **risk log** will be regularly updated in intervals of no less than every six months in which critical risks to the project have been identified. **Quarterly Progress Reports** will be prepared by the Project team and verified by the Project Board. **Annual Project Reports** will be prepared to monitor progress made since project start and in particular for the previous reporting period. These annual reports include, but are not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- Project outputs delivered per project Outcome (annual);

- Lessons learned/good practices;
- Annual expenditure reports;
- Reporting on project risk management.

Government authorities, members of the Project Board and UNDP staff will conduct regular field visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress.

In terms of financial monitoring, the project team will provide UNDP with certified periodic financial statements. The Audit will be conducted in accordance with UNDP Financial Regulations and Rules and applicable audit policies on UNDP projects by a legally recognized auditor of the Government, or by a commercial auditor engaged by the Government. During project implementation, Annual Work Plans (AWP's) and Quarterly Work Plans (QWP's) will be used to refine project delivery targets and realign project work upon consultation and endorsement by the Project Board.

The project will undergo an independent **Mid-Term Evaluation (MTE)** at the mid-point of project implementation, which will determine progress being made toward the achievement of outcomes and identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; highlight issues requiring decisions and actions; and present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for the final half of the project's term. A summative **terminal evaluation** will be conducted 3 months before project closure.

A budget for programme monitoring and evaluation is provided in Table 14.

Table 14: Programme Monitoring and Evaluation Budget

Type of M&E Activity	Schedule	Responsibility	Total Budget (USD)
Inception workshop	Within 1st month of programme commencement	Project Coordinator UNDP-CO	5,000
Inception report	Within 2nd month of programme commencement	Project Coordinator Local consultant UNDP-CO	2,000
Quarterly reports	Every quarter	PMU	0
Technical Reports	As required	PMU Local consultant	12,000
Meetings of National Project Steering Committee	Immediately following inception workshop, and every three months	PMU	2,000
Meeting of National Climate Change Country Team	Annually at the end of 12 months	PMU UNDP-CO	1,000
Mid-Term Evaluation	Mid way through Phase 1	PMU, UNDP-CO External consultant	20,000
Terminal Evaluation for Phase 1	At end of Phase 1	PMU, UNDP-CO External consultant	30,000
Project Terminal Report	During last quarter of final year of Phase 1	PMU	0
Annual audits	At end of each year	PMU, UNDP-CO	10,000
TOTAL ESTIMATED M&E COSTS			**82,000**

D. Project Budget Summary by Outputs

Award id: 00062173, Project id: 00079524

Component 1: Strengthening and implementing climate change adaptation and disaster risk reduction at national level

Output	Implementing Entities	Cost Estimate
1.1 National and sector policies, related instruments, and work programmes enhanced in ways that support CCA and DRM in the Pa Enua, consistent with island development plans	OPM, MOIP, MMR	33,000
1.2 Staff of national agencies and organisations on the NCCCT trained and working in ways that improve coordination and delivery of CCA and DRM initiatives on the ground in the Pa Enua	MOE, HRD	60,000
1.3 Fully operational climate early warning and information systems	CIMS, NES, MMR, MOA	307,000
	COMPONENT TOTAL	**400,000**

Component 2: Strengthening capacities for climate change adaptation and disaster risk reduction in the Pa Enua

Output	Implementing Entities	Cost Estimate
2.1 Integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited Pa Enua, including harmonization with island development plans	Island Councils and Administrations	275,000
2.2 In each of the 11 inhabited Pa Enua, island councils, administrators, technical officers, farmers, fishers, households and business owners trained in planning and undertaking integrated climate change adaptation and disaster risk reduction initiatives, consistent with the island development plans	Island Councils and Administrations National SGP Steering Committee	510,000
	COMPONENT TOTAL	**785,000**

Component 3: Implementing climate change adaptation and disaster risk reduction measures in the Pa Enua

Output	Implementing Entities	Cost Estimate
3.1 Small grants to the 11 Pa Enua and their communities, to implement CCA and DRR within the framework of integrated island- and community-level DRR and CCA action plans and the island strategic development plans	Island Councils and Administrations National SGP Steering Committee	420,000
3.2 Climate-resilient agricultural and fisheries practices implemented in at least 5 Pa Enua	Island Councils and Administrations, MOA, MMR	390,000
	Island Councils and	1,595,000

3.3 Water capture, storage and groundwater management capacities are enhanced in at least 4 Pa Enua through community based actions and infrastructure climate-proofing projects 3.4 Coastal protection enhanced in at least 3 Pa Enua 3.5 Resilience of tourism enterprises to climate change enhanced in at least 3 Pa Enua 3.6 Health support and vector-borne disease control techniques introduced in at least 5 Pa Enua to address climate-induced health risks	Administrations, MOIP Island Councils and Administrations, MOIP Island Councils and Administrations, CITC Island Councils and Administrations, MOH	See Annex 6 for the infrastructure projects 460,000 160,000 190,000
	COMPONENT TOTAL	**3,215,000**

Component 4: Climate change adaptation knowledge management

Output	**Implementing Entities**	**Cost Estimate**
4.1 Lessons learned and best practices are generated (case studies, photo stories, short videos, posters, brochures, etc) and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms 4.2 Training materials incorporating climate change issues developed and used for training of field staff, students and other key players	PMU PMU, ME, HRD	60,000 40,000
	COMPONENT TOTAL	**100,000**

Programme Execution Costs: see Annex 2

F. Strategic Results Framework

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
Objective **To strengthen the ability of all Cook Island communities and the public service to make informed decisions and manage anticipated climate change driven pressures (including extreme events) in a pro-active, integrated and strategic manner**	Number of households in the Pa Enua and Rarotonga target villages (Ruaau and Akaoa) and the number of public officers dealing with Pa Enua sustainable development who have enhanced adaptive capacity to respond to climate-induced risks	Past climate change assessments and panning processes (principally attached to the National Communications process and a few projects) have raised awareness amongst community members and public officers on climate change, but responses are limited to a few projects and ad-hoc coping measures by communities. As a result communities lack adequate capacity to adapt to climate-induced impacts affecting food and water supply, coastal ecosystems, tourism and related livelihood activities.	By the end of the programme at least 1600 households and 100 public officers in the Pa Enua have increased their adaptive capacity	Project implementation, technical, and training workshop reports Community consultations and surveys on perceived risk reduction National and sectoral policy documents and island level adaptation plans	Availability of necessary expertise and experience to undertake activities required to integrate climate risk management in relevant policies and other instruments Political will and commitment by senior government officials to integrate climate risk management Strong coordination amongst climate change and disaster risk reduction stakeholders in country Strong community leadership and support for, and engagement in project activities in the Pa Enua

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 1 **Efficient and effective support at national level for disaster risk reduction and adaptation initiatives in the Pa Enua**	Number of national policies and related instruments enhanced in ways that support CCA and DRR Number of government staff with job descriptions that make reference to climate and disaster risk management and who have received relevant training	Relevant national policy instruments, coordination mechanisms and institutions do not address climate risks in an adequate manner Climate and disaster risk management are seen as the sole responsibility of the National Environment Service and Emergency Management Cook Islands	At least four relevant national level policy instruments, and coordination mechanisms addressing have integrated climate risk management At least 75 government staff with responsibilities for sustainable development in the Pa Enua have job descriptions that make reference to climate and disaster risk management At least 100 government staff with responsibilities for sustainable development in the Pa Enua will have received formal training in climate and disaster risk management	National policy documents Ministry Corporate and Strategic Plans Annual reports of ministries and other government agencies Project reports Project monitoring and evaluation reports Annual reports of ministries and other government agencies	Political will and commitment, and availability of necessary expertise and experience, to undertake activities required to integrate climate risk management in relevant policies and other instruments Appropriate staff members are selected for training by their host agencies Very low staff turnover resulting in sustained capacity of government and partner institutions

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 2 **Key players in Pa Enua development have the capacity to reflect disaster risk management and adaptation considerations when planning, making decisions and during operations**	SRIC Focal Points for each inhabited Pa Enua appointed and funded	There are no individuals in the Pa Enua who have formal responsibilities for, and oversight of, climate risk assessment and management in the context of sustainable island development	By the end of year 1 of the programme SRIC Focal Points appointed and fully operational in 11 inhabited Pa Enua	Reports of island councils, and secretaries Project reports Project monitoring and evaluation reports	Suitably qualified personnel available in each inhabited Pa Enua SRC Focal Points establish effective working relationships with island administrations, councils and community leaders
	Prepare integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited Pa Enua	No Pa Enua has a climate change adaptation and disaster risk reduction action plan or any other formal mechanism for addressing climate and disaster risks in a pro-active, integrated and strategic manner	By the end of the 3rd year, integrated climate change adaptation and disaster risk reduction action plans approved for each of the 11 inhabited Pa Enua, and harmonized with island development plans	Reports of island councils, and secretaries Project reports Project monitoring and evaluation reports	Political will and commitment to ensure plans are prepared in a fully participatory manner Strong community leadership and support for, and engagement in project activities in the Pa Enua Availability of necessary expertise and experience to undertake activities required to prepare integrated climate change adaptation and disaster risk reduction action plans
	Island stakeholders and key players trained in climate and disaster risk assessment and their management	Island stakeholders and key players have little practical understanding of climate and disaster risk assessment, and how this understanding can contribute to sustainable island development	By the end of the 3rd year at least 500 island stakeholders and key players have been trained in climate and disaster risk assessment and management involving both men and women in an	Training evaluation reports Reports of island councils, and secretaries Project reports Project monitoring and evaluation reports	Political will and commitment to ensure effective use of climate information, and undertake monitoring of climate impacts on terrestrial, marine, and coastal ecosystems

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
			equitable manner		
	Number of successfully completed capacity building projects funded by the SRIC Small Grants Programme	It is exceedingly difficult for stakeholders in the Pa Enua to access the UNDP/GEF SGP; that programme no longer funds capacity building initiatives	By the end of the 3rd year, at least 50 initiatives to build capacity in climate and disaster risk assessment and management are funded by the small grants programme, and are completed successfully, involving both men and women in an equitable manner	Reports of the Steering Committee of the SRIC Small Grants Programme Reports of island councils, and secretaries Project reports Project monitoring and evaluation reports	Efforts to build capacity for grant application and execution are successful The Steering Committee is independents of political and other influences Strong community interest in, support for, and engagement in capacity building activities in the Pa Enua

Project Strategy	*Indicator*	*Baseline*	*Target*	*Sources of verification*	*Assumptions*
Outcome 3 **Enhanced resilience to climate change, including weather- and climate-related disasters, for all 11 inhabited Pa Enua**	Increase in the volume (Litres) of water storage capacity in communities affected by climate-induced water shortages	The current estimated total water storage capacity in the 11 Pa Enua is about 7 M L. The current open reservoir of 10 M L in Ruaau, and Akaoa (Rarotonga), is completely dysfunctional and needs to be repaired or replaced by another type of storage facility. The infrastructure (e.g. pumps, pipes, guttering) supplying the storage facilities are in poor status reducing efficiency of supply, needing upgrade and maintenance, to satisfy demand and to face climate-induced disturbances in water	By the end of the programme the water storage capacity is increased by at least 14 M L in affected communities as a result of the water infrastructure adaptation projects implemented in at least 7 islands (Aitutaki, Atiu, Mangaia, Mitiaro, Palmerston, Pukapuka and Nassau and Rarotonga)	Project technical assessments and reports Reports on community consultations, trainings and surveys Site/field visits and surveys Reports of Island Water Committee meetings Annual reports of ministries and other government agencies, including island	Strong island and community interest in, support for, and engagement in capacity building activities in the Pa Enua Island councils and secretaries can identify the need for, and oversee implementation of interventions that address climate and disaster risks in a pro-active, integrated and strategic manner Strong island and community interest in, support for, and engagement in the design and

