Integrated Water Resource Management
Demonstration Project

Enhancing water security for Nauru through better water management and reduced contamination of ground water

NAURU

Country: **Nauru**

Title: Enhancing water security for Nauru through better water management and reduced contamination of ground water.

A. Brief summary of Project

Overall Objective: *Sustainable Integrated Water and Wastewater Management in Nauru*

Project Purpose: *To adopt a system of affordable as well as a working system for the sustainable integrated water resource and management of wastewater*

Components: (C1) Protection of Groundwater Resources from Pollution through Sanitation Upgrading; (C2) Stress Reduction of Water Resources through Conservation and Improved Water Management; (C3) Capacity building and awareness.

The project is designed to assist with enhancing water security for Nauru through better management practices and greater water use efficiency through the reduction of ground water pollution and use of grey water. The project will increase awareness about water issues, and help prepare the country for the projected water shortages due to climate change and climate variability. It will seek to enhance capacity of the Nauruans to adopt better water conservation measures and seek alternative ways to ensure that the development of the country is not compromised due to shortage of water. This will include the following activities:

- Protection of groundwater resources from surface activities e.g. erection of buildings on hot spots
- Water management is sustainable through conservation
- Water extraction and eradication of salt water intrusion
- Seasonal abstraction
- Improve and maintain drinking water quality
- Improved health practice
- Preparation for water shortages
- Improve the co-ordination among stakeholders
- Strategies for sanitation management

B. Executing Body:
Ministry of Commerce, Industries and Resources (CIR).

C. Cost of Project:
GEF Funding: $500,000; Co-funding: $1,589,190

D. Linkage to GEF Operational Programme

Within the GEF Operational Strategy for International Waters this project tackles water and environmental problems using an IWRM approach across GEF Strategic Programme III: Balancing overuse and conflicting uses of water resources in transboundary surface and groundwater basins (*with a specific focus on SIDS to protect community surface and groundwater supplies while reducing sewage releases*).

The geographical nature of SIDS allows IWRM approaches to rapidly demonstrate the multiple benefits of tackling water resource management in an institutionally horizontal manner, whilst applying a ridge to reef approach, tackling technical and socio-economic issues with communities and civil society at large to demonstrate equity, efficiency and environmental sustainability.

The project will also tackle, through IWRM approaches, many of the issues under GEF Strategic Programmes I and II through identifying and understanding multiple stresses on fragile coastal environments and linking these to freshwater and land management, especially upstream practices; IWRM will contribute to improving coastal and marine fishstocks and biodiversity. IWRM approaches will include methods to reduce economic and ecologic dead-zones of oxygen deficient water as a result of watershed mis-management, agricultural and industrial pollution and human and animal sewage waste.

The project consists of three main components:

- ***Component 1*** – : Protection of Groundwater Resources from Pollution through Sanitation Upgrading
- ***Component 2*** – Stress Reduction of Water Resources through Conservation and Improved Water Management
- ***Component 3*** – Capacity Building and Awareness Raising and Improved Sanitation Manaagement

E. Linkage to National Priorities and Programmes

Nauru's National Sustainable Development Strategy (2005-2007) focuses on a pathway for "A Future where individual's communities are self sufficient and contributing to a continually improving quality of life for all Nauruan". The plan identifies the priorities that Government must concentrate on during the next three years to 10 year milestones (linked to the Pacific Regional Action Plan on Sustainable Water Management). It consists of an integrated set of policies in the areas of Macroeconomic Management; Economic Development; Social and Community Development; and key cross sectoral issues, including environmental protection. The central policy guideline in relation to the use and management of natural resources is to promote environmentally sustainable development that is consistent with the priority economic and social needs of Nauru. Provision of reliable and clean water services for the people of Nauru is part of the short as well as long term strategy of the Government.

The 2001 Draft Water Plan, developed in conjunction with the WHO, sets out the long term plans for Nauru for safe and reliable water. The objectives of the Plan include:

- Provision of safe potable water to the residents of Nauru;
- Ensure that the water supply is sustainable in perpetuity;
- Provide an adequate amount of water for the needs of all residents;
- Ensure a reliable water supply even during prolonged droughts;
- Safeguard the environment and the ecology of Nauru;
- Ensure potable water is affordable by all residents;

- ❖ Have efficient distribution of water;
- ❖ Make best use of existing resources, facilities and skills;
- ❖ Conserve resources and energy; and
- ❖ Provide a culturally acceptable water system.

