COUNTRY REPORT

REPUBLIC OF KIRIBATI

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"STATE OF FOREST AND TREE GENETIC RESOURCES IN THE PACIFIC ISLANDS, AND SUB-REGIONAL ACTION PLAN FOR THEIR CONSERVATION AND SUSTAINABLE USE"

The Conference was organised by:

The South Pacific Regional Initiative On Forest Genetic Resources (SPRIG),
the Australian Agency For International Development (AusAID),
the Food And Agriculture Organization of the United Nations (FAO),
the Pacific Islands Forest and Tree Support Programme of the Secretariat of the Pacific Community (SPC),
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and the Forestry Division of Samoa.

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REPUBLIC OF KIRIBATI

COUNTRY REPORT FOR THE PACIFIC SUB-REGIONAL WORKSHOP ON FOREST AND TREE GENETIC RESOURCES, 12-16 APRIL 1999.

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1. INTRODUCTION

1.1 Background

The Republic of Kiribati, formerly the Gilbert Islands, lies astride the equator in the Central Pacific and consists of 33 islands divided into 3 main groups; the Gilbert group, Phoenix group and the Line group. The total land area is about 720 km^2, excluding the 320-km economic zone.

The dominant tree species is the coconut palm, which covers most of the country, forming naturally regenerating open woodland. Man to a greater or lesser extent manipulates the woodland by the removal of plants of no economic value, and by the planting of coconuts in open spaces. Other trees and shrubs grow among the coconut palms and, especially on the wetter islands, form dense thickets. These include *Scaevola sericea, Argusia argentea, Pandanus tectorius, Guettarda speciosa, Premna obtusifolia* and *Morinda citrifolia.* Tall trees such as *Pisonia grandis, Hernandia peltata* and *Calophyllum inophyllum* are rare in Kiribati and only on Fanning Island do they form pockets in which they are the dominant vegetation. In areas of exceptionally low fertility, coconuts may be absent and *Scaevola* and *Argusia* dominate the vegetation. Such areas occur especially on the drier islands in the central and southern Gilbert group.

The undergrowth varies from almost bare ground to dense bush. The grass *Lepturus repens* forms an almost complete cover in the better managed open coconut woodland, whilst on poorer soils the surface vegetation consists largely of *Sida fallax* and *Triumfetia procumbens.* Other common herbaceous plants include *Cassytha filiformis (*a parasitic climber), *Boerhavia diffusa, Boerhavia tetranda, Vigna marina, Canavalia sericea, Portulaca* spp, *Pilea microphylia, Fleurya ruderalis* and the grasses *Eleusine indica, Eragrostis amabilis, Stenotaphrum micranthum, Thuraria involute* and *Cenchurus echinatus.* Mangrove *(Rhizophora mucronata)* grows mainly offshore whilst ironwood *(Pemphis acidula)* occurs around high water level.

The terrestrial vegetation associations of atoll Kiribati are limited to:

- coastal strand vegetation;
- limited areas of mangroves and coastal marsh vegetation; and
- relict stands of inland forest.

Secondary and cultural vegetation associations include:

- coconut palm oriented agricultural lands including giant swamp taro or babai pits under various stages of cultivation and fallow;
- house yards and village gardens; and
- extensive and variable areas of ruderal vegetation.

There is no land resource survey in Kiribati to provide information on the land area occupied under each land system. Estimates, through observation only, are:

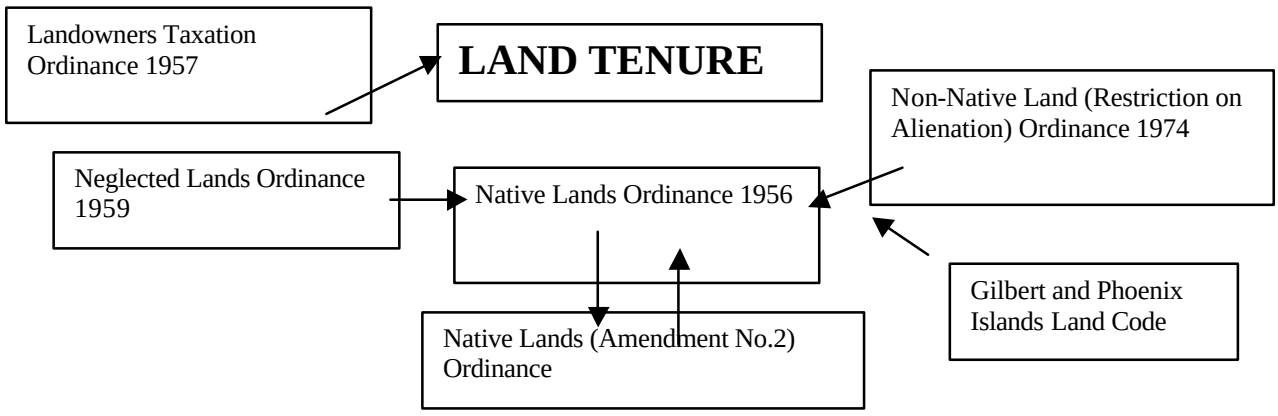
LAND USE	Percentage
Coconut trees, taro pits and other food crops	47
Mixed inland forests and under-storey species	20
Marginal shrubs and barren land	8
Airstrips, sport grounds, roads	8
Coastal strand vegetation, mangroves and marsh vegetation	7
Backyard gardens and village gardens	5
Villages, schools, hospitals, offices	3
Fish ponds	2