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
		supply.		councils and administrations Project monitoring and evaluation reports	construction of infrastructure that will not only enhance island and community resilience, but is designed with attention to future climate risks Island councils and secretaries can oversee implementation of infrastructure projects that will enhance island and community resilience
	Km of coastline with climate resilient shoreline protection measures introduced	Currently coastal protection measures applied by communities are ad-hoc and piecemeal, limited to some vegetation planting along the shore, but lacking the capacity to introduce shoreline protection measures in a planned and systematic way.	By the completion of the programme climate resilient shoreline protection measures are introduced in at least 20 Km of coastline in at least 3 islands (Aitutaki, Palmerston and Rakahanga)		
	N. of households with enhanced capacity to reduce climate-induce disturbances in food supply through applying climate resilient agriculture and fisheries techniques	Currently the estimated 920 households engaged principally in subsistence agriculture or fishing activities in the 5 islands are ill-prepared to adapt to climate change impacts. They lack the capacity to apply adequate land management, crop cultivation and fisheries techniques, and food storage methods, consequently being affected by climate-induced disturbances of food supply, such as droughts or cyclones	By the end of the programme at least 750 households have increased capacity in applying climate resilient agriculture and fisheries practices in at least 5 islands (Aitutaki, Atiu, Manihiki, Mangaia and Mauke)		
	N. of households with access to enhanced health services and practices adapting to climate-induced health risks	The total number of households in these 5 islands is 460. Current prevention activities are limited to occasional cleanup programmes (tutaka) to control areas of stagnant water, while there is inadequate capacity of health staff to diagnose and respond to climate-related illnesses.	By the end of the programme at least 400 households have access to enhanced health services and practices in at least 5 islands (Mangaia, Mauke, Mitiaro, Palmerston and Pukapuka)		

Project Strategy	*Indicator*	*Baseline*	*Target*	*Sources of verification*	*Assumptions*
	N. of local tourism enterprises applying climate resilient management techniques	The total number of tourism enterprises in these 3 islands is 67, 54 of these are located in Aitutaki. Currently tourism operators cope with climate-induced impacts (like water shortage, coastal erosion) in an ad-hoc fashion, lack capacity to undertake integrated adaptation measures.	By the end of the programme at least 50 local tourism enterprises apply climate resilient adaptation techniques in at least 3 islands (Aitutaki, Atiu and Manihiki)		

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 4 **Lessons learned and best practices improve the effectiveness of initiatives to enhance the resilience of Pa Enua and other vulnerable communities**	Number of knowledge materials generated on lessons learned and best practices,	There is no systematic programme in the Cook Islands to capture lessons learned and best practices in adaptation, disaster risk reduction, and related projects, and disseminate them for wider use	At least 5 knowledge materials (experience notes, case studies, photo stories, videos, etc,) are generated per year starting from year 1 of the programme	Documents on lessons learned, best practices and case studies Project reports E-mail exchanges with other countries Project monitoring and evaluation reports	Locally available printing, video and audio production firms have the ability to engage with the SRIC programme
	Training materials prepared and evaluated	There is a critical lack of training materials for enhancing the capacity of island stakeholders and key players in climate and disaster risk assessment and their	By the end of the programme at least four training packages receive positive evaluations in independent assessments	Independent evaluation reports Reports of island councils and secretaries Project reports Project monitoring and	Local capacity exists to produce training materials that are of a high standard Island stakeholders and key players have a high interest in, support for, and engagement in

Project Strategy	Indicator	Baseline	Target	Sources of verification	Assumptions
		management, in adaptation planning, in the use sector-tailored climate information and in implementation of climate-resilient practices		evaluation report	capacity building activities in the Pa Enua

G. Alignment of Project Objectives/Outcomes with Adaptation Fund Results Framework

Programme Objective	**Programme Objective Indicators**	**Fund Outcome**	**Fund Outcome Indicator**
To strengthen the ability of all Cook Island communities and the public service to make informed decisions and manage anticipated climate change driven pressures (including extreme events) in a pro-active, integrated and strategic manner	Number of national policies and related instruments enhanced in ways that support CCA and DRR Integrated climate change adaptation and disaster risk reduction action plans prepared and implemented at the Pa Enua	**Outcome 2** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses **Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	2.1. No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks 3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses
Programme Outcomes	**Programme Outcome Indicators**	**Fund Output**	**Fund Output Indicator**
Outcome 1 Efficient and effective support at national level for disaster risk reduction and adaptation initiatives in the Pa Enua	Number of national policies and related instruments enhanced in ways that support CCA and DRR Number of government staff with job descriptions that make reference to climate and disaster risk management and who have received relevant training	**Output 2.2:** Targeted population groups covered by adequate risk reduction systems	2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased
Outcome 2 Key players in Pa Enua development have the capacity to reflect disaster risk management and adaptation considerations when planning, making decisions and during operations	SRIC Focal Points for each inhabited Pa Enua appointed and funded Prepare integrated climate change adaptation and disaster risk reduction action plans for each of the 11 inhabited Pa Enua Island stakeholders and key players trained in climate and disaster risk assessment and their management	**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

	Number of successfully completed capacity building projects funded by the SRIC Small Grants Programme		
Outcome 3 Enhanced resilience to climate change, including weather- and climate-related disasters, for all 11 inhabited Pa Enua	Number and type of climate adaptation and disaster risk reduction initiatives implemented in the framework of integrated village-level adaptation and Island Strategic Development Plans Number of new Infrastructure projects that enhance water security in the Pa Enua	**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)
Outcome 4 Lessons learned and best practices improve the effectiveness of initiatives to enhance the resilience of Pa Enua and other vulnerable communities	Number of knowledge materials generated on lessons learned and best practices, Training materials prepared and evaluated	**Output 3:** Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.2 No. of news outlets in the local press and media that have covered the topic

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT

Dr. Jim Gosselin
Secretary
Ministry of Foreign Affairs & Immigration Date*: 12 July 2011*

B. IMPLEMENTING ENTITY CERTIFICATION

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this programme.	
 Yannick Glemarec Director, Environmental Finance, UNDP	
Date: October 10, 2011	Tel. and email: +1-212-906-6843; yannick.glemarec@undp.org
Project Contact Person: Gabor Vereczi (LECRDS)	
Tel. and Email: +685 27482; gabor.vereczi@undp.org	

Annex 1

UNDP Environmental Finance – Specialized Technical Services

The implementing entity fee will be utilized by UNDP to cover its indirect costs in the provision of general management support and specialized technical support services. The table below provides an indicative breakdown of the estimated costs of providing these services. If the national entity carrying out the project requests additional Implementation Support Services (ISS), an additional fee will apply in accordance with UNDP fee policy regarding ISS and would be charged directly to the project budget.

Category	Indicative Services[17] Provided by UNDP	Estimated Cost of Providing Services[18]
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). Engage in upstream policy dialogue related to a potential application to the AF. Verify soundness and potential eligibility of identified idea for AF.	***US$ 21,080***
Feasibility Assessment / Due Diligence Review	Provide up-front guidance on converting general idea into a feasible project/programme. Source technical expertise in line with the scope of the project/programme. Verify technical reports and project conceptualization. Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements. Determination of execution modality and local capacity assessment of the national executing entity. Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.	***US$ 63,240***
Development & Preparation	Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme. Source technical expertise in line with the scope of the project/programme needs. Verify technical reports and project	***US$ 84,320***

[17] This is an indicative list only. Actual services provided may vary and may include additional services not listed here. The level and volume of services provided varies according to need.
[18] The breakdown of estimated costs is indicative only.

Category	Indicative Services[17] Provided by UNDP	Estimated Cost of Providing Services[18]
	conceptualization. Verify technical soundness, quality of preparation, and match with AF expectations. Negotiate and obtain clearances by AF. Respond to information requests, arrange revisions etc.	
Implementation	Technical support in preparing TORs and verifying expertise for technical positions. Provide technical and operational guidance project teams. Verification of technical validity / match with AF expectations of inception report. Provide technical information as needed to facilitate implementation of the project activities. Provide advisory services as required. Provide technical support, participation as necessary during project activities. Provide troubleshooting support if needed. Provide support and oversight missions as necessary. Provide technical monitoring, progress monitoring, validation and quality assurance throughout. Allocate and monitor Annual Spending Limits based on agreed work plans. Receipt, allocation and reporting to the AFB of financial resources. Oversight and monitoring of AF funds. Return unspent funds to AF.	***US$ 189,720***
Evaluation and Reporting	Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting. Participate in briefing / debriefing. Verify technical validity / match with AF expectations of all evaluation and other reports Undertake technical analysis, validate results, compile lessons. Disseminate technical findings	***US$ 63,240***
Total		***US$ 421,600***

Annex 2

Programme Execution Costs

Award id: 00062173
Project id: 00079524

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Project Coordinator salary	16500	16500	16500	16500	16500	**82500**
Project Admin/Finance Officer Salary	12200	12200	12200	12200	12200	**61000**
Project Procurement Officer salary	10500	10500	10500	10500	10500	**52500**
Field Coordinators salary	24000	24000	24000	24000	24000	**120000**
Office Furniture	10000					**10000**
Computers/ IT equipment	12000	2000	2000			**16000**
Stationary and supplies	2500	2500	2500	2500		**10000**
Travel	10000	10000	10000	10000	8000	**48000**
Mid-term Evaluation			20000			**20000**
Final Evaluation					30000	**30000**
Audit	2000	2000	2000	2000	2000	**10000**
TOTAL	**99700**	**79700**	**99700**	**77700**	**103200**	**460,000**

Annex 3

Implementation Schedule/Gantt Chart

Implementation schedule:
Milestones: ▲

Award id: 00062173
Project id: 00079524

Particulars	Schedule																			
Years	Year 1				Year 2				Year 3				Year 4				Year 5			
Quarters	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Project Inception																				
Project Inception Workshop		σ																		
Outcome 1: Capacity developed for efficient and effective support at national level for disaster risk reduction and adaptation initiatives in the Pa Enua																				
Output 1.1: Staff of national agencies and organisations on the NCCCT trained and working in ways that improve coordination and delivery of CCA and DRM initiatives on the ground in the Pa Enua																				
1.1.1 Training of policymakers, technical officers and leaders of relevant NGOs																				
All training completed												σ								
Output 1.2: National and sector policies, related instruments, and work programmes enhanced in ways that support CCA and DRM in the Pa Enua																				
1.2.1 Strengthen national policies and related instruments (analysis; workshops)																				
1.2.2 Strengthen institutional coordination mechanisms (analysis; workshops)																				
1.2.3 Appoint and Support Learning and Teaching Advisor with ESD (CCA/DRR) focus																				
Learning and Teaching Advisor appointed			σ																	
Output 1.3: Fully operational climate early warning and information systems																				
1.3.1 Build capacities of national institutions																				
1.3.2 Strengthen weather observing networks																				
Strengthened weather observing network fully operational												σ								
1.3.3 Training for officers in the CINMS, and other relevant individuals																				
1.3.4 Establish and implement a Climate Early Warning System																				
Climate Early Warning System fully operational																σ				

Particulars	Schedule																			
Years	Year 1				Year 2				Year 3				Year 4				Year 5			
Quarters	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.3.5 Establishment of a framework for a monitoring and surveillance system																				
Outcome 2: Key players in Pa Enua development have the capacity to reflect disaster risk management and adaptation considerations when planning, making decisions and during operations																				
Output 2.1: Enhanced capacities of island councils, administrators, technical officers, farmers, fishers households and business owners																				
2.1.1 Appoint, train and fund SRIC Focal Points for each inhabited Pa Enua																				
Formal training of SRIC Focal Points completed										σ										
2.1.2 Train island councils, administrators and technical officers																				
Formal training completed																		σ		
2.1.3 Prepare integrated climate change adaptation and disaster risk reduction action plans																				
Integrated plans prepared for all Pa Enua																		σ		
2.1.4 Train technical officers providing advisory services to communities, and other players																				
Formal training completed																		σ		
2.1.5 Train farmers, fishers, households, and business owners																				
Formal training completed																		σ		
2.1.6 Establish and implement arrangements to support building capacity in the Pa Enua																				
SRIC small grants programme for building capacity is operational				σ																
2.1.7 Fund, administer and manage the small grants programme																				
Outcome 3: Enhanced resilience to climate change, including weather- and climate-related disasters, for all 11 inhabited Pa Enua																				
Output 3.1: Small grants to the 11 Pa Enua and their communities, to implement CCA and DRR																				
3.1.1 Fund, administer and manage the small grants programme for implementing DRR/CCA																				
SRIC small grants programme for implementing DRR/CCA is operational				σ																
3.1.2 Implement approved DRR and CCA initiatives using small grants modality																				
Output 3.2: Climate-resilient agricultural and fisheries practices implemented in at least 5 Pa Enua																				
3.2.1 Implement DRR/CCA actions that will address the complete cycle of food production																				
Output 3.3: Water capture, storage and groundwater management capacities are enhanced in at least 4 Pa Enua																				
3.3.1 Implement DRR/CCA through integrated water-management approaches																				

