

# COUNTRY REPORT FOR CPBD and CBD

## KIRIBATI

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Kiribati National Report to CPBD - CBD was drafted by Temakei Tebano with the assistance of Ribanataake Awira and Kaitu Koina, in collaboration with various government ministries and departments, NGOs and individuals. The report was submitted to Cabinet for endorsement prior to presentation to the United Nations.

December 8, 1999.

Biodiversity Strategy and Action Plan Project,  
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CAPTIONS TO PHOTOGRAPHS ON OPPOSITE PAGE  
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(refer to Appendix 2)



## ACKNOWLEDGEMENT

A big thank you is given to the following persons and organizations for the various assistance and contributions they gave that made the compilation of this report possible:

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UNDP, GEF of the United Nations	
Butaritari Island Council	
Tabiteuea North Island Council	
Staff of the Ministry of the Line and Phoenix Group and	
All other individuals and organizations not mentioned in the list.	
Once again kam bati n rabwa, Te Mauri, Te Raoi ao Te Tabomoa.	

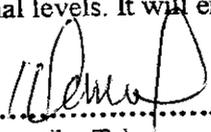
## FOREWORD

This document presents a concise report to the Conference of the Parties and the United Nations Development Programme on the current status of Sustainable Use of Biodiversity with associated problems and constraints, strategies to overcome them and ways forward to improve them. It was prepared as a component of the Kiribati National Biodiversity Strategy and Action Plan Project document. This marks an historic commitment that was opened for signature at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. At the Conference for the Adoption of the Convention on Biological Diversity (CBD) (the Final Act) held in Nairobi in May 1992, Resolution 2 was agreed which recognizes the importance of Country Studies in the preparation of national strategies and action plans. This report will be the first of its kind submitted to the Conference of the Parties on Biological Diversity by the Government of Kiribati in fulfillment of its obligation as Contracting Party, by reporting periodically to the COP of the CBD.

This report is a reference document on the current status of Kiribati Biodiversity, which should serve as a landmark against future changes caused by human activities. The document outlines the current knowledge about the biodiversity of Kiribati and the need to inform and involve the rural communities in decision making and planning for the conservation and sustainable use of biodiversity.

The multi-sectoral composition of the members of the Steering Committee and Planning Team, and the invaluable contribution of National Consultants, government departments and ministries, has contributed tremendously to the content of the report. The involvement of other programs such as Pacific Islands Climate Change Programme (PICCAP), Environmental Impact Assessment (EIA), Conservation Areas Programme (CAP), Sustainable Agriculture and Fisheries, has enriched the scope of the project in all directions. Their contributions have made this work possible and presentable.

The Ministry of Environment and Social Development is fully committed to the cause of conservation and management of both at the national and international levels. It will endeavour to support initiatives that sustain the health of Biodiveristy.

  
.....  
Kataotika Tekee  
(Minister for Environment and  
Social Development)

## TABLE OF CONTENTS

MEMBERS OF THE STEERING COMMITTEE AND PLANNING TEAM	i
ACKNOWLEDGEMENT	ii
FOREWORD	iii
TABLE OF CONTENTS	iv
LIST OF ABBREVIATIONS	v
EXECUTIVE SUMMARY	
Sustainable Biodiversity and Development as a priority	1
Geography	1
Natural Resources and Production Systems	2
Economic Structure	3
Biodiversity Issues and Programs	3
Kiribati commitment to Sustainable Biodiversity and COP	4
<b>SECTION 1. DEVELOPMENTAL TRENDS AND IMPACTS ON BIODIVERSITY</b>	
CHAPTER 1. NATURAL RESOURCE ENDOWMENT	6
1.1 Introduction	6
1.2 Land and Ocean Area	6
1.3 Nature of the Land	6
• True atolls	6
• Limestone or reef islands	6
1.4 Lagoon and reef resources	6
1.5 Terrestrial Fauna, Flora and Vegetation	7
• Vegetation	7
• Flora	

1.6 Pests	9
1.7 Marine Flora, Fauna and Fisheries Resources	9
1.8 Endangered species	11

**CHAPTER 2. CONSTRAINTS TO THE SUSTAINABLE USE AND  
CONSERVATION OF BIODIVERSITY AND DEVELOPMENT**

2.1 Introduction	11
2.2 Biodiversity constraints to development	12
2.3 Current trends in biodiversity degradation in the SP and abroad	13
2.4 Cultural or Human-induced constraints to sustainable biodiversity	14
2.5 Promoting culturally and ecologically sustainable development	14