Summary of Population Indicators in Kiribati

Population (enumerated)	77,658
Population (estimated)	80,800
Mid-year 1998 population (estimated)	86,350
Population density-1998 (persons/km^2)	106.5
Population annual growth rate per cent (1995-2000)	2.5
Median age-1995 (years)	19.6
Sex ratio	96.5
Dependency ratio, 15-19	87
Crude birth rate (1995-2000)	33.2
Crude death rate (1995-2000)	8.3
Average household size	6.5
Total fertility rate	4.5
Life expectancy at birth-males (1992/93)	58.5
Life expectancy at birth-females (1992-93)	64.7
Infant mortality rate (1992/93)	62
Child mortality rate (1992/93)	24

Source: Statistics Office.

Land Tenure System in Kiribati



The Environmental Legislation Review by M. Pulea and D. Farrier discusses the system of land tenure. Kiribati has practiced traditional systems of land tenure, whereby land allocations and rights to use land resources are enjoyed under traditional systems. During the Colonial era legal actions were undertaken whereby the land tenure system has been legalized and codified under Section 5(1) of the Native Lands Ordinance 1956.

For any developments on land to take place, the following factors have to be considered.

- Almost all land in Kiribati belongs to the I-Kiribati, except for the Phoenix and Line islands, small portions of reclaimed land owned by Government and lands belonging to the Catholic and Protestant churches.
- Rights and interest in I-Kiribati land are mostly acquired by inheritance and gifting customs as codified in the *Gilbert and Phoenix Islands Lands Code 1956.* The various customs governing the acquisition of interests and rights to land in the islands of Kiribati are defined in the Code. The Code documents customs and practices in 1956 and, despite changes to a market economy, these customs and practices continue to be highly relevant in Kiribati society today.
- Environmental management and resource conservation requires the co-operation of landowners.

As customary land tenure touches on all aspects of social organization – kinship, adoption, marriage, group affiliations – which involve in one way or another the ownership, use and conveyance of land, it is important that the customary land use is understood if environmental management is to be effective.

Section 5 of the Lands Ordinance clearly emphasizes that land cannot be alienated by sale, gift lease or otherwise to a person who is not native. There are exceptions in this Ordinance whereby alienation of land to the Crown, a Local Government Council, the Housing Corporation, a registered society under the Cooperative Societies Ordinance or the National Loans Board is not restricted.

Title to native land is vested by a Magistrates Court which approves the transfer of title, which is also subject to any appeal made against the transfer. This transfer if approved by the Magistrates Court will be defined as Indefeasible. Communally owned lands are common in some islands where a certain community owns certain pieces of lands and has regulations whereby members observe the right to use the land and its resources. This has been abolished but has certain exceptions.

Distribution of land

Gifting and several other methods can distribute land. A number of land distribution and gifting customs are defined in the Code:

- gifts inter vivo;
- gifts for nursing;
- gifts for wet nursing;
- gifts for kindness; and
- distribution of property of absentee owner.

Neglected lands

The Neglected Lands Ordinance 1959 provides for the purchase of neglected lands and regulates the sale of such land to indigenous people. Other rules and regulations in this Ordinance are applied.

Exchange of property

Landowners may exchange their lands but they must do so in court. The Court will prevent an exchange if there are great differences in the value of the properties offered.

Sale of property

An owner may sell land, a pit or a fishpond provided the owner's next of kin and the Court approves. Before reaching its decision, the Court should first consider if the owner's remaining lands, after sale, would be sufficient for his family needs.

Leases

A lease of any kind is specified in the Native Lands Ordinance. No lease or sublease of native land is valid until it is approved and registered in accordance with the provisions of part VI of the Ordinance (s.9). The Minister cannot approve a lease of native land unless the Court of the district or island in which the land is situated has confirmed that:

- the land is the property of the lessor;
- the lessor is not prohibited under the Code from alienating the land for the term proposed; and
- the lessor will be left with sufficient land to support himself and his dependents.

Native leases

Any native wishing to obtain a lease over native land must submit the proposed lease to the Court of the district or island in which the land is situated. The Court will approve the lease if there is sufficient land remaining for the lessor to support himself and his family.