Particulars	Schedule																			
Years	Year 1				Year 2				Year 3				Year 4				Year 5			
Quarters	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Output 3.4: Coastal protection enhanced in at least 3 Pa Enua																				
3.4.1 Implement coastal protection activities to manage climate change risks																				
Output 3.5: Resilience of tourism enterprises enhanced in at least 3 Pa Enua																				
3.5.1 Implement activities that will enhance the resilience of tourism assets																				
Output 3.6: Health support and vector-borne disease control techniques introduced																				
3.6.1 Implement integrated disease prevention, control and response measures																				
Output 3.7: Implement infrastructure projects that enhance water security																				
3.7.1 Implement priority infrastructure interventions to enhance resilience to climate change																				
Outcome 4: Lessons learned and best practices improve the effectiveness of initiatives to enhance the resilience of Pa Enua and other vulnerable communities																				
Output 4.1: Lessons learned and best practices																				
4.1.1 Generate lessons learned and best practices																				
4.1.2 Distribute lessons learn and best practices																				
4.1.3 Prepare and evaluate training materials																				
PROJECT EXECUTION																				
5.1 Project Management Unit established and operational																				
5.1.1 Project staff recruited																				
5.1.2 Office furniture, equipment and stationary procured																				
5.1.3 PMU operational and supporting project implementation																				
PMU fully staffed and operational		σ																		
5.2 Project monitoring and evaluation																				
Incept report		σ																		
Quarterly reports																				
Six monthly technical monitoring																				
Meetings of National Climate Change Country Team																				
Annual Audits																				
Mid Term Evaluation												σ								
Final Project Evaluation																				σ
Project Terminal Report																				σ

Annex 4

Multi-year Budget and Work Plan[19]

Award ID:	**00062173**
Project ID:……	**00079524**
Business unit	**SMO10**
Project title:	**PIMS 4569; AF; FSP: Cook Islands:** Akamatutu'anga i te iti tangata no te tuatau manakokore ia e te taui'anga reva -Strengthening the Resilience of our Islands and our Communities to Climate Change (SRIC - CC)
Implementing partner:	Climate Change Coordination Unit and Emergency Management Cook Islands

GEF Outcome/Atlas Activity	Implementation	Fund ID	Donor Name	Atlas Budgetary Code	ATLAS Budget Description	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year3	Amount (USD) Year 4	Amount (USD) Year 5	Total (USD)
OUTCOME 1:Efficient and effective support at national level for disaster risk reduction and adaptation initiatives in the Pa Enua	UNDP - NEX	62040	AF	71200	Int'nal Consultants	15000					**15,000**
	UNDP - NEX	62040	AF	71300	Local Consultants	25000	20000	20000	14,000	10,000	**89,000**
	UNDP - NEX	62040	AF	71600	Travel	21000	1000	1000			**23,000**
	UNDP - NEX	62040	AF	74200	Promotional Materials	2000	2000	2000			**6,000**
	UNDP - NEX	62040	AF	72200	Met Equipments	130000	100000	7000			**237,000**

[19] See following pages for budget notes.

	UNDP - NEX	62040	AF	72100	Contractual Services-Companies	20000	10000				**30,000**
	Total Outcome 1					**213000**	**133000**	**30000**	**14000**	**10,000**	**400,000**
	UNDP - NEX	62040	AF	71300	Local Consultants	30000	35000	30000	30000	30000	**155,000**
OUTCOME 2: Key players in Pa Enua development have the capacity to reflect disaster risk management and adaptation considerations when planning, making decisions and during operations	UNDP - NEX	62040	AF	71200	International Consultants	10000	10000	10000	10000	10000	**50,000**
	UNDP - NEX	62040	AF	71600	Travel	20000	20000	20000	20000	15000	**95,000**
	UNDP - NEX	62040	AF	74200	Promotional Materials	3000	6000	3000	3000		**15,000**
	UNDP - NEX	62040	AF	72100	Contractual Services-Companies	90000	105000	110000	105000	60000	**470,000**
	Total Outcome 2					**153000**	**176000**	**173000**	**168000**	**115000**	**785,000**
	UNDP - NEX	62040	AF	71300	Local Consultants	50000	180,000	225000	215000	120000	**790,000**
OUTCOME 3: Enhanced resilience to climate change, including weather- and climate-related disasters, for	UNDP - NEX	62040	AF	71200	International Consultants	25000	75000	90000	90000	50000	**330,000**
	UNDP - NEX	62040	AF	71600	Travel	27000	60000	90000	90000	55000	**322,000**
	UNDP - NEX	62040	AF	72300	Materials and supplies	20000	110000	148000	120000	50000	**448,000**
	UNDP - NEX	62040	AF	72600	Grants	40000	140000	150000	60000	30000	**420,000**

all 11 inhabited Pa Enua	UNDP - NEX	62040	AF	72100	Contractual Services-Companies	45000	145000	250000	245000	220000	**905,000**
	Total Outcome 3					**207000**	**710000**	**953000**	**820000**	**525000**	**3,215,000**
OUTCOME 4: Lessons learned and best practices improve the effectiveness of initiatives to enhance the resilience of Pa Enua and other vulnerable communities	UNDP - NEX	62040	AF	71300	Local Consultants	5000		15000		15000	**35,000**
	UNDP - NEX	62040	AF	71200	International Consultants						**-**
	UNDP - NEX	62040	AF	71600	Travel			5000		5000	**10,000**
	UNDP - NEX	62040	AF	74200	Promotional Materials	10000		14000	4000	4000	**32,000**
	UNDP - NEX	62040	AF	72100	Contractual Services-Companies			10000	5000	8000	**23,000**
	Total Outcome 4					**15000**	**0**	**44000**	**9000**	**32000**	**100,000**
Project management	UNDP - NEX	62040	AF	71400	Contract Ser-Individ	63200	63200	63200	63200	63200	**316,000**
	UNDP - NEX	62040	AF	72200	Office Furniture	10000					**10,000**
	UNDP - NEX	62040	AF	72800	IT Equipment	12000	2000	2000			**16,000**
	UNDP - NEX	62040	AF	72500	Stationary & Supplies	2500	2500	2500	2500		**10,000**
	UNDP - NEX	62040	AF	71600	Travel	10000	10000	10000	10000	8000	**48,000**
	UNDP - NEX	62040	AF	71200	Int'nal Consultants			20000		30000	**50,000**
	UNDP - NEX	62040	AF	71300	Local Consultants	2000	2000	2000	2000	2000	**10,000**

	Total Project management	**99700**	**79700**	**99700**	**77700**	**103200**	**460,000**
	GRAND TOTAL	**687700**	**1098700**	**1299700**	**1088700**	**785200**	**4,960,000**

Budget Notes

Note	Atlas No.	Category	5 Yr Total	Description
Component 1: Strengthening and implementing climate change adaptation and disaster risk reduction at national level Total Cost 400,000				
1	71200	International Consultants	**15,000**	Transfer international good practices and lessons learned regarding strengthening national policies and institutions; provide oversight of training
2	71300	Local Consultants	**89,000**	Training services related to strengthening DRR and CCA in national policies, and in institutional coordination and support; training in preparation, dissemination and use of weather and climate information;
3	71600	Travel	**23,000**	Travel for technical/extension officers working at island level to attend training workshops in Rarotonga or other suitable locations
4	74200	Promotional Materials	**6,000**	Preparing and distributing outreach and other communications materials
5	72200	Met Equipment	**237,000**	Equipment to strengthen weather observing networks and related data management systems
6	72100	Contractual Services-Companies	**30,000**	Services related to development and operationalizing a climate early warning system and to strengthening weather observing networks
Component 2: Strengthening capacities for climate change adaptation and disaster risk reduction in the Pa Enua Total Cost 785,000				
7	71300	Local Consultants	**155,000**	Training services to island councils, administrators, technical officers, farmers, fishers, households and business owners
8	71200	International Consultants	**50,000**	Transfer international good practices and lessons learned regarding preparation of integrated CCA and DRR actions plans and oversight of training of island councils, administrators, technical officers, farmers, fishers, households and business owners
9	71600	Travel	**95,000**	Travel of national trainers to Pa Enua
10	74200	Promotional Materials	**15,000**	Preparing and distributing outreach and other communications materials

11	72100	Contractual Services-Companies	**470,000**	Salaries of SRIC Focal Points and establishment, funding, administering and managing the small grants programme for capacity building in Pa Enua
Component 3: Implementing climate change adaptation and disaster risk reduction measures in the Pa Enua Total Cost 3,215,000				
12	71300	Local Consultants	**790,000**	Support to DRR and CCA interventions related to agriculture, fisheries, water resources, coastal protection, tourism and health
13	71200	International Consultants	**330,000**	Transfer international good practices and lessons learned regarding implementing climate change adaptation and disaster risk reduction measures at island and community levels
14	71600	Travel	**322,000**	Travel of international and local consultants, government officials and NGO representatives to the Pa Enua
15	72300	Materials and supplies	**448,000**	Materials and supplies used for DRR and CCA interventions related to agriculture, fisheries, water resources, coastal protection, tourism and health
16	72600	Grants	**420,000**	Funding small grants programme for community-based CCA and DRR in the Pa Enua
17	72100	Contractual Services-Companies	**905,000**	Design and build seven infrastructure projects to enhance water security; establish, provide technical advice, administer and manage small grants programme for CCA and DRR in the Pa Enua
Component 4: Climate change adaptation knowledge management Total Cost 100,000				
18	71300	Local Consultants	**35,000**	Generate lessons learn and best practices
19	71200	International Consultants	**-**	
20	71600	Travel	**10,000**	Travel of local consultants and government officials to the Pa Enua
21	74200	Promotional Materials	**32,000**	Prepare and disseminate lessons learned and best practices
22	72100	Contractual Services-Companies	**23,000**	Prepare, trial, evaluate and disseminate training materials
Programme Execution Costs				

Total Cost 460,000				
23	71400	Contract Ser-Individ	**316,000**	Salaries for Project Coordinator, Project Admin/Finance Officer, Project Procurement Officer and Field Coordinator
24	72200	Office Furniture	**10,000**	Furnishings for office of the PMU
24	72800	IT Equipment	**16,000**	Computers and communications equipment for the office of the PMU
26	72500	Stationary & Supplies	**10,000**	Stationary and other supplies for the office of the PMU
27	71600	Travel	**48,000**	Travel by PMU staff to the Pa Enua
28	71200	International Consultants	**50,000**	Costs for mid-term and final evaluations
29	71300	Local Consultants	**10,000**	Costs for financial audits