**SECTION II. RESPONSES AND PRIORITIES FOR PROMOTING  
SUSTAINABLE BIODIVERSITY**

<b>CHAPTER 3. RESPONSES TO BIODIVERSITY/DEVELOPMENT ISSUES</b>	<b>16</b>
3.1 Sustainable biodiversity issues in Kiribati	16
3.2 Policies, legislation an institutions in general	16
3.3 International conventions	17
3.4 Coordinating biodiversity planning	17
3.5 Outer islands outreach	17
3.5 Agriculture, Fisheries and Eco-tourism	18

CHAPTER 4. PRIORITIES FOR FURTHER ACTION	18
4.1 Conservation of Biodiversity as a Priority	18
4.2 Constraints and priorities	19
4.3 Constraints to addressing major biodiversity issues	20
4.4 Strategies to encourage sustainable use of biodiversity	21
4.4.1 Local Initiatives	21
4.4.2 International initiatives	22
CHAPTER 5. PROCEDURAL MATTERS RELATED TO THE PREPARATION AND ENDORSEMENT OF THE REPORT	24
APPENDICES:	
APPENDIX 1: BUDGET SUMMARY	27
APPENDIX 2: BSAP Steering Committee members	28
BSAP Planning Team	28
BSAP Support Staff	28
APPENDIX 3: List of Plants of Kiribati	29
List of Corals of Kiribati	
List of some Fin-fish species of Kiribati	
BIBLIOGRAPHY	50

## LIST OF ABBREVIATIONS

BSAP	Biodiversity Strategy and Action Plan
CAP	Conservation Areas Programme
CBD	Convention on Biological Diversity
COP	Conference to the Parties
DP7	Kiribati Seventh National Development Plan
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
GEF	Global Environment Facility
IUCN	International Union for the Conservation of Nature
MCIL	Ministry of Commerce Industry and Labour
MESD	Ministry of Environment and Social Development
METT	Ministry of Education Training and Technology
MFEP	Ministry of Finance and Economic Planning
MHARD	Ministry of Home Affairs and Rural Development
MNRD	Ministry of Natural Resources Development
MWE	Ministry of Works and Energy
NGO	Non-governmental organizations
NTCA	North Tarawa Conservation Area
PC	Planning Committee
PCBD	Party to Convention of Biological Diversity
PICCAP	Pacific Islands Climate Change Programme
PWD	Public Works Department
SPBCP	South Pacific Biodiversity Conservation Programme
SC	Steering Committee
SPREP	South Pacific Regional Environment Program
UN	United Nations
UNCED	United Nations Conference for Environmental and Development
UNDP	United Nations Development Program
USP	University of the South Pacific

## EXECUTIVE SUMMARY

### Sustainable Biodiversity and Development as a priority

All environmental, historical, cultural, political and judicial issues may impact biological diversity in one way or another. In this context, Kiribati Government recognizes the need to sustain biological diversity. In doing so, related programmes in Environmental Impact Assessment, Climate Change and Sea Level Changes, Solid Waste Management and Conservation Areas have been implemented with the full assistance and support of Government.

The Government recognizes the importance of sustaining our biodiversity as well as development to enhance the wellbeing of mankind. The Environment Act 1999 which has been debated in Parliament and made into law enshrines the management of biological resources for the future generation. It follows that development and environmental and biodiversity policies are among the most difficult issues facing developing countries. The debate over biodiversity and resource management within the framework of economic development is relatively recent. The survival of developing countries depends on economic development and on the exploitation of their natural resources. What will be the major issue is the promotion of resource management within development projects to ensure that the exploitation and utilization of natural resources is carried out within the philosophy of sustainability.

### Geography

The Republic of Kiribati has a total land area of only 822.8 sq. km. It consists of 33 islands in two main groups, the Gilberts (17) and the Line and Phoenix group (16). The islands are extremely isolated and fragmented, covering an ocean area of 3.5 million sq. km. Kiribati consists of true atolls, except Banaba which is a raised limestone island.