1.2 Legal and planning

There are no Acts related to the conservation of forest genetic resources, forestry environment, and the conservation of flora and fauna. However, a review has been prepared regarding environmental legislation. The review recommends that the current laws on agriculture be revised for environmental content with a view to include measures for soil conservation and prevention of erosion and other negative impacts caused by agricultural activities.

Despite this review, there are existing Ordinances in the Laws of the Republic of Kiribati that are relevant to the conservation of forest genetic resources, including:

a) Native Lands Ordinance 1956, which declares the code of laws governing native land rights, codifies the custom, describes the system of native land tenure and regulates the distribution or transfer of native lands, fish ponds and fish traps to the owner's spouse and children (illegitimate, legitimate or adopted).

b) Land Owners Taxation Ordinance 1957 describes the different land tax rates imposed on all lands which are payable to the local council within whose area the land is situated, and the penalty due to those who do not comply with the law.

c) Prohibited Area Ordinance 1957, which permits designation of prohibited areas for the purpose of environmental conservation on any island in Kiribati.

d) Neglected Land Ordinance 1959 provides for the purchase of neglected lands and regulates the sales of such land to indigent natives.

e) Native Land Amendment Ordinance (no. 2) as given in Native Lands Ordinance.

f) Phoenix and Gilbert Islands land code declares that the owner's control, use and distribution of land is subject to various conditions of which the care of the family is of the utmost importance.

g) Land Planning Ordinance 1973, which provides for land use planning, zoning, and the establishment of regulation for the conservation of the natural environment.

h) Plant Importation Ordinance 1978, which prohibits the illegal entry of any plant or planting material including earth into the country.

i) Local Government Ordinance 1984, restricting activities which cause land erosion and degradation.

j) The proposed Environment Bill 1996, which seeks to make provisions for the protection, improvement and conservation of the environment of Kiribati, to establish the Environment Division and for other purposes is yet to be passed by Parliament.

Kiribati became a party to the Convention on Biological Diversity in 1995. Under this International Convention, Kiribati has obligations to fulfil and these are being slowly entertained through regional/national programs like the South Pacific Biodiversity Program (SPBP) currently implemented by SPREP through the Environment Unit of the Ministry of Environment and Social Development. One of the programs the Environment Unit has implemented was endorsed by Cabinet - the " North Tarawa Conservation Program" - which was developed in 1995. The primary objective of this program is to promote and develop community awareness of the conservation and sustainable use of available resources through community based participatory approaches.

In this regard, conservation focuses on ecosystems such as coastal and mangrove forests, scrublands, coconut plantations, excavated taro pits, villages, beaches, tidal flats, reefs, lagoon and the ocean. It includes all plant and animal species and varieties found in these ecosystems *e.g*. all species of tress, shrubs, vines, herbs, grasses, seaweed, shellfish, finfish, beche-de-mer and crustaceans, as well as all varieties (cultivars) of food crops such as pandanus, coconut, breadfruit, native fig and bananas. A similar conservation program on birds is implemented on Kiritimati Island. This island is totally owned by government and the management of the conservation programs is maintained and enforced by law which reflects only the rights of the Government on the island.

Based on the conservation programs, there is no national forest plan or policy that has been developed that will prevent certain tree species from destruction. However, there is a conservation strategy, as specified in the Biodiversity Conservation program implemented by the environment unit of the Ministry of Environment and Social Development. This

conservation strategy includes:

- International consultancies;
- National consultancies;
- National workshops;
- Publications/translations/dissemination; and
- Public awareness (media,video,etc).

These are all being produced in 1998. Also a review has been prepared on the current environmental legislation, which recommends that the current laws on agriculture be reviewed for environmental content with a view to including measures for soil conservation and the prevention of erosion and other negative impacts caused by agricultural activities.

Sustainable forest or tree utilization practices have been adopted to a lesser extent. This reflects on the small land area and the limited land resources, which therefore have no operational Code of Logging Practices, and no guidelines on reduced impact-logging.

1.3 Contribution of forestry and trees to economy and environment

There is no significant contribution of forestry and trees to the economy, but trees contribute strongly to the subsistence needs of the people. Copra dominates the local industry, whilst other industries are only minor. Mangroves (*Rhizophora stylosa)* and other related species have significantly contributed to the formation of lands and other marine life. Other offshore and on-shore trees have played an important role in the prevention of erosion of shorelines. Trees as a whole play a very significant role in the atoll environment taking into account the very poor soils and their effects on the plants.

The three main important features of forests and trees (including mangroves) to Kiribati are:

- they protect land from sea erosion, sea spray, wind and water;
- they are primary sources of food, shelter and medicines; and
- they produce biomass to improve soil fertility.

2. UTILIZATION AND DISTRIBUTION OF FOREST GENETIC RESOURCES

The most important tree species both local and exotic in Kiribati, their main uses and constraints are listed in Table 2.1A.