Annex 5

Island Profiles, including Focus of SRIC Interventions

Aitutaki

Resident Population & Gender	Land/Lagoon Area & Use	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
2235 51% female 452 dwellings	Distance to Rarotonga: 277 km Land Area: 18.1 **km^2** Lagoon Area: 66 **km^2** Length of Reef: 43 km 52% of island suitable for annual and tree crops (banana, mango, and coconut), additional 26% is suitable for tree crops 285 households involved in fishing	Water (433 dwellings connected to public water main; 162 have rainwater tank; 23 use public water catchments; despite a recent upgrading of the water supply for the island, this falls short of consumption requirements; all major new commercial users are required to install rainwater collection tanks or desalination systems, and households are encouraged to install private water tanks) Tourism (leading development sector; approx. 12,500 tourists annually plus 4,200 day trippers; tourism must be managed to	Water capture, storage and groundwater management capacities will be carried out through integrated water-management approaches dealing with the main sources and components of water supply, supported by demand management and awareness raising actions, as well as the application of regulatory instruments. Additional rainwater harvesting will involve capturing water from big community buildings and increasing water storage capacity for households (water tanks, gutters and tubes). Suitable rust-resistant and solar water pumps will be used to distribute water between storage facilities and households. On-going maintenance of community water tanks will be improved. In order to improve water efficiency, use of brackish/seawater and water recycling will be promoted when appropriate, Simple monitoring devices will be fitted to public galleries and main water tank supplies, to monitor use of public water supplies. A specific infrastructure project designed to enhance water

		ensure it remains economically viable, socially acceptable and environmentally sustainable) Agriculture (most households produce exclusively for home consumption, while some supplemented subsistence production with cash cropping; production is vulnerable to drought, cyclone damage and pests and diseases Health (influenza and acute respiratory infection, diarrhoea, conjunctivitis, fish poisoning, asthma and outbreaks of dengue fever are of concern)	security in the face of current and projected climate change impacts will also be implemented. This will involve the purchase of water tanks for 297 households that do not have water tanks. The tanks will be secured in ways that prevent destruction during strong wind events; they will also help reduce the risk of severe water shortages during times of prolonged drought, which is an increasing risk. Climate-resilient agricultural and fisheries practices will be implemented through a set of actions designed to cover the complete cycle of food production. The introduction of climate-resilient crop varieties and related farming techniques will also contribute to the reintroduction of culturally significant varieties affected by past extreme climatic events, and to the diversification of crops and related food products. Fish storage methods will be improved and clam restocking initiatives will be undertaken. These actions will enhance food security under changing climatic conditions. Specific activities for Aitutaki will include: Improved food preservation and other storage practices, implement permaculture, including recycling green waste. Reintroduce and repatriate culturally significant crop varieties, especially taro, that were significantly damaged or lost during past cyclones. Introduce new technologies, e.g. hydroponics. Establishment of community nurseries and introduction of seedling propagation techniques for the sustainable supply of climate-resilient crops. Improve fish storage methods. Repopulation of lagoon with corals and clams There are currently few and ineffective coastal protection measures in Aitutaki. Potential activities for this aspect could include: the assessment of locally available resources for coastal protection, additional planting of vegetation effective for coastal protection, installation of sand traps similar to those in Bora Bora - Tahiti – adapted to the Aitutaki environment, reduction in sand mining, including alternative sources and livelihoods, adoption of draft environmental by-laws for integrated coastal zone management (linked with the ICZM policy to be developed by PACC, and to be piloted in Mangaia, based on the PACC demo), construction of cyclone shelters and use of building code to ensure houses are built to cyclone

			proof standards; improve EIAs to ensure sound building (e.g. sanitation) standards. Regulations to discourage people from building at the coast. Tourism-related interventions will reflect that that the natural assets which Aitutaki communities rely on for tourism activities are high vulnerable to direct and indirect impacts of climate change. The tourism interventions will be designed to stimulate agriculture, fisheries, construction, arts, craft and cultural development as well as contributions to community organisations such as the Church and the development of public infrastructure (e.g. power, water, sewage). Specific interventions will include increasing the volumes and varieties of fresh local organic produce available, reflecting climate change considerations when upgrading public facilities such as visitor information centres, markets and public conveniences, and a water conservation awareness programme for tourists.

Atiu

Resident Population & Gender	Land/Lagoon Area & Use	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
570 50% female 161 dwellings	Distance to Rarotonga: 215 km Land: 26.9 **km^2** Lagoon: Nil Length of Reef: 21 km Over 17% of land area suitable	There is noticeable erosion in parts of the inland hills, while limestone cliffs, caves and swamplands are important environmental features. Makatea wildlife and the Atiu kopeka	Activities to enhance the resilience of agriculture and fisheries in Atiu will include improve rain-fed agriculture systems (e.g. install irrigation systems for taro patches). Improved food preservation and other storage practices. Implement permaculture,

	for annual and tree crops; further 51% suitable for tree crops.	(swiftlet) bird are common in particular areas. Water (household tanks are supplemented by tankers filled at public reservoirs or natural wells; maintenance of roofs, gutters and tanks for clean rainwater storage tends to be neglected; all households on Atiu have 6000 or 5500 litre plastic water tanks which were installed in 2004 and 2005; since then Atiu has experienced two serious drought periods. This includes 2010, when the island residents had to resort to pumping water from underground caves; the seriousness of that drought has caused the island leaders to re-evaluate the water supply situation) Agriculture (leading development sector; only seven households not involved in agricultural activity; 80% produce entirely for home consumption;16% engaged in subsistence production with some cash cropping; only 4% of agricultural producers are commercial; one need is to improve water wells to increase water supply for irrigation of wet taro land) Health and Sanitation (In recent years the incidence of non-communicable diseases such as diabetes, hypertension and asthma has risen; the costs of specific medicines for such diseases as Parkinson's are burdensome; of the 161 dwellings, 58 have flush toilets, 52 pour flush toilets and 100 pit toilets) Fishing (over 80% of all households are involved in fishing, mostly for home consumption only; the bulk of fishing activity occurs inside and on the reef, but an increase in the number of outboard motors has permitted access to the sea beyond the reef, so that trolling and deep bottom fishing have increased) Tourism (there has been a relatively marked	including recycling green waste. Reintroduce and repatriate culturally significant crop varieties, especially taro, that were significantly dam-aged or lost during past cyclones. Establishment of community nurseries and introduction of seedling propagation techniques for the sustainable supply of climate-resilient crops. Improve fish storage methods. Fisheries database for monitoring stocks. Introduce resilient plant species, cyclone resilient crops and salt and drought resilient plants. Water capture, storage and groundwater management capacities will be carried out through integrated water-management approaches dealing with the main sources and components of water supply, supported by demand management and awareness raising actions, as well as the application of regulatory instruments. Additional rainwater harvesting will involve capturing water from big community buildings and increasing water storage capacity for households (water tanks, gutters and tubes). Suitable rust-resistant and solar water pumps will be used to distribute water between storage facilities and households. On-going maintenance of community water tanks will be improved. In order to improve water efficiency, use of brackish/seawater and water recycling will be promoted when appropriate, Simple monitoring devices will be fitted to public galleries and main water tank supplies, to monitor use of public water supplies. Specific infrastructure projects designed to enhance water security in the face of current and projected climate change impacts will also be implemented. Island leaders have agreed on construction of an additional centrally located community water storage facility involving installation of a 500,000 litre water storage facility to be filled from bigger community buildings located in the centre of the island. Additional home

		expansion in tourism in recent years, with annual visitor numbers of over 1500; future growth in tourism will need to be managed carefully, with an eye on the island's infrastructure capacity, especially water supply, and on ensuring that benefits accrue to the local population through employment and supplying products and service; a major area for participation in tourism for a larger portion of the population is the supply of women's handicrafts)	based storage capacity of one more tank per household will be implemented. This will double the current 5500-6000 litre storage capacity per dwelling to 11,500-12,000 litres Tourism-related interventions will reflect that that the natural assets which Atiu communities rely on for tourism activities are high vulnerable to direct and indirect impacts of climate change. The tourism interventions will be designed to stimulate agriculture, fisheries, construction, arts, craft and cultural development as well as contributions to community organisations such as the Church and the development of public infrastructure (e.g. power, water, sewage). Specific interventions will include increasing the volumes and varieties of fresh local organic produce available, reflecting climate change considerations when upgrading public facilities such as visitor information centres, markets and public conveniences, and a water conservation awareness programme for tourists.

Mangaia

Resident Population & Gender	Land/Lagoon Area & Use	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
640 51% female	Distance from Rarotonga: 204 km Land: 51.8 **km^2**	Water (most households are connected to the public water main; 90 access public water catchments and 50 have	Water capture, storage and groundwater management capacities will be carried out through integrated water-management approaches dealing with the main sources

199 dwellings	Lagoon: Nil Length of Reef: 27 km Only 8% of the island is suitable for annual and tree crops, with an additional 41% suitable for tree crops alone	their own rainwater tanks; water is in short supply, and mains water is only available for limited hours each day; the galvanized pipes of the water reticulation system have deteriorated, and some tanks, roofs, and guttering are in disrepair) Agriculture (Mangaia is poorly endowed with land by Southern Group standards; nonetheless, agriculture is the principal productive sector in the island economy; only 24 households do not engaged in agricultural activity of some kind; most of households produce exclusively for home consumption, but a substantial number supplement subsistence production with cash cropping; the main crops are avocado, banana, breadfruit, chestnut, coconut, mango, taro, and tarua; home gardens are mainly the responsibility of the women to plant, maintain, and harvest; to a certain extent, women are still associated with the cultivation of the very high-quality swamp taro; the Island Council and residents have expressed the need for identification of export markets and for assistance with marketing) Tourism (There are approximately 300 visitors to Mangaia annually, staying for an average of 4 days. Participation in the tourism sector is mainly restricted to supplying handicrafts made by women to craft outlets and family contacts on Rarotonga for selling on to tourists) Health and Sanitation (generally the population is in good health; however, there is a familiar rising incidence of	and components of water supply, supported by demand management and awareness raising actions, as well as the application of regulatory instruments. Additional rainwater harvesting will involve capturing water from big community buildings and increasing water storage capacity for households (water tanks, gutters and tubes). Suitable rust-resistant and solar water pumps will be used to distribute water between storage facilities and households. On-going maintenance of community water tanks will be improved. In order to improve water efficiency, use of brackish/seawater and water recycling will be promoted when appropriate, Simple monitoring devices will be fitted to public galleries and main water tank supplies, to monitor use of public water supplies. A specific infrastructure project designed to enhance water security in the face of current and projected climate change impacts will also be implemented. The water system feeding the Tamarua village is leaking badly and water resources are being wasted as result, with very low efficiency of scarce resources that are being further compromised by climate change impacts. This also makes the Tamarua water network prone to contamination, thus posing a health risk to the whole community. The upgrading project involves trenching and laying approximately 1.8 km of new pipeline and repairing to the existing intakes. Climate-resilient agricultural and fisheries practices will be implemented through a set of actions designed to cover the complete cycle of food production. The introduction of climate-resilient crop varieties and related farming techniques will also contribute to the reintroduction of culturally significant varieties affected by past extreme climatic events, and to the diversification of crops and related food products. Fish storage methods will be improved. These actions will enhance food security under changing climatic conditions. Health support and vector-borne disease control techniques will be introduced in an integrated way, combining enhanced prevention, control and response measures, supplemented by enhanced water safety and food security

		non-communicable diseases such as hypertension and diabetes; illness is generally understood to be caused by viruses and germs, hereditary factors and human relationships; Mangaia is well served with flush toilets - 77 households have flush toilets, 70 pour flush toilets, and 89 with pit toilets; 114 dwellings have a bath/shower)	measures. Specific actions will include expanding the use of vector-borne disease control techniques and vector control with a focus on prevention activities through health education and awareness, strengthening community cleanup programmes to control areas of stagnant water, encouraging balanced nutrition and food storage, encouraging increased drinking of fluids in order to avoid dehydration, including the use of traditional sources of fluid, such as coconut, increasing response by health staff to diagnose and treat climate-related illnesses, and modifying cultural and behavioural practices in order to reduce stress in hot weather, and to counteract the health effects of poor water quality, including filtration and boiling of water at critical times when there is poor water quality.