The Kiribati Exclusive Economic Zone (EEZ) of some 3.5 million sq. km has considerable potential for pelagic fisheries development, and to a lesser extent, for the harvesting of deep water corals. There is longer term potential for mineral resource development in terms of the occurrence of poly-metallic manganese nodules and cobalt-

rich crusts. Shallow and reef fish are gradually being over-exploited. The marine fauna includes around 386 fin-fish species. The marine environment is a critical and strategic resource for Kiribati. It provides the mainstay for subsistence and is most likely its main hope for economic development besides copra and seaweed.

#### Natural Resources and production systems

Apart from a number of land-locked saltwater lagoons and salt pools, there are no surface freshwater resources on Kiribati. The only permanent freshwater resource is groundwater in the form of a "lens" of often slightly brackish freshwater. There is a large freshwater lake on Teraina, and, on Kiritimati, there are over 100 small saline lakes, some several kms in diameter. Otherwise, freshwater supplies are limited in quantity and quality, and even on the larger, wetter atolls, there is serious periodic water scarcity. For South Tarawa and Betio between 500 and 1,500 cubic meters of water is required per day (Public Utilities Board pers. Comm.). Kiritimati requires round 500 cubic meters per day (Linnix Office pers. comm). Additional water resources and reserves are required as drought is still taking its toll.

Soils are among the poorest in the world. They consist of layers of organic material in varying thickness. With the frequency of bush fires during dry periods, the organic materials are simply turned into ash making the soil even poorer.

The mineral resources of Kiribati include: sand, coral, gravel and limestone rock aggregate; there is some tricalcic phosphate rock, guano and unexploited concentrations of deep-sea-bed polymetallic manganese nodules and cobalt-rich crust.

Kiribati is relatively rich in marine fauna, which includes between 600 - 800 fin-fish species (Fisheries Revised Fin-Fish List, 1999). The marine flora comprises the seaweeds and sea-grasses. There is only one endemic vertebrate species, the Line Islands Reed Warbler (*Acrocephalus aequinoctialis*), and the only mammal (probably an aboriginal introduction) is the Polynesian Rat (*Rattus exulans*) (Kiribati Country Report to UNCED, 1992). Most of the seabirds found in Kiribati are migratory, some find home in the atolls where they live and breed. The black noddies and white sooty terns are the most common.

By-products from terrestrial and marine resources (that include handicrafts or timber, dried or fresh fish) contribute significantly in terms of small cash especially to those homes that do not have any bread winner. The estimated value of handicrafts and locally made items recorded by one of the women centres (Itoiningaina) is between AUD\$2,000 - 3,000 per year. There are more than a half dozen women centers and the figure could be trebled or quadrupled. With copra alone, according to the 1998 figures of the Kiribati Copra Society, the tonnage shipped to overseas market was 11,214 with a value of more than AUD\$5 million.

Kiribati is renowned as being one of the richest countries in cultural and historical resources. One of the most striking aspects of Kiribati legend is its conservation ethic, which ensures a sustainable use of resources. This is based on a traditional scientific knowledge of the environment, the sea, the land and the resources. The old paradigm of traditional technologies of fishing and farming skills help sustain their limited resources.

#### Economic structure

Kiribati is slowly moving away from subsistence to cash economy. On South Tarawa and Betio the people survive on a more cash oriented existence, whereas, on the outer islands and rural areas both aspects still play almost equal roles. Imports still outpace exports. Imports are dominated by food supply, fuel and building materials. Copra and seaweed are the only major export commodities. Tuna, handicrafts, fishing licenses and other activities (such as eco-tourism and sports-fishing in the Line and Phoenix group) contribute to some increase in Gross Domestic Product (GDP).

Government revenues in terms of taxation, fishing licenses in the EEZ and other ventures keep Government annual budget in line with its development objectives. Major activities such as seaport and airport developments are usually funded by external donors. At times interest on the country's monetary reserve is tapped when external donors could not be identified.

### Biodiversity issues and programs

With an increase in human population, the smallness of the islands, scarcity of resources and little export for foreign exchange, Kiribati is facing a tough time in terms of sustaining and managing its resources and biodiversity. The main issues include over-exploitation of natural resources (both marine and terrestrial), non-replacement of exploited resources particularly land resources, public attitude towards most conservation programs, that is, limited cooperation on most conservation measures at a local level, and a steady increase in human population. The latter imposes substantial stress on the resources.