The following are the studies that have been carried out on the use and knowledge of trees by local communities:

- The collection of traditional methods of babai cultivation (*Cyrtosperma);*
- Traditional coconut cultivation;
- Collection and documentation of knowledge on local medicine;
- Documentation of trees and supernatural uses;
- An inventory, feasibility and management study of the mangroves of Kiribati;
- A preliminary listing of Kiribati plant and fish names; and
- Coconut trial report – Abatao.

Species found in islands or major island groups are listed in Table 2.2.

3. CONSERVATION OF FOREST GENETIC RESOURCES

Some threats which affect the priority species are listed in Table 3.1.

Conservation Areas:

Nauru Park	This is a reclaimed area from the causeway built to link Betio and Bairiki on the island of Tarawa. Tree types are restricted to *Casuarina equisetifolia, Terminalia catappa, Scaevola taccada, and Argusia argentea.* The area is mainly used for family getaways and other parties. Facilities such as barbecue areas, shelter and toilets have been built and a small fee has to be paid for using the area.
Eden Garden	This garden is looked after by a group of people renowned for their traditional healing skills on Tarawa. The area has not been developed properly. The main species grown are mainly native plants which are believed to have traditional medicinal values. These include *Scaevola* spp, *Argusia argentea, Pandanus tectorius and Guettarda speciosa.* (Note from 2002: All plants in this area have now been cleared and the area is currently used for a Junior Secondary School)
Eco-forestry Nursery	The nursery is based in Tarawa where the main objective is to try to conserve local species, in particular those which are slowly disappearing through urbanization pressures, both for medicinal and traditional values. FSP and the Division of Agriculture look after the nursery.
Wildlife Conservation Area	Located in Christmas island, main habitat for birds and wild plant species used for nesting.

The types of forest which are threatened are coastal forest and inland forest. Erosion threatens coastal forest, which is related to the effects of land reclamation with a sea wall. This is a common practice and is seen on islands where people live close by the ocean side and reclaim the land within a sea wall which combats the movement of the current and causes beach and soil to be washed away. Inland forest is threatened mainly with the removal of plants of no socio-economic value to clear up the land for coconut replanting or for residential areas. Other noticeable contributing factors are the heavy utilization of trees for building houses and the people's habit of ignoring replanting of used trees. The habit of chopping down the whole tree without thinking of just chopping off the part that they need and leave the rest of the plant to reproduce is another contributing factor to the problem.

In regard to the above, there is only minimal, or no, evidence of any traditional conservation and management practices being practiced in the community.

4. PRIORITY ACTIONS FOR FOREST GENETIC RESOURCES

Some activities have already been implemented, and some are currently being undertaken.

Past programs:

- Coconut improvement project. This was a EU funded project and covered all islands in Kiribati whereby existing non-bearing and bearing coconut groves are fertilized and composted to improve coconut production.
- Mangroves. An inventory, feasibility and management study of the mangrove resources was undertaken in 1995 with the financial assistance from SPFDP (Metz 1995).
- Satellite Tree Crop Nurseries. These nurseries were established on 7 outer islands in the Gilbert group. The project was funded by the Canada Fund and was aimed at providing a center where farmers on the outer islands could easily obtain their planting materials (Webb 1996).

Current Programs:

- Terrestrial Bio-diversity Enhancement. The Ministry of Environment launched this program, which is still in progress. It was funded through SPREP and implemented by the Environment Unit. The project has a broad mandate for the development of a sustainable method of terrestrial conservation.
- Eco-Forestry Project. This project is promoting the use of native plants with social and economic values. The project was funded by EU through the Foundation of the Peoples of the South Pacific in Kiribati.
- Introduction of different tree crop species. This is an on-going program of the Agriculture Division on food diversification.
- Agricultural Day – It is an on-going program conducted twice a year (June and December) where free seedlings distributed to promote and attract the interest of people on the planting of food trees and other useful trees.
- Conservation of endangered tree species – Endangered exotic trees species which are of great importance to the benefit of I-Kiribati people such as *Bauhinia variegata, Eucalyptus camaldulensis* and *Ximenia americana* are being propagated and seedlings distributed to interested people.

Species which may deserve priority action are listed in Table 4.1

5. INSTITUTIONS AND RESOURCES FOR FOREST GENETIC RESOURCES

The three main institutions which are involved in forest and tree genetic resources are the Ministry of Natural Resources Development through the Division of Agriculture; the Environment Unit through the Ministry of Environment and Social Development; and the Non Government Organization called The Foundations of the People of the South Pacific.

The total human resource capacity of the Division of Agriculture is 86 staff in which 36 are directly involved in forest trees programs.