Mauke

Resident Population & Gender	Land/Lagoon Area & Use	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
391 48% female	Distance from Rarotonga: 278 km Land: 18.4 **km^2**	In general the social structure of Mauke is similar to that observed in traditional times. Men are	Climate-resilient agricultural and fisheries practices will be implemented through a set of

110 dwellings	Lagoon: Nil Length of Reef: 17 km 23% of the land area is suitable for cultivation of both annual and tree crops; a further 63% is suitable for tree crops.	responsible for outdoor activities such as tending animals, planting and fishing and women are responsible for cooking food, handicrafts and caring for the family; a notable feature of the current population is that the economically active age group of 15 – 64 comprises over 50 percent of the population; there are few births being recorded on the island and females dominate the older age groups Agriculture and Fishing (land availability is not a constraint to production, especially with the decline in population of working age; only 7% of households do not engage in any agricultural activity, while12% do so, but only in a minor way; of those substantially involved, over two-thirds farm only for home consumption, while 16% are engaged in subsistence production with supplementary cash cropping; marine resources are a source of food and recreation for the people of Mauke; around 70% of households are involved in fishing) Health and Sanitation (generally the Mauke population are of good health; however, there are rising incidences of non-communicable diseases such as hypertension and diabetes; 58 dwellings have flush toilets, five have pour-flush toilets, and 100 have pit toilets; Water (a water-upgrading programme was recently completed; it included rebuilding and repairing public water tank catchments and encouraging all households to install private water tanks as well) Tourism (tourist accommodation is very limited; participation in tourism is restricted to the supply of handicrafts to Rarotonga by the women of Mauke)	actions designed to cover the complete cycle of food production. These will involve the establishment of community nurseries and introduction of seedling propagation techniques for the sustainable supply of climate-resilient crops. Improve fish storage methods. Undertake coconut replanting programmes. Encourage subsistence home gardening (Island Admin can provide compost from mulch from forest mulcher). The introduction of climate-resilient crop varieties and related farming techniques will also contribute to the reintroduction of culturally significant varieties affected by past extreme climatic events, and to the diversification of crops and related food products. These actions will enhance food security under changing climatic conditions. Activities aiming at enhancing health support and vector-borne disease control techniques will be introduced in an integrated way, combining enhanced prevention, control and response measures, supplemented by enhanced water safety and food security measures. Specific actions will include expanding the use of vector-borne disease control techniques and vector control with a focus on prevention activities through health education and awareness, strengthening community cleanup programmes to control areas of stagnant water, encouraging balanced nutrition and food storage, encouraging increased drinking of fluids in order to avoid dehydration, increasing response by health staff to diagnose and treat climate-related illnesses, and modifying cultural and behavioural practices in order to reduce stress in hot weather, and to counteract the health effects of poor water quality, including filtration and boiling of water at critical times when there is poor water quality. In addition to these other potential actions are to

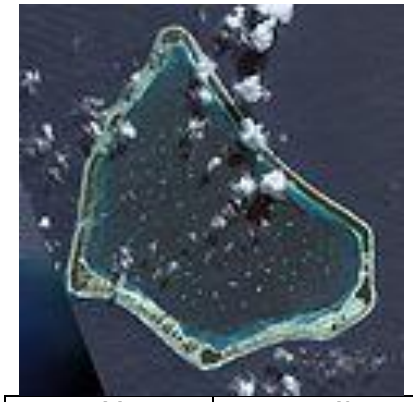
			ensure emergency shelters are capable of withstanding category five cyclones, strengthen community cleanup programme (tutaka) to control areas of stagnant water, repair community activity areas e.g. hardcourts, sports fields.

Mitiaro

Resident Population & Gender	Land/Lagoon Area & Use	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
219 45% female 62 dwellings	Distance from Rarotonga: 263 km Land: 22.3 **km^2** Lagoon: Nil Length of Reef: 18 km Mitiaro is poorly endowed with agricultural land; only 5% of the land is suitable for annual crop cultivation and 41% for tree crops.	In general the social structure of Mitiaro is similar to that observed in traditional times. Men are responsible for outdoor activities such as tending animals, planting and fishing and women are responsible for cooking food, handicrafts and caring for the family. Women today are increasingly seen in community and outdoor activities as well as providing support in family garden plots and selling handicrafts to increase the family income. Agriculture and Fishing (all house-holds are engaged in agriculture, 37 in purely subsistence production and the rest in subsistence production with supplementary cash cropping; 10 households derive all their income from agriculture, 32 three-quarters, and four half. The main tree crops are banana, mango, and coconut, with taro and tarua also grown. Home garden crops included rukau viti, tomato, cabbage, and kumara; fish, eel, and seafood from the reef are a regular part of the diet; communal sharing of fish catches is important) Water (rainwater is the principal source of drinking	Water capture, storage and groundwater management capacities will be carried out through integrated water-management approaches dealing with the main sources and components of water supply, supported by demand management and awareness raising actions, as well as the application of regulatory instruments. Additional rainwater harvesting will involve capturing water from big community buildings and increasing water storage capacity for households (water tanks, gutters and tubes). Suitable rust-resistant and solar water pumps will be used to distribute water between storage facilities and households. On-going maintenance of community water tanks will be improved. In order to improve water efficiency, use of brackish/seawater and water recycling will be promoted when appropriate, Simple

		water; a public reticulation system of 56 km provides brackish water for laundering, bathing, and other uses; most households are connected to the public water mains, 45 have their own rainwater tank, and 15 draw water from public water catchments; of the 62 dwellings, 35 have water piped to outside, 20 have water piped inside, while seven have to cart water to the house) Health and Sanitation (there is a strong use of traditional medicine, often as the first source of treatment; the community combines both traditional and modern methods of treatment and values both; due to the relatively large number of residents over 60, concerns have been raised over the lack of facilities and equipment required to help families look after the elderly; the sanitation system is well designed and effective; 23 households have flush toilets, 36 have pour-flush toilets, and just seven have pit latrines) Tourism (guesthouse accommodation is exceedingly limited; the total number of tourists visiting annually is around 200)	monitoring devices will be fitted to main water tank supplies, to monitor use of public water supplies. Health support and vector-borne disease control techniques will be introduced in an integrated way, combining enhanced prevention, control and response measures, supplemented by enhanced water safety and food security measures. Specific actions will include expanding the use of vector-borne disease control techniques and vector control with a focus on prevention activities through health education and awareness, strengthening community cleanup programmes to control areas of stagnant water, encouraging balanced nutrition and food storage, encouraging increased drinking of fluids in order to avoid dehydration, including the use of traditional sources of fluid, such as coconut, increasing response by health staff to diagnose and treat climate-related illnesses, and modifying cultural and behavioural practices in order to reduce stress in hot weather, and to counteract the health effects of poor water quality, including filtration and boiling of water at critical times when there is poor water quality.

Manihiki



Resident Population & Gender	Land/Lagoon Area & Use (km^2)	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
356 44% female 118 dwellings	Distance from Rarotonga: 1204 km Land: 5.4 **km^2** Lagoon: 40.63 **km^2** Length of Reef: 30 km There is no land suitable for both annual and tree crops. The main vegetation is coconut, pandanus, and a few breadfruit trees. Indigenous trees such as ngangie and toa are prevalent on all the islets (motu) along the reef. The lagoon area constitutes a crucial marine resource.	Environmental features include extensive seabird nesting on isolated motus, turtle nesting grounds, and stocks of blacklip pearl oyster. Fishing and pearl farming are the mainstays of the island economy. All households rely on fish for their food, and pearl farming has developed from the early 1980s into a somewhat lucrative income-earning option for the islanders. The existing and potential impact of black pearl oyster production on lagoon ecology is an important environmental issue. The total number of dwellings declined from 149 in 1996 to 118 in 2001. In 1997 Cyclone Martin destroyed about 90 percent of the houses and killed 19 people. New Zealand sponsored a housing project, which was completed in 2001. The houses are cyclone micro-shelters which have inbuilt underground water tanks and septic systems. The houses in the villages are spread out on family owned plots. Each village has a community Cyclone Management Centre with emergency power, water supply and accommodation. These centres also function as community meeting places. In general, the division of labour observed in traditional	Currently, agricultural production in Manihiki is hindered by the poor quality of soil, exacerbated by climate-induced drought. Therefore, measures will aim at improving soil quality in order to retain moisture and nutrients to support crops coping with drought situations, and employing other means of growing vegetables that is not reliant on soil quality such as hydroponics. Climate-resilient agricultural and fisheries practices will be implemented through a set of actions designed to cover the complete cycle of food production. The introduction of climate-resilient crop varieties and related farming techniques will also contribute to the reintroduction of culturally significant varieties affected by past extreme climatic events, and to the diversification of crops and related food products. Fish storage methods

		times still exists today, with men being responsible for fishing, tending animals, and building houses and canoes, and women being responsible for cooking food, processing raw materials for weaving, and child rearing. The main industry on the island is pearl farming, which has created a significant number of unskilled jobs. As a result, families are less reliant on welfare payments. Taro of the northern tropical variety is now established and home gardening is encouraged. Rice and fish are staple foods. The fish is somewhat varied and plentiful. Health and Sanitation (there is a high prevalence of diarrhoea problems, influenza, and acute respiratory infections, suggesting environmental causes of poor hygiene, lack of food safety, and lack of a safe water supply; there is a rise in the occurrence of non-communicable lifestyle diseases (hypertension and diabetes); poor nutrition contributes to obesity; injury-related infections are problematic; 80 households have flush toilets, 25 have pour flush toilets, 2 have pit toilets, and 12 have lagoon toilets) Tourism (there is no registered tourist accommodation on Manihiki, although a few homestay operations exist; this lack of accommodation and the limited number and high cost of seats on flights from Rarotonga discourage visitation; participation in tourism is generally focused on the supply of black pearl and pearl products for on-selling to tourists; Manihiki women were once prolific producers of beautiful rito hats, fans and purses. This is less so today, due in part to the demands of pearl farming) Water (rain provides the only source of water for Manihiki; 103 households rely on their own rainwater tanks, with 28 using public water catchments. Only 48 households have water piped inside the home; 37 have it piped to outside the dwelling; and 33 have to carry water to the home)	will be improved and clam restocking initiatives will be undertaken. These actions will enhance food security under changing climatic conditions. Tourism-related interventions will reflect that that the natural assets which Manihiki communities rely on for tourism activities are high vulnerable to direct and indirect impacts of climate change. The tourism interventions will be designed to stimulate agriculture, fisheries, construction, arts, craft and cultural development as well as contributions to community organisations such as the Church and the development of public infrastructure (e.g. power, water, sewage). Specific interventions will include increasing the volumes and varieties of fresh local organic produce available, reflecting climate change considerations when upgrading public facilities such as visitor information centres, markets and public conveniences, and a water conservation awareness programme for tourists.

Penrhyn

Resident Population & Gender	Land/Lagoon Area & Use (km^2)	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
255 45% female 84 dwellings	Distance from Rarotonga: 1365 km Land: 9.8 **km^2** Lagoon: 233 **km^2** Length of Reef: 59 km There is no land suitable for either annual or tree crops. Soil is infertile, consisting mainly of coral debris, fragmented shells and silty limestone. Moisture retention is poor. Coconut palms, pandanus, and breadfruit trees are the main vegetation. Indigenous trees such as ngangie and toa are prevalent on all the islets. The large lagoon area constitutes a crucial marine resource. Penrhyn is notable for its green and hawksbill turtle nesting sites and natural stocks of blacklip pearl oyster.	Water (In 1982, as a result of a prolonged dry spell, water had to be airlifted to the island to replenish empty water tanks; 79 households have their own rainwater tank and 20 rely on a public water catchment; supply of water from these sources was piped inside the house in 21 cases and to a point outside the house in 29 cases; 33 households have to carry or cart water to the dwelling) Health and Sanitation (a high prevalence of diarrhoea problems, influenza, and acute respiratory infections, which are attributable to poor hygiene, inadequate food safety, and unsafe water supplies; many in the community have severe weight problems, with very little organized sports activities; there are few green	Water capture, storage and groundwater management capacities will be carried out through integrated water-management approaches dealing with the main sources and components of water supply, supported by demand management and awareness raising actions, as well as the application of regulatory instruments. Additional rainwater harvesting will involve capturing water from big community buildings and increasing water storage capacity for households (water tanks, gutters and tubes). Suitable rust-resistant and solar water pumps will be used to distribute water between storage facilities and households. On-going maintenance of community water tanks will be improved. In order to improve water efficiency, use of brackish/seawater and water recycling will be promoted when appropriate, Simple monitoring devices will be fitted to main water tank supplies, to monitor use of public water supplies. Health support and vector-borne disease control techniques will be introduced in an integrated way, combining enhanced prevention, control and response measures, supplemented by enhanced water safety and

		vegetables or fresh fruit in the diet of most people skin infections and wounds are common; there is elevated incidence of conjunctivitis; 44 dwellings have flush toilets, 29 have pour-flush toilets, and 14 have lagoon toilets; water shortages can cause problems for all flush toilets) Tourism (there is no registered tourist accommodation on Penrhyn, although a few homestay operations exist; this lack of accommodation and the limited number and high cost of seats on flights from Rarotonga discourages visitation; participation in tourism is generally focused on the supply of black pearl and pearl products for on-selling to tourists; Penrhyn is considered the Cook Islands' centre of creative work utilizing rito, the woven craftwork of young, bleached coconut leaves; the highly sought-after products consist of hats, fans, purses, mats, and brooms)	food security measures. Specific actions will include expanding the use of vector-borne disease control techniques and vector control with a focus on prevention activities through health education and awareness, strengthening community cleanup programmes to control areas of stagnant water, encouraging balanced nutrition and food storage, encouraging increased drinking of fluids in order to avoid dehydration, including the use of traditional sources of fluid, such as coconut, increasing response by health staff to diagnose and treat climate-related illnesses, and modifying cultural and behavioural practices in order to reduce stress in hot weather, and to counteract the health effects of poor water quality, including filtration and boiling of water at critical times when there is poor water quality.