Together with other existing environmental programs, for example North Tarawa Conservation Area (NTCA), the BSAP project strove to concentrate on community consultation and education at a village level outside the capital island of Tarawa. These were delivered in the form of workshops manned by a team of experts from various fields. To date, the various existing programs within the Ministry of Environment and Social Development, including the BSAP project, have an estimated value of over AUD\$500,000 with the majority of funds coming from external sources (Environment Unit, pers. comm.). Figures on other Government programs related to biodiversity were not available during the compilation of this report.

### Commitment to sustainable biodiversity and COP

Kiribati Government recognizes the importance of conserving biodiversity and has committed itself by signing a membership to the Conference of the Parties on the Conservation of Biodiversity. At a national level the Biodiversity Strategy and Action Plan Project (BSAP) has been running under the guidance of the Environment Unit at the Ministry of Environment and Social Development. The objectives of the project are:

1. To identify the current status of pressure and options and priority actions for the conservation and sustainable use of national biodiversity by stakeholders.
2. To formulate a Biodiversity Strategy and Action Plan (BSAP), as well as producing and submitting a national report to the Secretariat of the

Convention of Biological Diversity (CBD) in fulfillment of Kiribati's obligation as a party to the Convention on Biological Diversity (CBD).

3. To compliment, build on and strengthen the National Environmental Management Strategy (NEMS) as well as the National Development Plan (DP7) and other sectoral plans, through a participatory process involving representation from different sectors of society.
4. To raise community awareness on the outer islands, not covered by the NEMS project, on sustainable use of biodiversity thus creating a greater understanding and responsibility by the grassroots people with the hope that any further activities required to safeguard the biodiversity rests within the local community.
5. To expedite the processing of law enforcement mechanisms to safeguard the richness of biodiversity in closed areas as well as protecting the rare terrestrial and marine fauna and flora species from over-exploitation and extinction in more accessible ecosystems.
6. To develop research projects and activities that will provide useful information for the enhancement and sustainable use of biodiversity particularly on the island of Kiritimati in the Line and Phoenix group.

**SECTION 1:**

**DEVELOPMENT TRENDS**

**AND**

**IMPLICATIONS FOR BIODIVERSITY**

## CHAPTER 1. NATURAL RESOURCE ENDOWMENT

### 1.1 Introduction:

The Republic of Kiribati has very limited natural resources in the case of terrestrial, lagoon and near-shore resources, or extremely vast and difficult to utilize and manage in the case of its oceanic resources within its extended exclusive economic zone.

There is a need to expedite and implement resource management measures that will safeguard the deteriorating status of natural resources for the future generations of the country. It is essential to take into account traditional conservation practices that may be effective in the daily management of the resources. This chapter presents the current state of the living and non-living resources available in Kiribati.

### 1.2 Land and Ocean Area

The Republic of Kiribati has a total land area of only 822.8 km<sup>2</sup>. The islands are extremely isolated and fragmented, covering an ocean area of 3.5 million km<sup>2</sup>.

### 1.3 Nature of the Land

The two main groups in the Republic are the Gilberts consisting 17 islands and the Line and Phoenix consisting 16 island, totaling 32 true atolls and 1 raised limestone island, Banaba.

### 1.4 Lagoon and reef resources

Shallow and reef fish are gradually being over-exploited. The marine fauna includes between 600 and 800 fin-fish species. The marine environment is a critical and strategic resource for Kiribati and is most likely its main hope for subsistence mainstay; more importantly, its main hope for economic development.

The most common marine resources include lobsters (*mnewe*), coconut crabs (*Bigus lastro* - aaii), giant clams (*Tridacna gigas* - te kima, *T. maxima* - te were, *T. squamosa* - te were matai, and *Hippopus hippopus* - te neitoro), the popular *Anadara* sp. (*Anadara uropigmelana* or te bun), cone shell (*Strombus luhuanus* - te nouo), mud worm

(sipunculid), sea cucumber (*Holothuria sp.*), pearl oyster, and many others (Fisheries Division pers. comm.).

Other popular inshore species include snappers (*Lutjanus* spp. -ikanibong), mullet (*Chanos chanos* - aua), milk-fish (*Valamugil seheli* -baneawa), bonefish (*Albula vulpes* - ikairii), goat-fish (*Upeneus* spp. - te maebo), trevally (*Caranx* spp. - rereba), barracudas and stingrays. Turtles are also a source of food for traditional and non-traditional users. The species reported include Hawksbill, Loggerhead, Pacific Ridley, Leatherback and the Green Sea turtles (Kiribati Report to UNCED, 1992).