A 2006 AusAID assessment of the electricity and water generation capacity for Nauru underscored the critical situation in respect of the water and power situations in the country. Based on an analysis of the current water requirements, and the availability from various sources such as desalination, rainwater and groundwater, the report made far ranging recommendations to improve water security. These included enhancing potable water use efficiency by improving collection and storage, and use of sea water for sanitation.

The proposed medium term work program for the Nauru Rehabilitation Corporation (2005 – 2010), acknowledges that Nauru has limited fresh water supply, and is extremely vulnerable to climate variability. The development of land for agriculture and reforestation will increase the demand for water. The Work Program sets out a number of strategies for meeting this requirement. These include tapping the groundwater resource and building a reservoir over a natural depression at Buada Lagoon.

F. Name and Designation of Government Representative endorsing Demonstration Activity

Mr Russ D Kun

Secretary of Commerce, Industry and Resources (CIR)

Republic of Nauru

G. Project Description

a. Hotspot/Sensitive Area Justification

Nauru, one of the world's smallest independent nations, with an area of 22 km^2 is located approximately 50km south of the equator. It is a raised atoll comprising a single island with a maximum elevation of 71 m, approximately 6 km long (NE-SW) by 4 km wide (NW-SE). The Nauru volcanic base was presumably constructed by hotspot volcanism during the mid-Eocene to Oligocene time, or 29 to 47 Ma. It is estimated that the seamount is capped by about 500 m of limestone, with uplift and sub-aerial exposure of the carbonate platform during the Pleistocene, 1.6 Ma (Jacobsen et al. 1997).

It is located in the dry belt of the equatorial oceanic zone, with diurnal temperatures of ranging from 26 C to 35 C, and night temperatures between 22 – 34 C. Annual rainfall is extremely variable. Averaging 2126 mm pa, with a range of 280 – 4590 mm. Rains are more frequent between December and April. Prolonged droughts are common causing severe stress on natural species. During the drier months of May to November, the prevailing wind direction is generally easterly at 5-10 knots. During the wetter months, the winds are generally from the west at 10-18 knots. Nauru does not experience tropical cyclones, although it is subject to strong winds and sea squalls from time to time.

The only significant freshwater resource in Nauru is a lens of often slightly brackish water hydrostatically 'floating' on high density sea water. A desalination plant that was installed by the National Phosphate Commission, and has a capacity of 1150 tonnes freshwater/day, has been out of operation due to the scarcity of energy and spare parts. The population of Nauru currently relies

on rainwater, and two reverse osmosis units for their freshwater supply.

The island is having severe difficulties in achieving a safe and adequate supply of potable water and suffers from pollution of local groundwater due to poor sanitation services and unsealed rubbish disposal above the future groundwater aquifer. These problems have arisen from the collapse of the utility services when phosphate mining ceased, followed by a national financial crisis.

As a consequence, households and commercial buildings are experiencing a severe water shortage, and have to use non-potable water for a wide range of purposes even though it is often polluted by wastes from onsite sanitation systems.

The key factors that underpin the water and sanitation issues are:

- Insufficient rainwater tanks, guttering and down pipes to collect a satisfactory amount of rainwater for potable use;
- The large desalination plant, which uses waste heat from the power station, has not operated since 2001;
- The two small reverse osmosis desalination plants are operating but, due to a lack of delivery trucks, only 3 % of possible production was delivered to consumers in 2005/06;
- There is a possible groundwater resource, but it is still to be explored, and the ownership of water is yet to be settled;
- Many households have cesspits which are close to wells used to withdraw non-potable water for a wide range of household uses;
- Most septic tanks are full of sludge because there is no sludge removal truck, and this reduces treatment and hence increases local pollution of groundwater;
- The shortage of local skills in plumbing repairs and in managing water supply and water demand;
- Crippling financial limitations on government;
- Municipal wastes are taken to a landfill on top of the aquifer, which does not have appropriate lining of waste disposal cells or leachate collection; and
- There is no resource recovery at the landfill.

The Hot Spot Analysis Workshop concluded that more resources were essential to achieve a sustainable, safe and adequate water supply, and a sustainable, non-polluting sanitation system. Three main areas were identified for possible Demonstration Concept Projects:

- ❖ Water supply;
- ❖ Sanitation; and
- ❖ Environmental monitoring and waste management.

b. Linkage to other ongoing and planned activities

The realization of water as a critical sector for the sustainable development of Nauru has attracted attention of many development partners. Several projects, planned and under implementation, are directly addressing issues related to water supply, demand, water use efficiency, waste water, water security, water plans/policies and data requirements. A diagrammatic representation of the various interventions is given in Annex 1, which also summarise the main focus of the different projects.