Rakahanga

Resident Population & Gender	Land/Lagoon Area & Use	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
141 64% female 32 dwellings	Distance from Rarotonga: 1248 km Land: 4.1 **km^2** Lagoon: 13 **km^2** Length of Reef: 13 km Atoll soil is poor; vegetation consists mainly of coconut palms, pandanus, and a few breadfruit trees. Indigenous trees such as ngangie and toa are prevalent on all the islets. Ancient taro swamps are the main source of root crops. The atoll is a green turtle nesting site. The atoll has a shallow, almost landlocked lagoon. The lagoon appears semi-stagnant due in part to its landlocked nature. No ship passage enters the lagoon, and the flats between motus are shallow. Inter-island ships take up to 3 days to reach the island from Rarotonga. A small boat makes the journey from Manihiki, which can take 2 hours or more depending on the seas. A 1.7 km airstrip was built in the early 1980s but is out of use since following damage by cyclones in 1987 and 1997.	In general, the division of labour observed in traditional times still exists today, with men being responsible for fishing, tending animals, building houses and canoes, and women being responsible for cooking food, processing raw materials for weaving, and child rearing. Health and Sanitation (similar to other islands in the Northern Group, there is a high prevalence of diarrhoea problems, influenza, and acute respiratory infections; twelve of the households have flush toilets, and 20 have pour flush toilets; there are no pit or lagoon toilets still in use) Agriculture and Fishing (Fishing remains important for subsistence purposes, and mostly involves hook and line fishing on, over and outside the reef; pearl farming has become a significant activity in Rakahanga; the nono fruit is the latest tree crop harvested from wild plants on the island; this plant is native to the island and grows wild in abundance; there is potential to expand the cultivation and harvesting of nono as an export commodity; experimental hydroponic growing of vegetables is being used as a means of providing vitamin and mineral supplements to the daily diet) Tourism (Rakahanga's isolation and the lack of accommodation constitute major constraints to tourism development; some indirect benefits from Cook Islands	Given the low-lying atoll formations of Rakahanga highly exposed to climate-induced impacts, coastal protection activities designed to manage current and anticipated climate change risks will be undertaken in order to safeguard vital community assets. Emphasis will be in implementing soft adaptation techniques, such as vegetation planting to protect coastal land from erosion and provide windbreaks. Adaptation actions will be supported through the application of local regulatory measures and community awareness programmes.

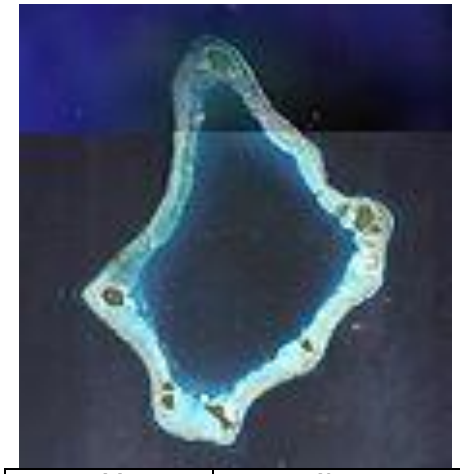
	The atoll is a green turtle nesting site.	tourism could be received if Rakahanga women could successfully market their handicrafts (hats, fans, purses, mats and brooms)) Water (26 households have their own rainwater tanks and 6 households rely on four public water catchments. Sixteen have water piped outside the dwelling; 8 have it piped inside; and 8 have to cart water to the home)	

Pukapuka and Nassau

Resident Population & Gender	Land/Lagoon Area & Use	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
Pukapuka 507 44% female 124 dwellings Nassau 75 41% female 15 dwellings	Pukapuka Distance from Rarotonga: 1324 km Land: 1.3 **km^2** Lagoon: 133 **km^2** Length of Reef: 41 km Nassau Land: 1.3 **km^2** Lagoon: 3 **km^2** Length of Reef: 6 km Pukapuka is a coral atoll consisting of three islets (motus) situated at the corners of a roughly triangular lagoon. Access to the lagoon for canoes and light boats is limited to several reef passages to the north of the main village. One motu has a significant area of ancient taro and puraka swamps. The two islands are vulnerable to cyclones. Nassau is a sand cay of 121 hectares, with dense vegetation and a wide reef. It is the only island	Water (drought can be a serious problem; 81 households in Pukapuka and 15 in Nassau rely on public water catchments as a source of water, while 58 households in Pukapuka and one in Nassau have their own rainwater tanks; only 11 households in total have water piped inside the home; 68 have water piped to a point outside the dwelling; and 60 have to carry water to the dwelling) Health and Sanitation (statistics show a high prevalence of scabies, skin sepsis and ringworm, suggesting that hygiene and safe water supply are issues; obesity is a problem; skin infections and wounds are common; traditional medicine and massage are use; there are few green vegetables or fruit in the diet of most people; hypertension,	Water capture, storage and groundwater management capacities will be carried out on both Pukapuka and Nassau, through integrated water-management approaches dealing with the main sources and components of water supply, supported by demand management and awareness raising actions, as well as the application of regulatory instruments. Additional rainwater harvesting will involve capturing water from big community buildings and increasing water storage capacity for households (water tanks, gutters and tubes). Suitable rust-resistant and solar water pumps will be used to distribute water between storage facilities and households. On-going maintenance of community water tanks will be improved. In order to improve water efficiency, use of brackish/seawater and water recycling will be promoted when appropriate, Simple monitoring devices will be fitted to public galleries and main water tank supplies, to monitor use of public water supplies. A specific infrastructure project designed to enhance water security in the face of current and projected climate change impacts will also be implemented. Investigations reveal that it is possible for the Pukapuka community to have an improved supply by using rain water tanks to provide most of the potable water needs of the island, with the rest of the domestic supply supplemented by and derived from ground water resources. Developing the ground water resources will require the installation of three underground gallery

	in the Northern Group without a lagoon. Pukapuka's soil is infertile. Coconut palms, pandanus, puraka (a taro variety tolerant of the harsh atoll environment) and a few breadfruit trees constitute the main vegetation. Indigenous trees such as ngangie and toa are prevalent on all the islets. The atoll is a nesting site for green and hawksbill turtles. Trochus and blacklip pearl oysters have been introduced. There is no ship passage into the Pukapuka lagoon, and the flats between motus can be fairly shallow. An airstrip was constructed in 1996. It is 1.5 km in length and is used infrequently. Flights to Pukapuka are charters.	gout and diabetes is a problem; 75% of adults smoke; 114 households on Pukapuka have pour flush toilets, 10 have flush toilets, and 4 have pit latrines; in Nassau, 9 households have pour flush toilets, 6 have pit latrines, and one has a flush toilet. Water for washing is from shallow wells) Agriculture and Fishing (all households harvest coconuts and plant bananas, kumara and puraka; home gardens also include rukau viti (hibiscus esculentum), tomatoes, and chinese cabbage; women and men share home gardening activities; all but 13 households keep pigs and chickens; fishing is important for subsistence purposes; most of the households on Pukapuka engage in fishing for home consumption, while all those on Nassau supplement subsistence fishing with some cash sales; there is no commercial fishing)	systems on the southern side of Wale islet, for pumping and delivery to community stand pipes located around the island The main work to be undertaken includes excavation and establishment of water galleries in Wale, installation of a water tower and construction of two 45,000 liter water tanks, installation of solar pumps and pumping networks and installation of a delivery network. Health support and vector-borne disease control techniques will be introduced in an integrated way, combining enhanced prevention, control and response measures, supplemented by enhanced water safety and food security measures. Specific actions will include expanding the use of vector-borne disease control techniques and vector control with a focus on prevention activities through health education and awareness, strengthening community cleanup programmes to control areas of stagnant water, encouraging balanced nutrition and food storage, encouraging increased drinking of fluids in order to avoid dehydration, including the use of traditional sources of fluid, such as coconut, increasing response by health staff to diagnose and treat climate-related illnesses, and modifying cultural and behavioural practices in order to reduce stress in hot weather, and to counteract the health effects of poor water quality, including filtration and boiling of water at critical times when there is poor water quality.

Palmerston



Resident Population & Gender	Land/Lagoon Area & Use	Key Sectors – Summary of Issues and Vulnerabilities	Focus of SRIC Interventions
63 48% female 12 dwellings	Distance from Rarotonga: 500 km Land: 2.1 **km^2** Lagoon: 56 **km^2** Length of Reef: 26 km The soil of the six islets along the reef is infertile and not suitable for annual crops. But what are known locally as “planting pits” have been created by composting, and a range of crops is grown, including breadfruit, pawpaw, lime, taro, and banana. In addition are the typical atoll tree crops of coconut and pandanus. Indigenous trees such as ngangie and toa are prevalent on all the islets. Palmerston is a major nesting site	Water (11 households have their own rainwater tanks, while five use the public water catchment. Eight have water piped inside the dwelling, two have it piped outside, and two had to cart water to the home) Sanitation (11 households report having a flush toilet; five report having a pour-flush toilet; five report they have a pit latrine) Agriculture and Fishing (nine households are engaged in agricultural activity but only in a minor way; eight households raised chickens and pigs; six households engage in fishing, three for home consumption	Water capture, storage and groundwater management capacities will be carried out through integrated water-management approaches dealing with the main sources and components of water supply, supported by demand management and awareness raising actions, as well as the application of regulatory instruments. Additional rainwater harvesting will involve capturing water from big community buildings and increasing water storage capacity for households (water tanks, gutters and tubes). Suitable rust-resistant and solar water pumps will be used to distribute water between storage facilities and households. On-going maintenance of community water tanks will be improved. In order to improve water efficiency, use of brackish/seawater and water recycling will be promoted when appropriate, Simple monitoring devices will be fitted to main water tank supplies, to monitor use of public water supplies. A specific infrastructure project designed to enhance water security in the face of current and projected climate change impacts will also be implemented. This involves provision of a reliable and

	for green turtle, which is hunted for subsistence. Rare seabirds also nest on Palmerston. Parrot fish are caught and sold to buyers on Rarotonga to such an extent as to put pressure on fish stocks.	only, and three for subsistence and cash sales; a privately owned blast freezer is used to freeze parrot fish for transport to Rarotonga) Tourism (Palmerston has no formal tourist accommodation, but homestay arrangements are possible)	more secure water supply for the Palmerston island community. 25 additional water tanks will be delivered and installed on the island, resulting in all households having two water tanks each. Tank bases will be installed, along with spouting, first flush system down pipes and outlet taps. Coastal protection activities designed to manage current and anticipated climate change risks will be undertaken in order to safeguard vital community assets. Emphasis will be in implementing soft adaptation techniques, such as vegetation planting to protect coastal land from erosion and provide windbreaks. Adaptation actions will be supported through the application of local regulatory measures and community awareness programmes. Health support and vector-borne disease control techniques will be introduced in an integrated way, combining enhanced prevention, control and response measures, supplemented by enhanced water safety and food security measures. Specific actions will include expanding the use of vector-borne disease control techniques and vector control with a focus on prevention activities through health education and awareness, strengthening community cleanup programmes to control areas of stagnant water, encouraging balanced nutrition and food storage, encouraging increased drinking of fluids in order to avoid dehydration, including the use of traditional sources of fluid, such as coconut, increasing response by health staff to diagnose and treat climate-related illnesses, and modifying cultural and behavioural practices in order to reduce stress in hot weather, and to counteract the health effects of poor water quality, including filtration and boiling of water at critical times when there is poor water quality.