Division of Agriculture (Agro-forestry section; September 2002)

Designation	Name	Gender	Qualification
Chief Agricultural Officer	Manate Tenang	Male	Bachelor of Agriculture
Senior Agricultural Officer	Teaoti Beia	Male	Bachelor of Agriculture
Agro-forestry Officer	Tokintekai Bakineti	Male	Diploma in Tropical Agriculture
Agro-forestry Assistant	Tearimawa Natake	Female	On study at USP
Nursery Manager	Mamarau Beingam	Female	Certificate in Agriculture
Nurseryman	Kaiota Bokai	Male	
	Tanentoa Tawaia	Male	
	Tokanikai Ruka	Male	
	Tibau Rabunataai	Male	

The above list includes only agro-forestry staff at headquarters in Tarawa, and excludes the 27 Agricultural Assistants working in the outer islands covering the three main groups.

The Environment Unit:

One staff member within the Environment unit is called the Conservation Area Staff Officer (CASO), who is involved with conservation and management of forest trees in the conservation area. The CASO works closely with the agro-forestry staff of the Division of Agriculture for implementing conservation activities that are related to agriculture.

The FSP:

The FSP deals with forest trees as well and has five staff working under the Eco-forestry program. Their main focus is on research on mangroves and on medicinal plants, including multiplication of planting materials on traditional plants and trees for distribution to grass-root farmers and landowners. They are also involved in the production of teaching materials.

Important resources that are available in Kiribati for the forest and genetic resources are:

- Publications for information, as noted in the references in Section 8;
- Tree nursery at the Agriculture nursery;
- Foundation for Peoples of the South Pacific's Eco-forestry nursery; and
- Local Healers Association's Arboreta.

To strengthen work on forest genetic resources, the following training requirement and facilities are recommended:

- Up grading of local staff knowledge of Trees and the Environment to provide a sound understanding of the conservation of trees.
- Production of videos to address the problems and possible solutions to the conservation of forest trees to enhance the improvement of forest genetic resources.
- Providing appropriate equipment for the propagation of breadfruit trees.

6. CONCLUSIONS AND RECOMMENDATIONS

It is apparent that Kiribati lacks most of the important information on trees, which is a reflection of the recent foundation of the Agroforestry Section of the Agriculture Department. There is a need to restructure the Agroforestry Section to organise responsibilities and duties in a more efficient manner. In view of the problems experienced and the need to improve affected areas, the following recommendations are made.

a) A land resource survey for all the islands should be carried out very soon. This survey will reflect true records of the existing land resources and their current potential at subsistence and commercial levels, which can be used to plan future agro-forestry programs. Local people must be involved in this study.
b) Agricultural programs must be diversified and include forests and trees, taking into consideration cultural uses, environmental reasons and basic human needs as criteria for selection.
c) Seeing that the majority of the population is located on the Outer Islands and that they depend largely on fishing and subsistence agriculture, it is of vital importance that future development and improvement projects consider these peoples' needs and involve them in agroforestry projects. The Government should play an advisory role while the groups or communities do the implementation.
d) Education and awareness programs should be encouraged at all levels - policy, middle-management and grassroot levels - including the different levels of education (primary, secondary and tertiary). If possible, these awareness programs should be conducted in the local language.
e) There is a need to develop a long term agroforestry plan. This plan has to look at the current problems facing forest trees threatened by the fast population increase, especially in urban areas, and make long term plans to resolve such problems.
f) Given the problem of coastal erosion and its seriousness on south Tarawa, there is a need to develop a simple integrated system, such as seawall planting of forest tree species to reduce the impact of coastal erosion. Such a system can be very cheap and easily applied especially on the lagoon side of the island.
g) Some potential terrestrial forest tree species are not available on some of the islands. These species need to be diversified and agriculture should play a leading role in the mass production and distribution, and giving advice on how to plant such forest trees.
h) Mangroves are potential species on the reef mud area on the lagoon side of the islands. Simple techniques for planting these trees are needed and should be passed on to the groups and landowners to do their own planting.
i) There is a need at Sub-Regional level (atoll countries) to share experiences in the field of agro-forestry. Documentation of such training can be published and used as guidelines for establishment of agroforestry programs or used for improvements of existing programs.
j) Existing legislation that protects the wildlife and includes habitat protection needs to be reviewed or expanded to include legislation that supports mangrove conservation areas, mangrove forest reserves and other endangered species like *Pemphis*.
k) It is recommended that the Agricultural Division diversify its programs to include development of a forest trees seedling nursery. This nursery should cater for the demand for seeds and seedlings of the potential species, including mangrove seedlings, to be supplied to villages. This program should start on Tarawa and be slowly extended to other islands.

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TE MAURI TE RAOI AO TE TABEMOA

8. REFERENCES

Barr.J., 1994. Annual Technical Report on Coconut Research in Kiribati. Ministry of Natural Resources Development, Tarawa.