Given the need for coordination between the various projects, ensure synergies and maximize the benefit of the proposed IWRM demonstration project for Nauru, the main activities for the key projects are highlighted below:

(i) Pacific Adaptation to Climate Change (PACC)

Adaptation interventions will include (soft) non-structural and structural (hard) options that compliment each other. Indicative activities include:

- ❖ Assessing precipitation rates given climate change scenarios over 30 years
- ❖ integrating climate risks into national water management strategies
- ❖ Identifying and investigating groundwater development options
- ❖ Constructing new boreholes for extraction and increased storage of water
- ❖ Constructing community/village water tanks and water storage/reservoirs for key sectors
- ❖ Establishing groundwater monitoring programme including conducting recharge and yield analysis

(ii) AusAID

The assistance from AusAID is aimed at improving storage through improved rainwater harvesting. The project, which is under implementation, includes provision of 150 x 18,000 l tanks with associated pipings, gutters and pumps.

(iii) JICA

This project, which is also aimed at ensuring water availability, will provide 45 x 60,000 l tanks to be installed for communal use in different districts and at public service facilities.

(iv) EU Envelope B

This project, as part of the support for the Disaster Risk Reduction, is designed to look at alternative water sources, enhance storage and the distribution of water in Nauru. The goal is to improve the resilience of Nauru to drought using integrated water resources exploitation, management and protection measures. The specific objectives are:

- Provide access to alternative water resource
- Increase communal water storage
- Rehabilitate and expand water reticulation network
- Improve non-reticulated water distribution system
- Protect Nauru's ground water from anthropogenic hazards for future water demand

(v) EU EDF9

Under the project 'Reducing Vulnerability', the assistance is targeted at the water and sanitation sectors. The specific activities include enhancing rain water harvesting and development of data base to assist in policy. One of the important project outcomes is the finalization of a national policy/plan for water and sanitation.

The issue of water availability: adequacy, quality and management is closely allied to the sanitation and waste management issues. As identified in several assessment reports, the availability of water for drinking is, in part, determined by its use for cleaning, washing, flushing of toilets etc. The long term ground water supply is being threatened by the possible contamination due to seepage from cesspits, poor waste disposal and pollution from land based sources. The situation will be exacerbated by sea water intrusion resulting from increased storm surges, sea level rise and increased pumping of non-potable water.

The issue of capacity building and raising awareness about use of water, conservation strategies, reducing contamination, protection of ground water and healthy environment/ecosystem is critical to the sustainability of the project. There needs to be change in mind set and clear awareness about the fragility of the Nauruan environment and water resources. The above demonstration activities will serve as a focus for advocacy, training and raising awareness. This needs to be done at many levels involving communities, landowners and school children.

On a longer term, there needs to be greater investment in the development of technical and management skills within Nauru. This can be achieved through provision of scholarships for vocational/certificate type courses in maintenance, and in management through appropriate courses in business and the environment. The upgrading of skills in relevant areas is vital to the sustainability of the water sector.

c. Project Components and Activities

Component 1: Protection of Groundwater Resources from Pollution through Sanitation Upgrading

Rationale: The Diagnostic Reports and the Hot Spot Analysis identified serious issues in relation to contamination of ground water due to the current state of the cesspits and septic tanks. At the time of the assessment it was suggested that a sludge truck be procured to assist in removing the sludge and grit from overflowing toilet systems in the short term. A truck has now been obtained with assistance from AusAID and EIGIGU (responsible for public works) has embarked on a programme of flushing out the existing cesspits and septic tanks. Thus far the only truck belonging to IOM was used only for 'emergencies'.

This arrangement, whilst addressing the issue on a short term basis, will not necessarily help with reducing pollution to the marine/coastal ecosystems as the waste is dumped into the sea. A longer term, more sustainable arrangement, would require the treatment of the sewerage. There are individual treatment systems for the IOM and Menen Hotel. In these systems, the waste water (which is claimed to be relatively free of contaminants) is pumped out to the sea.

Given this the proposed demonstration activity entails upgrading an existing system in one household per district. This would include, together with the communities themselves, an assessment of available technologies and selection of the most appropriate given the costs, operation and maintenance and asset responsibilities required, cultural acceptance, affordability etc. Such an arrangement is the next best alternative to centralized reticulation and treatment system for Nauru, which is beyond the scope of the current project. Integrated with this, and using the same tanks, the grey water (from showers, washing etc) would be diverted to storage tanks for recycling. The waste water will be regularly monitored for levels of bacteria, and treated, as necessary.