The imported *Euchema cottonii* seaweed is commercially grown in some islands in the Gilbert group and on Kiritimati and Fanning islands in the Line and Phoenix group (Luxton, 1992; Taniera, Tabee and Tebano, 1994). Although there are many species of marine algae and seaweed found in the tidal areas some of which are edible, none are being exploited for subsistence or commercial purposes.

#### 1.5 Terrestrial Fauna, Vegetation and Flora

There is only one endemic vertebrate species, the Line Islands Reeds Warbler (*Acrocephalus aequinoctialis*) and the only mammal (probably an aboriginal introduction) is the Polynesian Rat (*Rattus exulans*) (SPREP, 1992). Most of the seabirds found in Kiribati are migratory, some find permanent nesting sites in the atolls where they live and breed. The black noddies and white sooty terns are the most common. Insects, birds, land crabs and others constitute resources of considerable importance. Domesticated chickens, ducks and pigs play a major role in the provision of local meat for home consumption. Cats and dogs are kept as pets.

The indigenous vegetation and flora of the atolls of Kiribati are among the poorest on earth. With the exception of the uninhabited islands in the Line and Phoenix groups, the coastal strand, mangroves and inland forest vegetation have been severely modified due to human habitation and removal of certain plant species for construction, canoe building and other domestic uses. The expansion of villages and coconut replanting scheme also contributed to the shrinking indigenous vegetation acreage. In the case of Banaba, open-cast phosphate mining has virtually reduced and removed the old and indigenous species.

The terrestrial vegetation associations of Kiribati are limited to:

- Coastal strand vegetation;
- Limited areas of mangroves and coastal marsh vegetation;
- Remnant stands of inland forest; and,
- In the case of Banaba, limestone escarpment of pinnacle vegetation.

Secondary and cultural vegetation associations include:

- Coconut-palm-dominated agricultural lands, including giant swamp taro (*Cyrtosperma chamissonis* - babai) pits;
- House yard and village gardens;
- Extensive and variable areas of ruderal vegetation;
- Shrub dominant vegetation along artificially dugout ponds at Temwaiku and Ambo on South Tarawa and some outer island, and,
- In the case of Banaba, almost the entire island that is under severely modified disclimax vegetation in various stages of succession after 70 years of open-cast phosphate mining.

The vegetation and flora of Kiribati constitute a critical ecological and cultural resource and a basis for sustainable development. This is particularly true for the indigenous species, virtually all of which have cultural uses in the subsistence economy. These represent non-cash incomes which cannot be replaced, or which can be extremely expensive to replace with imported substitutes.

Of particular importance is the mangrove ecosystem that contributes either directly or indirectly, through primary and secondary productivity, to the nutritional requirements of a high proportion of marine food species. Mangrove and coastal strand forests stabilize tidal-zone soils and reduce the impact of storm surge and ocean salt spray.

In terms of specific cultural utility, the most widely reported uses for atoll plants are for medicine, general construction, body ornamentation, fuel wood, ceremony and ritual, cultivated or ornamental plants, tool-making, food, boat or canoe making, dyes or

pigments, magic and sorcery, a fishing equipment. Also games or toys, perfumes and scented coconut oil, fertilizer and mulching, weapons or traps, food packaging, subjects of legends, mythology, songs, riddles, and proverbs, domesticated and wild animal feed, handicrafts, cooking equipment, clothing, fish poisons, items for export or local sale, and musical instruments.

Of particular note is the importance of traditional foods (such as fish, breadfruit, pandanus, etc.) and beverage crops (such as fresh and boiled toddy). However, they have been abandoned for highly imported foods such as sugar, white rice and flour products, canned food, alcohol and other beverages. These alien foods are causing a lot of diseases such as high blood pressure and diabetes.