Demmke *et al.*, 1998. Kiribati Population Profile. Statistics Office, Ministry of Finance, Bairiki, Tarawa.

Government of Kiribati, 1993. National Environmental Management Strategy. Ministry of Environment and Social Development, Tarawa.

Government of Kiribati, 1993. Environmental Legislation Review. Ministry of Environment and Social Development, Kiribati/SPREP.

Government of Kiribati, 1995. Urban Management - Plan for South Tarawa. Ministry of Home Affairs and Rural Development, Tarawa.

Government of Kiribati, 1995. Population Census - Volume 1. Statistics Office, Ministry of Finance, Bairiki, Tarawa.

Government of Kiribati, 1995. North Tarawa Conservation Area. Environment Unit, Ministry of Environment and Social Development, Tarawa.

Government of Kiribati, 1996. Kiribati National Development Strategy 1996-1999. Statistics Office, Ministry of Finance, Bairiki, Tarawa.

Metz. D.W., 1995. The Mangroves of Kiribati: An Inventory, Feasibility and Management Study, Vol. 1. Ministry of Natural Resources Development, Tarawa.

Seluka, S., 1997. Traditional, Current and Potential Uses of Plants and Trees in Tuvalu. Ministry of Natural Resources and Environment, Funafuti.

Seluka, S. *et al*., 1998. A Preliminary Listing of Tuvalu Plants, Fishes, Birds and Insects. Ministry of Natural Resources and Environment, Funafuti.

Thaman, R.R. *et al.*, 1994. Kiribati Plant and Fish Names - A Preliminary Listing. Atoll Research Program, Teaoraereke, Tarawa.

Webb. A.P., 1996. Tree and Perennial Crop Introduction and Extension in Kiribati. Ministry of Natural Resources Development, Tarawa.

Wilson, C., 1994. State of Environment Report. Environment Unit, and Ministry of Environment and Social Development, Tarawa.

Table 1.1: Vegetation cover of Kiribati

Vegetation type	Area (ha)	Percentage of land area
Mid height forest (20-30m)	Not Available	Not Available
Low forest (10-20m)		
Woodland (<10m)		
Thickets (3-8mm)		
Scrub (<3m)		
Grassland		
Swamp communities		
Mangroves		
Bare ground/human made		

Due to the unavailability of information regarding the land area under each vegetation type, it is not possible to produce even rough estimates since there is no study as such producing accurate information.

Coconut trees in Kiribati are the predominant tree species and are found in plantations throughout the islands. We are unable to present the land area covered under these plantations. Other tree species have been planted, but not so many that they may be regarded as plantations.

Table 2.1A : Fifty important indigenous tree species and uses

Name of species	Wood						Food & Fodder					NWFP				Services					Others
Scientific name	TI	Po	Ro	Wd	Pu	Fu	Fr	Nu	Ve	Ho	Fd	Me	Gu	Oi	Cu	Sh	Lf	Cs	Co	Sa	Ot
Acacia farnesiana		*				**						*				*					
Acalpha amentacea		*				**						*				**					fishing
Acalpha wilkesiana		*				**						*				**					fishing
Argusia argentea		**				**						**				**					
Artocarpus altilis		*				**						*				**					
Artocarpus mariannensis			**	*		**	**					**	*			**					
Barringtonia asiatica		*				**										**		*			
Boerhavia diffusa											**										
Boerhavia diffusa											**										
Bougainvillea spectabille																					flower
Calophyllum inophyllum	**	**	**	**		**						**			**	**		**			fishing
Calotropis gigantea						*										**					fishing
Carica papaya							**					**				**					
Casuarina equisetifolia		**	**			**										**		**			
Clerodendum inerme						*						**					**				
Cocos nucifera	**	**	**	**		**	**	**				**		**	**	**		**			
Codiaeum varigatum																					
Cordia subcordata		**	**	**		**					**	**					**				
Cucurbita pepo							**														
Cycas circinatis		*														**					
Cyrtosperma chamissionis												*			**						food
Datura metel						*															
Delonix regia			**			**										**					
Ficus tinctoria		*				**	**					**				**					
Gossypium tomentosum						**										*					

Key :

Food	Food and Fodder	Non-wood forest products	Services & Environmental	Other (please specify)	Coding
Ti = sawn timber	Fr = fruit	Me = medicinal products	Sh = shade, shelter,amenity	Ot	** = Major use
Po = posts, poles (ground contact)	Nu = nut	Gu = gums, resins, tannins	Lf = Living fence		* = Minor use
Ro = roundwood (above ground)	Ve = green vegetable	Oi = oils	Cs = coastal stabilisation		
Wd = other wood (e.g carving, canoe)	Ho = honey	Cu = cultural/custom	Co = soil and water conservation		
Pu = pulp and paper	Fd = animal fodder	Sa = sacred	fu = fuelwood, charcoal		