Outcome 1: Reduced contamination of ground water due to pollution from anthropogenic sources

Activities:

1. Assessment of current technologies used for sanitation, identification of reasons for failure, and assessment of range of sanitation options for Nauru
2. Appropriate sanitation system installed in every district as demonstrations
3. Assessment of recycle water systems appropriate for Nauru
4. Guidelines on siting of septic toilets in relation to shallow water wells
5. Development of medium and long term sanitation plans for Nauru
6. Close consultation with communities involved within the project leading to enhanced hygiene and sanitary practices

Outcome 2: A more informed basis on the status of waste water impacts on ground water resources in Nauru

Activities:

1. Data/information for integrated water and waste water plan
2. Improved institutional coordination for waste water management issues
3. Regulations developed on types of sanitation systems to be deployed
4. Feasibility study for small stand alone treatment facility for communities and households
5. Feasibility study for sewerage treatment facility for the whole of Nauru

Component 1 Potential Outputs:

- Report on recommendation of appropriate sanitation options/technologies
- Demonstration sanitation systems constructed in Nauru
- Cabinet – endorsed guidelines for on-site waste water systems
- Monitoring of Sanitation Plan in places approved by Cabinet
- Established Committee for water resource management
- A developed strategy suitable for education and community involvement for population and school children

Component 2: Stress Reduction of Water Resources through Conservation and Improved Water Management

Rationale: An extensive system using sea water for toilets existed at one of the most densely populated areas in Nauru. This is the old NPC housing site in Aiwo/Location districts. It has been estimated that around 25% of the Nauru's population live here. The system was also designed for flushing toilets in the hospital. Around 1000 cisterns from the neighboring schools hospitals and households could be connected to it.

The sea water facility has not been used for sometime and it is not known what the status of the piping network is. The piping runs underground from the pumps to the base of the hill, at the top of which storage tanks are installed. These appear to be in serviceable condition according to the AusAID report.

On the basis of 1000 cisterns connected to the sea water system, each with a capacity of approximately 10 litres, and an average water consumption of 250 litres per day per cistern (say 25 flushes per day per toilet in hospital, schools and offices), the total consumption would be in the order of 250 cubic metres per day. This is equivalent to the total output of the two Reverse Osmosis units used by the Utilities. Reinstatement of the sea water system has the potential to reduce the demand of potable water significantly.

Currently the homes and facilities use fresh water for all non potable use, and it is estimated that if it was possible to switch over to the use of sea water, more than a million litres per annum of fresh water could be saved. Rehabilitation of such a system would obviously be a major benefit to Nauru, and reduce the pressure on the fresh water resources.

Outcome 1: Reduction in the use of valuable fresh water for non potable uses

Activities:

1. Feasibility study to rehabilitate NPC system using sea water for flushing toilets
2. Upgraded system for use of grey water for toilets and other non potable use

Outcome 2: Strategies for dealing with water shortages due to severe events

Activities:

1. Conservation strategies
2. Water distribution strategies during periods of shortage
3. Regular monitoring of water quality
4. Development of a communications strategy on waste water and water conservation issues with Nauruan communities, including raising water and waste issues in school curricula
5. Monitoring of water use to improve institutional coordination through provision of data on poor sanitation, water quality and the effects on human health.

Component 2 Potential Outputs:

- Adoption of NPC wastewater flushing system
- Availability of recycled grey water to more residential areas for toilets
- Increased member of residences using groundwater
- Availability of huge storage of non-portable and portable water
- Visits of Consultants for training and “Train-the-Trainers” Workshops
- Government involvement in the quick adoption of Reports to approve activities

- Availability of water schedules that will support locals through more water distribution through more water tankers to complement the only current one
- Sustainable drinkable water
- Trained and skilled 'water' officers

Component 3: Capacity Development and Awareness Raising

Rationale: The issue of capacity building and raising awareness about use of water, conservation strategies, reducing contamination, protection of ground water and healthy environment/ecosystem is critical to the sustainability of the project. There needs to be change in mind set and clear awareness about the fragility of the Nauruan environment and water resources. The above demonstration activities will serve as a focus for advocacy, training and raising awareness. This needs to be done at many levels involving communities, landowners and school children.

In the longer term, there needs to be greater investment in the development of technical and management skills within Nauru. This can be achieved through provision of scholarships for vocational/certificate type courses in maintenance, and in management through appropriate courses in business and the environment. There are courses available through the DFL mode at the University of the South Pacific, and can be taken on a part-time basis. The upgrading of skills in relevant areas is vital to the sustainability of the water sector.

Outcome 1: Communities more resilient to drought and events that may lead to water shortages

Activities:

1. Enhanced water use efficiency.
2. Better quality water for drinking
3. Adequate potable water supply
4. Communal storage facilities

Outcome 2: Communities better informed and aware of the importance of sanitation and waste management.