### 1.6 Pests

The most serious pests are the insects and the non-insects (mites, slugs, crabs and rats). Of the insect pests that need mentioning include:

- Taro/Babai beetle (*Papuana huebneri*), very serious and major problem on Tarawa.
- Breadfruit/Pandanus Egyptian fluted scale (*Icerya aegyptica*), occasionally serious throughout the country.
- Coconut flat moth (*Agonoxena argaula*), occasionally serious.
- Coconut mealy bugs (*Pseudococcus oceanicus* and *Palmiculator*), occasionally serious.
- Cucumber/tomato green striped semilooper (*Chrysodeixis chalcites*), serious on leaves and bores into fruits.
- Spiralling white fly (*Aleurodicus dispersus*), causes serious damage to fruits and leaves of vegetables, breadfruit, coconut, pawpaw, ornamental plants and others.
- Mango fruit fly is the latest pest and causes serious damage to fruits (pawpaw, breadfruit, kuava, jujube and mango).

The non-insect pests include a ship rat (*Rattus rattus*), a red spider mite and vegetable mite, the latter are very active during dry spells.

Past insect problems that are likely to recur include that of *babai*/sweet potato burrowing cockroach (*Pycnoscelots surinamensis*) that became very serious on *babai* at

Makin and Nikunau islands in 1983-1984; a coconut stick insect (*Graeffea crouanii*) that appeared in large numbers on coconut leaves at Kenna, Abemama in 1984; and a coconut hole shot borer (*Xyleborus perforans*) that appeared in Teraina in 1994 damaging fresh coconut meat.

## 1.7 Marine Flora, Fauna and Fisheries Resources

### Flora

A range of indigenous marine seaweeds or algae constitute an important nutritional and commercial resource in many areas of the Pacific, although few are traditionally eaten in Kiribati. The most important of the indigenous species is sea grape or *nama* (*Caulerpa racemosa*), which is very common on all reefs throughout the country. It is an important subsistence food and commercial product for local sale in Fiji.

Of particular interest is the aquaculture of eucheama seaweed (*Eucheama cottonii*) which grows in most of the lagoons of the Gilbert group and some islands in the Line and Phoenix group. According to Atoll Seaweed Limited Production Report (1999) one farmer may produce up to 24 tons of dry seaweed per hectare per year. The annual seaweed export for 1998 was estimated to be around 635.3 metric tonnes with a value of AUD\$620,000. The impact of El Nino has substantially affected production in previous years.

### Fauna and Fisheries resources

The major fisheries resources include pelagic and oceanic species. The pelagic fish resources are centered on the tuna fishery which is dominated by the skipjack (*Katsuwonus pelamis - te ati*), yellowfin (*Thunnus albacares - te ingimea*) and big-eyed tuna. Foreign fishing vessels are the main exploiters of the tuna resources. Roughly around more than 260 metric tons is commercially exploited annually. The local fishermen also exploit the resource on a small scale especially for local market. Flying fish is fished beyond the reef crest either by night dip netting with a light or with gillnetting with small mesh size drift nets. They are usually sold on the roadside. Fish costs between AUD\$1 - 1.20 a pound.

Bech-de-mer is one of the lucrative exports and according to records 14.4 tonnes is exported to Korean, Chinese and Japanese markets (Fisheries pers. comm.). Shark fin is another export commodity but figures are not available at present.

Pet fish trade is flourishing on Kiritimati Island. They are sold for about 50 cents to US \$1 to middlemen in Hawaii who then sell them to United States mainland for US\$5-10 a piece. Approximately 107,000 pieces have been exported with commercial value of US\$1,100,000 according to Kiritimati Marine Exports 1999 record. Fish, sea-cucumber, lobster and aquarium fish have netted around AUD\$300,000 in export value for Kiritimati Island for the year 1998. Black pearl oyster and trochus may become lucrative export commodities in the near future.

Sports-fishing for bonefish on Kiritimati island brings in US\$7,000 per week per sports-fisherman apart from other expenses incurred for the trips and other necessities. The number of fishers is limited to 30 per week to ensure that the resource is not exploited beyond its maximum potential threshold.

The Government of Kiribati, through the Fisheries Division, is committed to the conservation of marine biodiversity. Two target islands have been selected for the establishment of marine protected areas, Butaritari Atoll in the Gilbert Group and Kiritimati Atoll in the Line and Phoenix Group. In the former two protected areas have been identified and it is hoped that the large grouper species in particular have safe havens from commercial operators. On the other hand Kiritimati has a huge potential for bird sanctuary and milkfish reserves. In the latter, two particular areas for milkfish and other fish reserves, one is around Cook Islet, the other is further inland adjacent to the Government fish ponds. The estimated value of the proposed marine reserves is \$55,000. This figure could double if more reserves are considered in the future.