Annex 6

List of Stakeholders Consulted

A. Prior to National Adaptation Planning Week

Date	Meeting	Time
Monday 21st	Office of the Prime Minister/Minister for Environment (Mac Mokoroa – *Chief of Staff*, Liz Koteka – *Director for Policy and Planning*, William Tuivaga – *Emergency Management Cook Islands*)	10.00am
Monday 21st	Ministry of Infrastructure and Planning (Otheniel Tangianau - *Secretary*, Adrian Teotahi – *Water Division*, Keu Mataroa – *PACC/IWRM* , Paul Maoate – *IWRM*)	3.00pm
Tuesday 22nd	Ministry of Marine Resources (Ben Ponia - *Secretary*, Kori Raumea – *Inshore Fisheries*)	10.30am
Tuesday 22nd	Ministry of Agriculture (Anthony Brown - *Secretary*, William Wigmore - *Researcher*)	1.00pm
Tuesday 22nd	Ministry of Finance and Economic Management MFEM (Lavinia Tama – *Budget Secretariat*, Dallas Young – *Budget Secretariat*, Peter Taivairanga – *Aid Management Division*)	3.00pm
Wednesday 23rd	Energy Division, Ministry of Infrastructure and Planning (Mata Nooroa, Tangi Tereapii)	9.00am
Wednesday 23rd	CI Meterological Service (Arona Ngari - *Director*, Maara Vaiimene - *Officer*)	11.00am
Wednesday 23rd	Ministry of Internal Affairs – *responsible for Gender/Labour/Welfare etc in the Cook Islands including the Pa Enua.* (Bredina Drollet - *Secretary*, Ruth Pokura – *Gender officer*)	2.30pm
Thursday 24th	Ministry of Education (Jane Taurarii – *Science Adviser*, Gail Townsend – *Director for Planning and Development,* Danielle Cochrane – *Social Science Adviser*)	9.00am
Thursday 24th	Department of National Human Resources Development-*responsible for scholarship schemes/vocational training (hospitality and trades training) for the Cook Islands including the Pa Enua* (Frances Topa-Apera)	11.00 am
Thursday 24th	Ministry of Health (Tata Vaeau, Charlie Ave – *Health Inspectors*)	1.00pm
Thursday 24th	Tourism Corporation (Metua Vaiimene – *Director for Destination Development*)	2.00pm
Friday 25th	Cook Islands Investment Corporation (Lloyd Miles - *CEO*)	9.00am
Friday 25th	Koutu Nui (Te Tika Mataiapo – Dorice Reid - *Président*)	11.00am
Friday 25th	National Council of Women: *a Non Government organisation that is strong in advocating for gender roles and the role of women as providers in the home* - Vaine Wichman (*President*)	2.30pm

B. National Adaptation Planning Week
28 Feb - 4 Mar 2011

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C. National Programme Appraisal Committee
11 May, 2011

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May 27, 2011

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Annex 7

Details of Proposed Infrastructure-climate proofing Projects (Output 3.2)

A. Costs

Project	Total Cost (NZD)	Total Coast (USD)	Funded by SRIC (USD)
Pukapuka Water Gallery Improvement	292,000.00	236,520.00	236,520.00
Aitutaki Water Tanks	360,000.00	291,600.00	291,600.00
Tamarua Water Pipeline Improvement	90,000.00	72,900.00	72,900.00
Atiu Emergency Water Storage	100,000.00	81,000.00	81,000.00
Atiu Water Tanks	250,000.00	202,500.00	202,500.00
Palmerston Water Tanks Upgrade	35,000.00	28,350.00	28,350.00
Ruaau/Akaoa Village, Water Upgrade	425,000.00	344,250.00	344,250.00
Total	1,552,000.00	1,257,120.00	1,257,120.00

B. Project Briefs (see following pages)

A set of specific and cross cutting institutional measures will be put in place to ensure the sustainability of these water-infrastructure interventions. Sustainability of water supply will be pursued in each project site through beneficiary participation in the setting and implementing of policies and institutional mechanisms relating to the management of water resources:

- Understanding and implementation of water management policies
- Establishment of a village/ Island council water committees to promote water conservation
- Participation of beneficiaries in water conservation practises at the household levels
- Introduction of fee and payment system for villagers for water supply and system maintenance services (e.g. water top up in tanks, supply from emergency storage facilities, breakdowns in system, etc.)
- Establishing minimum water storage capacities
- Houses to be effectively spouted to efficiently catch rainwater

Project 05	**Sector ; Water**
Name of Project	Aitutaki Water Tanks
Name of Island and Location	Aitutaki .The entire island
Background / Rationale	Water supply on Aitutaki island is derived from ground water sources. However the water is becoming increasingly brackish in nature and is no longer suitable for drinking (apart off course from the Vaimaru sources after treatment) and is mainly used for domestic cleaning and sanitation purposes. All drinking water on Aitutaki, like most atoll islands are therefore supplied though home based water tanks as well as community water tanks. Aitutaki was recently affected by Cyclone Pat in February 2009, during which many water tanks were damaged by the cyclone. Local fund raising efforts conducted in the country have raised enough funds to purchase approximately 240 x 6,000 water tanks. There is however a need to purchase extra water tanks for the remaining 297 households that do not have water tanks. The tanks will be secured in ways that prevent destruction during strong wind events; they will also help reduce the risk of severe water shortages during times of prolonged drought, which is an increasing risk.
Objectives	The provision of reliable, and more secure water supply for the Aitutaki island communities.
Description of Works	The scope of works includes the following; Tanks Supply(297x6000liter tanks) • Purchase of the required tanks and freighting to the island • Construction of the tank bases • Installation of spouting, first flush system, downpipes etc into the tanks and outlet tap
Estimated Costs	Approximately 360,000NZD (291,600USD)
Estimated beneficiaries	Aitutaki has a residential population of 2,235 people and with approximately and 573 households. Approximately 297 households, or 1150 residents, will directly benefit from this initiative
Land requirements	Land will be required at each residential property for the installation of water tank base pads. This is to protect the tank bottoms from damages.

Adaptation considerations	Climate change is expected to increase incidences of drought. The project is expected to minimise climate change impacts to the communities concerned via: • Reducing heavy reliance on groundwater, which is becoming increasingly brackish, further exacerbated by salt-water intrusion induced by climatic effects • Reducing the risk of damage during strong wind events; • Improving storage capacities in the homes • Improve management and use of rainwater water resources • Water supply security • Contribute to drought proofing the community supply
Project Preparation Works	A rapid scoping and assessment exercise has been undertaken by MOIP and the Aitutaki Island Administrations. This includes rough estimates of the materials required to complete the water tank component of the project. However additional household survey is required to collect the extra informations required for the finalisation of the project design. Contract documentations for the tanks components will be done once the project is finalised
Project Implementation readiness	The Aitutaki Island Administration and MOIP are ready to implement this project as soon as it is approved
Project Sustainability and Participation of the project Beneficiaries	Sustainability of water supply to the targeted clients will be achieved through beneficiary participation in the management of water resources especially in; • All households on the island to have a minimum 6000 liters water storage tanks • Identifying of additional water supply sources from the existing island supply system for supplementing existing household supplies • Minimum water charges for topping up of water tanks
Risks Assessment	The main risks forecasted ; • Weather conditions • Construction quality • Implementation of standards These risks however are manageable.

Project 06	**Sector ; Water**

Name of Project	Tamarua Water Pipeline Improvement
Name of Island and Location	Mangaia Island; Tamarua Village located on the western coast of the island
Background / Rationale	**Tamarua Village Water Pipeline Upgrade** The water systems in Mangaia consist of four intakes which feed three different villages, as follows: • The Ivirua village - fed by the Karanga intake • Oneroa Village - fed by the Keia intakes 1 and 2 • The Tamarua village - fed by the Veitatei intake. All village water supplies are gravity fed, and thus no pumping is required. At present work is underway to complete the improvement of the Oneroa village water supply. However, while this is occurring, the water system feeding the Tamarua village is leaking badly and water resources are being wasted as result, with very low efficiency of scarce resources further compromised due to climate change impacts. This calls for an urgent upgrade to the village supply. The Tamarua water system is based on the Veitatei intake located 3km from the village. The main issue with the system is that the pipeline was constructed with galvanized piping in the early 1980s. These pipes have been corroded due to high iron concentration in the soils where the pipelines were laid. This makes the Tamarua water network not only inefficient but it makes it prone to potential contamination thus posing a health risk to the whole community. The project has a high priority for implementation.
Objectives	The provision of reliable, and more secure water supply for the Tamarua village
Description of Works	MOIP has recently undertaken the assessment of the available water resources and has made the necessary recommendations to implement the upgrading project. The project involves the following; • Trenching and laying approximately 1.8 km of pipeline • Repairing to the existing intakes
Estimated Costs	Approximately 90,000NZD (72,900USD)
Estimated beneficiaries	The project will improve water supply and living standards to 118 village residents
Land requirements	Apart from areas identified for laying the pipelines there is no need for any land areas
Adaptation considerations	Climate change is expected to increase incidences of drought. The project will improve the reliability of water supply to the village concerned, thereby minimising the impact of

	climate change on the community by enhancing water security through; • Eliminating leakages in the trunk line to improve water availability • Improve water safety • Water use efficiency improvement • Drought proofing the community water supply
Project Preparation Works	A rapid project scoping and assessment works has been undertaken by MOIP. Further work is required to finalise the design and the materials required to complete the project. Once completed, all that is required to do is to tender for the supply of material and then the implementation. The project Contract documentations will be done once the project is finalised
Project Implementation readiness	The Mangaia Island Administrations, the Tamarua communities and MOIP are ready to implement this project as soon as it is approved
Project Sustainability and Participation of the project Beneficiaries	The water supply system feeding the Tamarua village has been in place since the early 1980s and has been operating well up until in 2006 when the village reported low flows as well as increase debris presence in the water received at the taps, Investigations later found that these were due to corrosion of the galvanised segment of the pipeline feeding the village due to high iron concentration in the area. The sustainability of this project can be achieved through; • Technical intervention especially through the use of the corrosion resistant materials on the project eg. The proposed use of MDPE pipelines to replace the existing galvanised lines. • Having village water management committee to monitor water use and report, leakages etc • Having villagers to pay for any breakdowns in their systems • Having all villages to have an existing water tanks to supplement supplies in times of low stream flows (All households in Tamarua have now purchased their own 6000 liter water tanks with the assistance of the NZAID)
Risks Assessment	The main risks forecasted ; • Weather conditions • Construction quality • Implementation of standards

	These risks however are manageable.

Project 07	**Sector ; Water**
Name of Project	Atiu Emergency Water Storage
Name of Island and Location	Atiu Island; Entire Island community
Background / Rationale	Atiu Emergency Water Storage All households on Atiu have 6000 or 5500 litre plastic water tanks which were installed in 2004 and 2005. Since then Atiu has experienced two serious drought periods. This includes last year when the island residents has to resort to pumping water from underground caves for cleaning purposes. The seriousness of that drought has caused the island leaders to re-evaluate the water supply situation. They have agreed that the construction of an additional centrally located community water storage facility will need to be considered. The council felt that installation of a 500,000 litre water storage facility to be filled from bigger community buildings located in the centre of the island presents a viable solution to increased threats to water security.
Objectives	The provision of reliable, and more secure water supply for the Atiu island communities
Description of Works	The works includes the following; • Purchase of a 500.000 litre water storage bladder or tank • Excavation of site • Pipeline laying works • Protection
Estimated Costs	Cost estimated at 100,000 NZD (81,000USD)
Estimated beneficiaries	The island with a residential population of 570 people or approximately 196 households will benefit from this initiative
Land requirements	Land for the community water storage facility has already been identified and approved for the project.
Adaptation considerations	Climate change is expected to increase incidences of drought. The project is expected to minimise climate change impacts to the communities by enhancing water security through: • Increasing storage capacity • Improving the management and use of rainwater resources

	• Water supply security • Drought proofing the community supply
Project Preparation Works	Feasibility assessment of the options of construction of the tank as oppose to the purchase of a storage bladders will need to be looked at. The main concern is the roof capacity available to fill the tanks/bladder. While the building have been identified and approved there is concern relating to the filling of the bladder and how this would be done. This however is currently being looked into.
Project Implementation readiness	The project requires additional investigation to identify and confirm the most feasible option. The area identified to build the tank/bladder is an existing valley just near the center of the island. Some environment impact will likely occur if the project is to be implemented on this site, so the project needs to be managed properly to minimise damages to the lower agriculture production areas
Project Sustainability and Participation of the project Beneficiaries	Sustainability of the project in terms of water supply will be achieved through the use of the islands 6 largest buildings with 1650 m^2 catchment surface and located in the center of the island to catch and store water in the emergency storage facility. This will be used to supply the island residents at a cost when water supply is low. It is obvious that prolonged droughts will affect and deplete the water supply from the emergency water storage facilities. To secure additional supplies to the facility, there is a need for further water investigation works to be undertaken by the island especially from underground sources. This undertaking however will require additional resources. Sustainability of water supply will be pursued, besides the cross-cutting policy and institutional measures stated above, also through: • Further increasing household storage from existing 5500/6000 liters to 11,500/12,000 liters per household • All island households to have a minimum 5000 liter water storage tank(* All households have existing 5500/6000 liter tanks) • Payment for water, supplied from the main water emergency storage facilities
Risks Assessment	The main anticipated risks: • Weather conditions • Construction quality

	• Availability of the raw materials eg. Quality sand • Implementation of standards • Environmental impact These risks however are manageable.