Activities:

1. Enhanced hygiene and sanitary practices amongst community.
2. Reduction of contamination of ground water supply
3. Enhanced protection of coastal areas including beaches and fishing areas.

Outcome 3: Effective communications strategy about waste and water issues amongst the community

Activities:

1. Range of options for communicating waste and water issues to the community

2. Strategies for information dissemination appropriate for Nauru
3. Inclusion of water and waste management issues in school's curricula

Outcome 4: Enhanced understanding of the relationship between human health and integrity of the ecosystem and environment.

Activities

1. Information providing linkage between poor sanitation, water quality and human health
2. Information on pollution of coastal/marine environment and human health
3. Importance of environmental sustainability.
4. Attainment of poverty reduction targets as enshrined in the MDGs.

d. End of Project Landscape

By the end of the project, there will be better understanding of the sanitation and waster water recycling technology appropriate for Nauru. The demonstration sites, preferably in each district within Nauru, will have a pilot sanitation system that will allow for the separation of solid wastes and water which will be recycled for non potable use after adequate treatment. Monitoring of the levels of contamination in the water will be undertaken regularly and mapped to demonstrate the effectiveness of such a facility at the level of individual household as well as with the larger system. The project will serve as a basis for seeking additional funding to assist with the installation of appropriate system for the entire country.

These facilities will serve as the focus for awareness raising and advocacy as well as training for different groups such as school children, landowners and the community at large. The models will provide incentive for other households to invest in such systems, with subsidy from government and other donors.

The feasibility of using the sea water facility for use of non potable water for use in toilets will provide for a future intervention by the government or development partner. If such a system works well, it could provide a model for use of similar systems in other atolls where there is limited fresh water which has to be limited to potable use.

The benefit to the environment will be considerable. The contamination of ground water from the leakage from existing cesspits will be reduced. This will allow for the possible use of ground water for other purposes such as agriculture, processing and even drinking water from the ground water resources if the contamination level met the WHO standards.

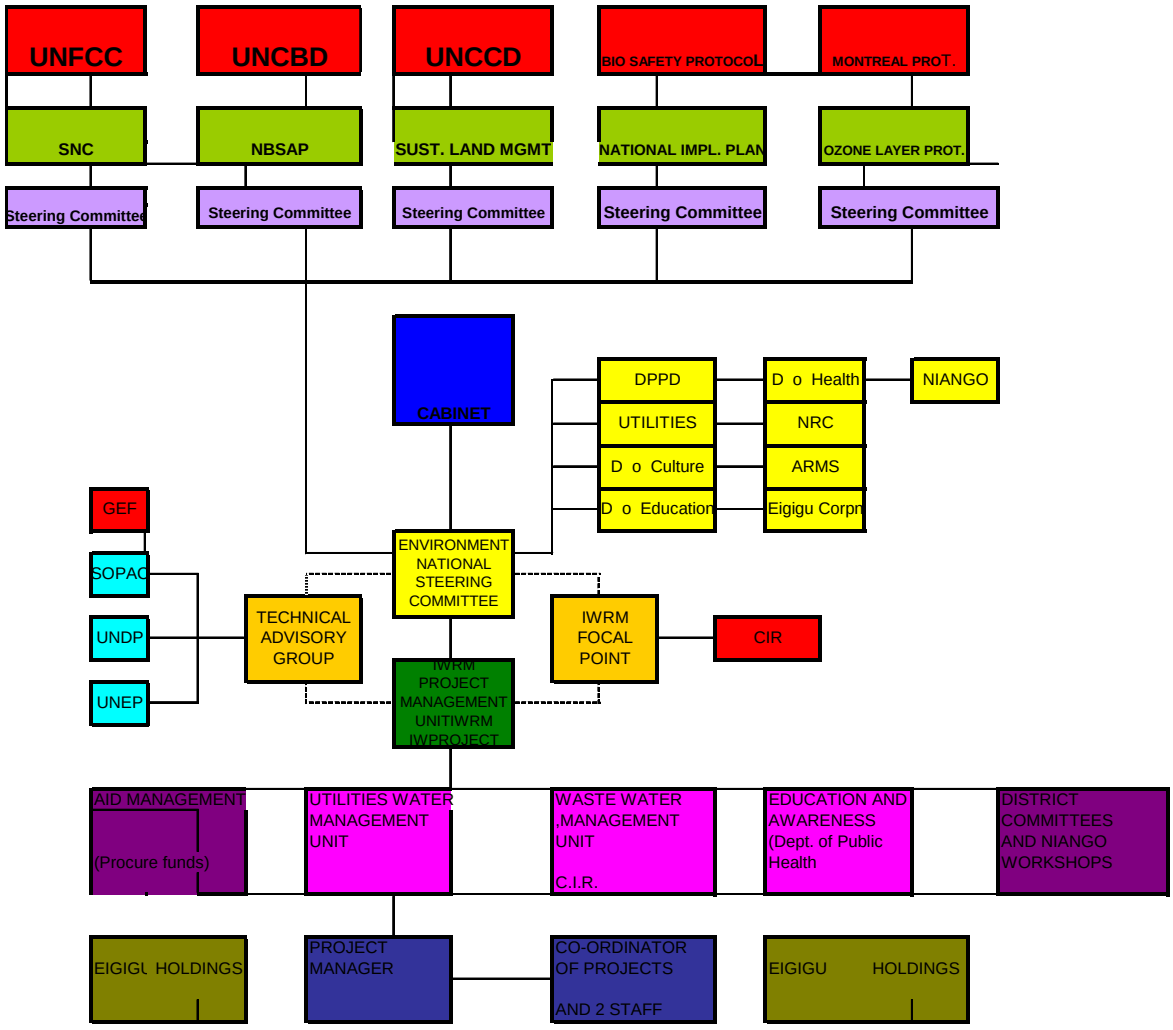
On the medium to longer time scale, Nauru should aspire for funding to build a sewerage treatment facility. The current practice of disposing waste water and raw sewage to the sea is clearly not conducive to healthy ecosystem. Moreover, the effect on fisheries, recreation and eventually on the health of the people could be significant. The project, would assist in identifying options at the household as well as national level which are environmentally sound and assist in the maintaining the health of the ground water resources.