Table 2.1A (cont.) Fifty important indigenous tree species and uses

Name of species	Wood						Food & Fodder					NWFP				Services					Others
Scientific name	TI	Po	Ro	Wd	Pu	Fu	Fr	Nu	Ve	Ho	Fd	Me	Gu	Oi	Cu	Sh	Lf	Cs	Co	Sa	Ot
Guettarda speciosa		**	**			**						**				**					
Hernandia nynphaeifolia		**	**	**		**						**				**					
Hibiscus rosa-sinensis																					Flower
Hibiscus tiliaceus																**					
Ixora casei				**								**							**		
Lantana camara																	**				
Leucaena leucocephala						**															
Lumnitzera littorea		**	**	*		**										**					
Mangifera indica							**									**					
Mirabilis jalapa															**						
Morinda citrifolia		**				**	*					**				**					
Nerium oleander																					
Pandanus tectorius		**	**	*		**	**					**			**	**					
Pemphis acidula		**	**	*		**					*	**						**			
Pipturus argenteus																					
Pisonia grandis		**	**	*		**						**				**					
Pluchea oderata						**										*					
Plumeria acuminata																**					
Polyscias fruticosa						**															
Polyscias grantiflora						*											**				
Portulaca tuberosa											**										
Premna serratifolia						**						**				**					
Pseuderanthemum carruthersi						*															
Russelia equisetifolia															**						
Sophora tomentosa															**						
Tacca leontopetaloides															**						
Vigna marina											**										NFT

Key :

Food	Food and Fodder	Non-wood forest products	Services & Environmental	Other (please specify)	Coding
Ti = sawn timber	Fr = fruit	Me = medicinal products	Sh = shade, shelter, amenity	Ot	** = Major use
Po = posts, poles (ground contact)	Nu = nut	Gu = gums, resins, tannins	Lf = Living fence		* = Minor use
Ro = roundwood (above ground)	Ve = green vegetable	Oi = oils	Cs = coastal stabilisation		
Wd = other wood (e.g carving, canoe)	Ho = honey	Cu = cultural/custom	Co = soil and water conservation		
Pu = pulp and paper	Fd = animal fodder	Sa = sacred	fu = fuelwood, charcoal		

Table 2.1B: Important exotic tree species (up to twenty) and uses

NAME OF SPECIES	WOOD						FOOD & FODDER					NWFP				SERVICES					OTHERS
Scientific name	Ti	Po	Ro	Wd	Pu	Fu	Fr	Nu	Ve	Ho	Fd	Me	Gu	Oi	Cu	Sh	Lf	Cs	Co	Sa	Ot
Widely utilised																					
Moringa olefera		**							**							**					NFT
Psidium guajava							**									**					
Citrus spp							**									**					
Casuarina equisetifolia		**	**													**		**			NFT
Promising/High potential																					
Gliricidia sepium						**										**					NFT
Mangifera indica							**									**					
Leucaena leucocephala																					NFT

Key :

Wood	Food & Fodder	Non-wood forest product	Services & Environmental	other(please specify)	Coding
Ti = sawn timber	Fr = fruit	Me = medicinal product	Sh = shade, shelter, amenity	Ot	** = Major use
Po = posts, poles(ground contact)	Nu = nut	Gu = gums, resins, tannins	Lf = living fence		* = Minor Use
Ro = Roundwood(above ground)	Ve = green vegetable	Oi = oils	Cs = coastal stabilisation		
Wd = other wood(e.g. carving, canoe)	Ho = honey	Cu = cultural	Co = soil and water conservation		
Pu = pulp and paper	Fd = animal fodder		Sa = sacred		
Fu = fuel, charcoal					

Table 2.2: Location and management of most important tree species (up to 20 species)

NAME OF SPECIES	LOCATION	Protected/managed as forest				Variable land use/management categories						
Scientific name	Province	Conservation Area	National Park	Reserved Forest	Other	Littoral forest & mangroves	Native Forests	Secondary Forest	Plantations and trials	Village gardens	Agricultural lands	Other
1. Artocarpus altilis	All islands								<50	>200 /Village	<50	
2. Artocarpus mariannensis	All islands								<20	<100/Village	<10	
3.Calotropis gigantea	All islands						>100 / island					
4. Calophylum inophyllum	All islands						>200 / island					
5. Casuarina equisetfolia	All islands						>200/ island					
6. Cocos nucifera	All islands								>1000			
7. Cordia subcordata	All islands						<100 / island					
8. Delonix regia	All islands									>20 / village		
9. Ficus tinctoria	All islands						>200/ island					
10. Guettarda speciosa	All islands						>1000 / island					
11. Hermandia ovigera	All islands						>100 / island					
12. Lumnitzera littorea	Northern islands					>500 /islands						
13. Morinda citrifolia	All islands						>1000 / island					
14. Pandanus tectorius	All islands						>1000 / island					
15. Pemphis acidula	All islands					>1000/islands						
16. Pisonia grandis	All islands									>20 / village		
17. Rhizophora mucronata	All islands					>1000/islands						
18. Sonneratia alba	Northern islands					>1000/islands						
19 Terminalia catappa	All islands						<100 / island					
20. Terminalia samoensis	All islands						>100/island					