Project 08	**Sector ; Water**
Name of Project	Atiu Water Tanks
Name of Island and Location	Atiu Island; Entire Island community
Background / Rationale	Atiu Emergency Water Storage All households on Atiu have a 6000 or 5500 litre plastic water tanks which were installed in 2004 and 2005.. Since then Atiu has undergone two serious drought periods. This includes last year where the island residents has to resort to pumping water from underground caves for cleaning purposes. The seriousness of that drought has made the island leaders to re-evaluate the overall community water supply situation. They have agreed that an additional home based storage capacity of one more tank per household is desirable. This will double the current 5500-6000 litre storage capacity to 11,500-12,000 litres
Objectives	The provision of a reliable and more secure water supply for Atiu island communities
Description of Works	The works includes the following; Tanks Supply(196 x6000liter tanks) • Purchase of the required tanks and freighting to the island • Construction of the tank bases • Installation of Spouting, first flush system , downpipes etc into tanks plus outlet tap
Estimated Costs	Approximately 250,000NZD (202,500USD)
Estimated beneficiaries	The island with a residential population of 570 people or approximately 196 households will benefit from this initiative
Land requirements	Land will be required at each residential property for the installation of water tank base

	pads. This is to protect the tank bottoms from damages.
Adaptation considerations	Climate change is expected to increase incidences of drought. The project is expected to reduce the impact of climate change on communities water supplies. This will be achieved by: • Improving storage • Improving the management and use of rainwater resources • Enhancing water security • Drought proofing the community water supply
Project Preparation Works	A rapid scoping and assessment exercise has been undertaken by MOIP and the Atiu Island Administration. This includes estimating the materials required to complete the water tank component of the project. . All that is required is the finalisation of the financial resources and the project is ready to be implemented. It is expected that the project will be undertaken by the Atiu Island Administrations and MOIP
Project Implementation readiness	The Atiu Island Administrations and MOIP is ready to implement this project as soon as it is approved
Project Sustainability and Participation of the project Beneficiaries	Sustainability of the project in terms of water supply can be achieved; • Through the use of the islands 6 largest buildings with 1650 m2 catchment surface and located in the center of the island to catch and store water in the reservoir proposed. This will used to supply the island residents at a cost when water supply is low. • Increase storage at household levels from current 5,500/6000liters to 11,500/12,000 liters • Each of the household agreeing to pay a minimum sum to own a 6000 liter water tank purchased under the project • The funds collected above to be used for the future management of the water tanks and spouting systems • Each household having a 5500/6000 liter water storage tank(* All households have existing 5500/6000 liter tanks)

Risks Assessment	The main anticipated risks are: • Weather conditions • Construction quality • Implementation of standards • Availability of resources to undertake component 2 of the proposed project • Shipping to the island on time These risks however are manageable.

Project 09	**Sector ; Water**
Name of Project	Palmerston Water Tanks Upgrade
Name of Island and Location	Palmerston Island; Entire Island community
Background / Rationale	**Palmerston Water Tanks Upgrade** In 2009, the Cook Island Government, via MOIP, supplied Palmerston Island with 25 6000 litre water tanks. These were distributed to all households of the island, as well as the schools and the medical centre. The Palmerston Island Administration (PIA) installed all the tanks for all the 25 households and the school. Initially the project was designed to supply 2 plastic water tanks, or approximately 12,000 litre storage capacity per family. However, due to the rising costs of materials and freight, only 25 tanks were acquired instead of 50 as previously planned. The people of Palmerston have requested 25 additional tanks, and to have these delivered and installed on the island. This will allow all the households to have two water tanks each.
Objectives	The provision of a reliable and more secure water supply for the Palmerston island community
Description of Works	The works include the following; • Tanks Supply (25x6000liter tanks) • Purchase of the required tanks and freighting to the island • Construction of the tank bases • Spouting, first flush system down pipes and outlet taps

Estimated Costs	Approximately 35,000NZD(28,350USD)
Estimated beneficiaries	The island with a residential population of 72 people or approximately 30 households will benefit from this initiative
Land requirements	Land will be required at each residential property for the installation of water tank base pads. This is for protecting the tank bottoms from damages.
Adaptation considerations	Climate change is expected to increase incidence of drought on the island. The project is expected to minimise the impact of climate change on community water supplies by: • Improving storage systems • Improving the management and use of rainwater resources • Enhancing water security • Drought proofing the community water supply
Project Preparation Works	A rapid scoping and assessment exercise has been undertaken by MOIP and the Palmerston Island Administration. This includes rough estimates of the materials required to complete the water tank component of the project. All that is required is the finalisation of the financial resources and the work is ready for implementation.
Project Implementation readiness	The Palmerston Island Administration and MOIP are ready to implement this project as soon as it is approved. The work on the island will be undertaken by the Palmerston Island Administration.
Project Sustainability and Participation of the project Beneficiaries	Sustainability of this water project will be pursued, besides the cross-cutting policy and institutional measures stated above, through • Increase existing household storage from existing 6000 liters to 12,000 liters • Each of the household agreeing to pay a minimum sum to own a 6000 liter water tank • The funds to be used for the management of the water tanks and spouting systems through the Island council
Risks Assessment	The main anticipated risks are: • Weather conditions

	• Construction quality • Implementation of standards • Shipping of materials and timing of shipping These risks however are manageable.

Project 010	**Sector ; Water**
Name of Project	Ruaau and Akaoa Village, Water Supply Upgrade
Name of Island and Location	Ruaau and Akaoa Village, Rarotonga
Background / Rationale	For a number of years the water supply in Ruaau and sections of Akaoa village in Arorangi has been poor. During drought periods most residents do not receive water. While the supply has improved considerably, the issues still remain. There are a few reasons for this, including: • The village is located at the end of the pipeline network. • More water being used by hotels and motels in the area, all of which are located on lower elevated sites • The leaking of water from the aged networks. There is a need to resolve this problem to ensure that residents, and especially those residing in higher elevated areas, have a more reliable water supply. Between 1986-1992, Ruaau and Akaoa villages were supplied by an open 10 Million liter water reservoir located near Betela. The reservoir was closed down due to the growth of algae in the reservoir in the early 1990s. It is proposed that the Akaoa reservoir be modified to hold 2 x4.5 million litre water storage bladders to feed the two communities. The water that used to supply the two villages is sourced from the Muriavai intake. At present the intake is only feeding twelve households located in higher areas of Betela. Excess water is therefore not available to those who require consistent supply.
Objectives	The provision of a reliable and more secure water supply for the Ruaau and Akaoa Village community
Description of Works	The option favoured is to catch the excess water from the intake and store it in two 4.5 million litre reservoirs (fitted with bladders) and feed the water this into the line during the night when it is expected

	the pressure is adequate to force the water into the existing network. The work will involve the following Intake upgrade; 80,000 Pipeline installation 145,000 Earthworks 100,000 Water Bladder (2x 4.50M liter) 100,000 **Total $425,000 (344, 250USD)**
Estimated Costs	Approximately 425,000NZD
Estimated beneficiaries	The village with a residential population of approximately 2000 people, plus tourists, will benefit from this initiative
Land requirements	No land will be required for this project as existing and targeted land is still under crown ownership.
Adaptation considerations	Climate change is expected to increase the incidence of drought. The project is expected to minimise the impact of climate change on the community water supply by: • Improving and increasing the availability of water • Improving the management of water resources • Enhancing water security • Drought proofing the community water supply
Project Preparation Works	A rapid scoping and assessment exercise has been undertaken by MOIP. This includes rough estimates of the materials required to complete the main component of the project. However, further technical assessments and data collection are required to ensure that the intended objective of the project is achieved.
Project Implementation readiness	MOIP is ready to implement this project but the details relating to the water flow and options chosen needs further analysis.
Project Sustainability and Participation of the project Beneficiaries	Sustainability of the project in terms of water supply for the village will be achieved through; • Feeding up to 100,000 litres per day of additional water into the existing Arorangi water supply network that would otherwise have flowed into the ocean • Look at technical interventions of storing the additional water in bladders for distribution by gravity into the existing networks • Managing the supply network system to ensure the additional secured supplies targets the areas more prone to risks • Encourage household located at higher elevations of the village to purchase their own

	water Upgrade and replace of aged and leaking segments of the Rarotonga water network • tanks
Risks Assessment	The main anticipated risks are: ▪ Weather conditions ▪ Available technical capabilities • Construction quality • Implementation of standards These risks however are manageable.

Project 013	**Sector ; Water**
Name of Project	Pukapuka water gallery
Name of Island and Location	Yato Village, Pukapuka
Background / Rationale	**Pukapuka water gallery** Pukapuka, as is the case for other islands in the Northern Group, depends on rainwater for water supply. However unlike most of these islands, Pukapuka also has access to underground water resources. These could be developed to supply water during times of drought. But installation of equipment, its use, and monitoring need to be carried out carefully to adapt to climate-induced impacts on ground-water resources, including salt-water intrusion. Water investigations that have been undertaken reveal that it is possible for the Pukapuka community to have an improved supply by using rain water tanks to provide most of the potable water needs of the island, with the rest of the domestic supply supplemented by and derived from ground water resources. Developing the ground water resources will require the installation of three underground gallery systems on the southern side of Wale islet, for pumping and delivery to community stand pipes located around the island
Objectives	The provision of reliable, and more secure water supply for the Pukapuka island community
Description of Works	The main work includes; • Excavation and establishment of the water galleries in wale

	• Installation of water tower and construction of two 45,000 liter water tanks • Installation of solar pumps and pumping net works • Installations of delivery network
Estimated Costs	Estimated cost is $292,000NZD(236,520USD)
Estimated beneficiaries	Pukapuka island, with a residential population of 510 people, will benefit from this initiative
Land requirements	Land will be required for the project, including for the galleries and the water tank towers
Adaptation considerations	Climate change is expected to increase the incidence of drought. The project is expected to minimise the impact of climate change on the community water supply by: • Improving and increasing the availability of water • Improving the management of water resources • Enhancing water security • Drought proofing the community water supply The areas identified for the gallery system is located south east of the island. The increase in cyclone events, high winds and frequent sea surges will impact on the gallery performance. The expected impact on the galleries requires further technical assessment, especially in relation to sea surge risks.
Project Preparation Works	A scoping and assessment exercise has been undertaken by the Cook Islands Government and GHD. This includes estimates of the materials required to complete the critical component of the project. Further technical assessment is however required, to review operations feasibility and finalise costs and to ensure that the intended objective of the project is achieved.
Project Implementation readiness	After a final detailed design is completed, and approved, the Pukapuka Island Administration and MOIP will be ready to mobilise and implement this project. It is expected the supplies will be tendered out. Construction will be contracted out to qualified contractors, with assistance from the Pukapuka Island Administration.
Project Sustainability and Participation of the project	Sustainability of the project in terms of water supply will be achieved through; • Technical intervention to ensure that the pumping rates from the proposed

Beneficiaries	water pumps systems is based on sustainable principles to allow for effective ground water recharging. • In events of higher than normal sea surges the system is not allowed to operate • The pumping system uses the most abundant sources of energy (solar) for the project • The installation of community taps are placed at critical locations • Understanding of existing island ground water resources • Each household having an additional 6,000 liter water storage tanks(This is currently being implemented under NZAID Funding)
Risks Assessment	The main anticipated risks are: • Weather conditions • Construction quality • Implementation of standards • Shipping of materials and timing of shipping These risks however are manageable.

Annex 7

Disbursement Schedule

Award id: 00062173
Project id: 00079524

	Oct-11	Oct-12	Oct-13	Oct-14	Oct-15	Total
Project Funds	588,000	1,019,000	1,200,000	1,011,000	682,000	**4,500,000**
Project execution costs	99,700	79,700	99,700	77,700	103,200	**460,000**
IA Fee	84,320	84,320	84,320	84,320	84,320	**421,600**
TOTAL	**772,020**	**1,183,020**	**1,384,020**	**1,173,020**	**869,520**	**5,381,600**
	Transferred by Trustee in 5 tranches					