Through the capacity building activities, the community will be better informed about the importance of water conservation and the need to protect groundwater resources by reducing pollution. The efforts will lead to better integrity of the ecosystem, and awareness about the fragility of the natural resources of Nauru.

The examples can be easily emulated in the other countries of the Pacific which are faced with similar challenges.

H. Project Management Structure and Accountability

IWRM PROJECT MANAGEMENT STRUCTURE & ACCOUNTABILITY



I. Stakeholders and Beneficiaries

Various governmental departments and institutions will be involved in an integrated and multi-

sectoral approach to the development and implementation of the objectives and deliverables of the demonstration project. The key departments are Health, Utilities and Environment, but entities like the EIGIGU, RONPHOS, NRC and NIANGO will also play very important roles to ensure coordination and integration. Nauru, with its small population and limited personnel, is fortunate in the sense that most of the leading players (technical experts, policy makers etc) will be common across many projects and departments.

J. Long-term Sustainable Strategy

The water and sanitation issues in Nauru are urgent, immediate and require sustainable solutions. The number of interventions, proposed and underway, underline the seriousness of the issues, as necessary for the sustainable development for Nauru. The Government is already committed to the upgrading of this sector as evidenced by the number of proposed and ongoing activities. In synergy with the other projects in these sectors, Nauru will be well placed through the IWRM, to ensure that the solutions will be long term. In the long term, sustainability of the limited freshwater resource will be ensured, as well as the integrity of the fragile Nauruan ecosystem, given the limited coastal areas that support the main infrastructure and population base.

The parallel processes which will also oversee the finalization of Integrated Water and Sanitation Plan for Nauru, with the necessary enforcements and regulation as part of the Environment Bill will ensure the long term commitment by the Government of Nauru.

Although there are substantial activities proposed, especially under the proposed Utilities Plans, that aim to address the water sector, without GEF's support and commitment to mobilize financial resources to complement the implementation of the baseline activities, Nauru would not be able to develop adequate capacity in order to fully address the mammoth challenge of providing adequate, safe and reliable water for its people, nor protect this valuable commodity from pollution. Also the necessary policies and regulations governing water use need to be adopted within the national development framework.

K. Replicability

The project is designed so that the experiences can be replicated across communities in Nauru. The pilot sanitation and waste water recycling facilities in each district can be directly replicated in all the households and public facilities in Nauru. Through the process of awareness raising and advocacy using the pilots as the focus, the people of Nauru will de able to observe the benefits of such arrangements and may set aside funding for such a system as part of their maintenance and upgrade activities.

The use of sea water for non potable use such as for flushing toilets etc can easily be adopted by all public facilities such as government buildings, hospital, schools etc, following realisation of sufficient funding. Given the concentration of the population in particular areas, especially along the coastal fringes, such systems utilizing sea water would make a lot of sense.