Notes: A. Add more island groups or islands as necessary
B. For each species Indicate approximate number of mature trees from the following categories:
< 100; 100-1000; > 1000 or ? (if known to be present but have no indication of numbers)
Include name(s) of main populations or localities
C. In other categories, indicate either protection status or land use type

Table 3.2: Conservation Areas in Kiribati

CONSERVATION AREA	LOCATION and AREA	LEGAL STATUS	FOREST TYPES CONSERVED AND MAJOR TREES SPECIES PRESENT
1.Eden Garden	Teaoraereke, Tarawa Land area : Appr. < 1 ha	This area leases out to a group of people renowned for their traditional healing skills. Only members of this group are accessible to the trees for medicinal purposes only.	Native forest. *Pandanus tectorius*, *Pisonia grandis*, *Cordia subcordata*, *Scaevola taccada, Argusia argentea*, *Guettarda speciosa*, *Cocos nucifera*, *Morinda citrifolia*
2. Nauru Park	Betio, Tarawa. Land area : Appr. > 1 ha	This is a reclaimed area from the causeway which therefore belongs to the Government. This area used by the public for recreation and picnics.	Coastal forest. *Pandanus tectorius*, *Casuarina equisetifolia*, *Terminalia catappa*,
3. Eco-Forestry Nursery	Bikenibeu, Tarawa. Land area : Appr. >0.5 ha	This area has been planted with native plants which are believed to scarce due to regular use for traditional medicines and other purposes such as fuel wood and constructions.	Native and Coastal Forest. *Scaevola taccada*, *Argusia argentea*, *Guettarda speciosa*,
4. Christmas Island Wildlife Conservation	Christmas Island (entire island)	Some part of the island has been established as residential areas, however the whole island belongs to the Government. Disturbances in conserved areas such as cutting down trees etc. are restricted.	
5. North Tarawa			

Table 4: List of species (up to 25) identified as high priority in Kiribati for genetic resource operations and activities[1]

SPECIES	EXPLORATION & GERMPLASM COLLECTION[2]			EVALUATION, IMPROVEMENT & GERMPLASM SUPPLY[3]			CONSERVATION		REMARKS
Indigenous	**Biological information**	**Gene-ecological studies**	**Germplasm collection and research**	**Field testing & evaluation**	**Selection and breeding**	**Germplasm supply**	***Ex situ* conservation**	***In situ* conservation**	
Acacia farnesiana	2								
Artocarpus altilis	2(T)		1*	*		1			
Artocarpus marianensis			1*	*					
Calophyllum inophllum	2								
Calotropis gigantea	2								
Casuarina equisetifolia			3						
Cocos nucifera									
Cordia subcordata			3						
Delonix regia	3								
Ficus tinctoria	3								
Guettarda speciosa	3								
Hernandia ovigera	3								
Lumnitzera littorea	3								
Macaranga caroliniensis									
Morinda citrifolia	1		2						
Pandanus tectorius								2	

[1] 1= Top priority, action urgently needed; 3 Action within next 5 years; Action within next 10 years; Blank = Action not required; *Action in progress

[2] Biological information, includes natural distribution, ecology, phenology; Gene-ecological studies = morphology, isozyme, DNA; (T) = taxonomic study needed; Germplasm collection and research = for evaluation and *ex situ* conservation; research on seed physiology & storage regimes; (S) selected cultivars

[3] Field testing & evaluation includes trials at provenance, progeny and clonal levels; Germplasm supply refers to development of seed production stands, clonal hedges etc for production of reproductive materials for general plantings

Table 4 con't : List of species (up to 25) identified as high priority in Kiribati for genetic resource operations and activities[1]

SPECIES	EXPLORATION & GERMPLASM COLLECTION[2]			EVALUATION, IMPROVEMENT & GERMPLASM SUPPLY[3]			CONSERVATION		REMARKS
Indigenous	**Biological information**	**Gene-ecological studies**	**Germplasm collection and research**	**Field testing & evaluation**	**Selection and breeding**	**Germplasm supply**	***Ex situ* conservation**	***In situ* conservation**	
Pemphis acidula	2							1	
Pisonia grandis	2								
Polyscias grandifolia	3								
Premna serratifolia									
Rhizophora mucronata	1	1(T)		1					
Sida fallax	3								
Sonneratia alba	1	1(T)		1					
Terminalia catappa									
Terminalia samoensis									