Apart from the huge potential for direct replication within the country, the experiences can be shared across many Pacific island countries with similar circumstances. Fresh water is a limited and valuable resource in many small islands, and the practices of conservation and use of appropriate technology will be directly relevant. The project also has huge potential of replication in many regions of the world, which while surrounded by the oceans, have limited fresh water resources.

L. Monitoring and Evaluation Process

Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the Project Steering Committee and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF.

The NECC through the Project Steering Committee (PSC) will monitor activities to ensure that they are carried out appropriately and in a timely manner as per the work plan. The feedback from communities in terms of the suitability of particular systems will be vital, and will be important component of the evaluations. A draft project logframe has been developed during the initial design stage. This will be further developed during the

Component 1: Protection of Groundwater Resources from Pollution through Sanitation Upgrading

Baseline	**Monitoring**	**Target**
No demo sanitation systems constructed	Research and survey of appropriate sanitation systems and sites for construction of demos	**Construction of a determined demo sanitation system (s)**
No preferred wastewater disposal	Survey of random households in each district for the most cost-effective and preferred disposal system of wastewater	**Government decision on selection of affordable sanitation systems to be adopted for wastewater disposal**
No appropriate Steering Committee made up of key stakeholders including community leaders to manage sanitation and wastewater	Community meetings for selection of their reps for this Committee	**Establishment of a Steering Committee for the National Sanitation and Wastewater Management.**
No guidelines for a Water Sanitation and Hygiene Policy framework	Draft guidelines for creation of a document framework	**A National Sanitation Policy endorsed and implemented**

Component 2: Stress Reduction of Water Resources through Conservation and Improved Water Management

Baseline	**Monitoring**	**Target**
NPC system currently not in use	Research into the rehabilitation of NPC seawater flushing system	**To measure the viability of reactivating NPC system as in cost analysis and environmentally friendly before implementing**
Insufficient sustainable rainwater harvesting tanks	Total survey of districts to realize that all residences have rainwater harvesting sources	**100 more rainwater tanks. Topside groundwater reservoir by Year 5 of Project**
Non-existence known	Co-ordination with Public	**Trained laboratory**

treatment of wastewater system into 'recycled domestic water'	Health, Utilities sectors and overseas water sanitation experts	**assistants for water researches and treatments**
There has never been any Workshops conducted by experts on the importance of conservation of water, portable or non-portable	Six-monthly Workshops on the awareness of water	**Six-monthly visits of Consultants. Trained local personnel who would be able to conduct these Workshops**
Currently there is 'one or more months' waiting list for distribution of desalination water to households	Schedule of the water tanker to be on a stringent 'rotating' system	**Procurement of 3 more water tanks to decrease the list to almost nil and to upkeep the desalination plant**
There is no strategic plans in events of droughts or severe water shortages	Involvement of key stakeholders and community leaders in creation of strategy in addressing events of severe water shortages	**Water Shortages Disaster Strategies Plan**
A very small number of wells	Checking annually the quality of ground water	**10 boring wells in each district by Year 4 of Project**

Component 3: Capacity Development and Awareness Raising and Improved Sanitation Management

Baseline	**Monitoring**	**Target**
There has never been Workshops for management of sanitation on Nauru	Consultants to be engaged to train the trainers for sanitation management methods and practices	**3 Trained sanitation management officers by year 5 of project**
Insufficient rainwater harvesting water tanks for individual households or for communities sharing	Government to look for donor funding to purchase additional rainwater harvesting tanks	**100 more rainwater tanks to complement what is available to local households now**
There is no current co-operation or integration between the Health and Environment departments to address sanitation issues	An immediate co-operation between the Public Health and Environment sectors in addressing sanitation issues for provision of relevant data	**A compiled data from both the Public Health, Environment and any other relevant sectors that will enhance the addressing of sanitation problems**
There is no current programs in the Education curriculum on the sanitation or water efficiency awareness	The Education department to include sanitation and water efficiency management programs in its curriculum	**Primary schools on Nauru will commence learning the basics on water efficiency and sanitation management programs and into higher grades**
There is no public education program being carried out on the conservation of water or sanitation awareness	The Public Health and Environment sectors should work to promote the awareness of sanitation and water efficiency within the	**Brochures, TV talk shows and Workshops are a frequented part of a cycle of the Public Health program.**

	public sectors	
There is no qualified water and sanitation officers currently on Nauru	The Public Health, Environment as well as Utilities should be active in providing scholarships for their officers who will be trained in conservation of water and sanitation management	**3 Trained officers in both water and sanitation management**

Overall Draft Project Logframe

Overall Objective: *Sustainable Integrated Water and Wastewater Management in Nauru*			
Purpose: *To adopt a system of affordable as well as a working system for the sustainable integrated water resource and management of wastewater*			
COMPONENTS	**ACTIVITIES**	**OUTPUTS**	**INDICATORS**
C1. Protection of Groundwater Resources from Pollution through Sanitation Upgrading	Installation of 'twin chamber sanitation arrangement system' for one household in each district	80% Reduction of contamination of groundwater and an affordable treatment system for Nauru	**15 Twin chamber systems installed by year 5 of project**
	Treatment of wastewater using an approved method	Reduction of pollutants from anthropogenic sources	**There is an increase of sustainable supply of domestic water**
	A Water Sanitation and Hygiene Policy framework coordinated by the Steering Committee	A Water Sanitation and Hygiene Policy drafted	**Sanitation Plan submitted to Government to be adopted by Year 2**
	Treatment of sewerage and wells	Reduction of pollutants from anthropogenic sources	**80% reduction of pollutants in drinking water**
C2. Stress Reduction of Water Resources through Conservation and Improved Water Management	To conduct feasibility studies on the rehabilitation of the NPC system using sea water for flushing toilets	Better decision-making for Government on rehabilitating the saltwater flushing system at the NPC compound	Feasibility report produced for Government perusal and endorsement
	Procurement of additional sustainable rainwater harvesting tanks appropriate to the climate of Nauru	All or most residences on Nauru possess rainwater tanks that will be sustainable for 30-40 years	**80% of the houses have access to non-portable freshwater by Year 5 of project**
	Installation of grey water system in one household in each district (15)	More portable water available for domestic usage only	**15 grey water systems installed in each district by end of project**

	Drafting of National Strategic Plan targeting water shortages due to severe events and water wastage	Awareness of water conservation in all communities	**A National Strategic Plan in place endorsed by Government by Year 2 of project**
C3. Capacity Development and Awareness Raising and Improved Sanitation Management	'Train-the-trainer' Workshop	Trained local water officers	**A notable decrease in expenditure of engagement of overseas Consultants**
	Workshops on water conservation awareness in community centres, TV talk shows and radio announcements	Trained agency and community representatives on water conservation awareness in regard to droughts and events that may lead to water shortage	**Water Management Plan in place by end of project**
	Compile data on relationship issues between human health and integrity of the ecosystem and environment for public awareness	Community knowledge on basic environmental issues and management	**A notable co-operation in communities in the management of priorities of environment sustainability**
	A Public education program on sanitation and water efficiency awareness	Community is better informed and aware of the importance of sanitation and waste management	**Brochure disseminated at all levels**
	Provision of scholarships for development of water officers.	Key stakeholders trained in sanitation management and water issues	**2 key stakeholders qualified in sanitation management**
		Enhanced hygiene and sanitary practices amongst community	**Educational Radio and TV programs produced and aired nationally**

ACRONYMS

AMU	Aid Management Unit
APR	Annual Project Review
ARM	Atmospheric Radiation Measurement
AusAID	Australian Assistance in Development
CEO	Chief Executive Officer
CIR	Commerce, Industry and Resources
EU	European Union
EDF	European Development Fund
GEF	Global Environment Facility
GEFSEC	Global Environment Facility Secretariat
GON	Government of Nauru
IOM	International Organization for Migration
IW	Inception Workshop
IWRM	Intergraded Water Resource Management
JICA	Japanese International Co-operation Association
LDC	Least Developing Countries
M&E	Monitoring and Evaluation
MTR	Mid-Term Review
NAP	National Action Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCSA	National Capacity Self Assessment
NECC	Nauru Environment Coordinating Committee
NIANGO	Nauru Island Association of Non-Governmental Organization
NPC	Nauru Phosphate Commission
NRC	Nauru Rehabilitation Corporation
PACC	Pacific Adaptation to Climate Change
PIR	Project Implementation Review
PIC	Pacific Island Countries
PM	Project Manager
PMU	Project Management Unit
PPER	Project Progress Evaluation Reports
PSC	Project Steering Committee
RONPHOSC	Republic of Nauru Phosphate Commission
SIDS	Small Island Developing States
SLM	Sustainable Land Management
SNC	Second National Communications
SOPAC	Secretariat of the Pacific Applied Geo-Commission
SP	Strategic Priority
TOR	Terms of Reference
TPR	Tripartite Project Review
UNCBD	United Nations Convention on Biodiversity
UNCCD	United Nations Convention to Combat Desertification
UNDP	United National Development Program
UNEP	United National Environment Program
UNFCCC	United Nation Frame work Convention on Climate Change
WHO	World Health Organization