MARAKEI ISLAND

2008

SOCIO-ECONOMIC PROFILE

PRODUCED BY THE MINISTRY OF INTERNAL AND SOCIAL AFFAIRS,
WITH FINANCIAL SUPPORT FROM THE UNITED NATION DEVELOPMENT PROGRAM & KAPII,
AND TECHNICAL ASSISTANCE FROM THE SECRETARIAT OF THE PACIFIC COMMUNITY.

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MARAKEI ANTHEM

by ATANIKAKIA BWARIRIETA

BON ABARA MA MWENGARA

Bon abara ma mwengara ae bati n tangiraki
I bungiaki iai maten nanou abau Marakei
Ti kabwaia ni memena iai bwa e kareke angina
I aki kani kitanna bwa I tangiria

Cho:
Boni Marakei (abau) Abau ae rerei (raoi)
I tabe n rikirake iaona mani kukurei (iai)
Bwa bon ti nanou (abau) ae I tangiria (naba)
I bia bon tiku ni mena n aki toki

E na bon aki bua aron ururiingakina
Aron te bobotaki iaona akea n ai arona
Rorobuaka ma ataeinaine bane kakatonga
Bwa ea uee te kai ni maeu iaona
Kukurei

OUR ISLAND, OUR HOME

it is our island, our most beloved home
Where I was born and love most, Marakei
We are blessed living on it as it is addictive
I don't ever want to leave for I love it very much

Cho:
It is Marakei (my island) My beloved island (very much)
Am still happily growing on it (on it)
For it is my heart (my island) that I love (also)
I wish to live and dwell on it forever

Forever it will be on my mind
The gatherings that cannot be compared
Men and women all rejoice
For the tree of life is flowering
Be happy

FOREWORD

By the Honourable Amberoti Nikora,
Minister of Internal and Social Affairs, July, 2007

I am honored to have this opportunity to introduce this revised and updated socio-economic profile for Marakei Island. The completion of this profile is the culmination of months of hard-work and collaborative effort of many people, Government agencies and development partners particularly those who have provided direct financial and technical assistance towards this important exercise.

The socio-economic profiles contain specific data and information about individual islands that are not only interesting to read, but also more importantly, useful for education, planning and decision making. The profile is meant to be used as a reference material for leaders at both the island and national level, to enable them to make informed decisions that are founded on accurate and easily accessible statistics. With our limited natural and financial resources, it is very important that our leaders are in a position to make wise decisions regarding the use of these limited resources, so that they are targeted at the most urgent needs and produce maximum impact.

In addition, this profile will act as reference material that could be used for educational purposes, at the secondary and tertiary levels. This is one of the intentions when the revision exercise was conceived in the first place. In its new format, the profile contains valuable information on the history, geography, demography, commerce and trade, natural resources, the environment, and many other important facts about the islands. The vision to make the island profile important reference material will be further enhanced with the launching of the Ministry's website. This is indeed a revolutionary step in the sense that such valuable information will be made accessible on the internet, for everyone to use in and outside Kiribati.

The profiles have potential economic value because they provide the kind of information that local and foreign investors need. This aspect of the profiles will be improved with time, as better information on marine and land resources becomes available and incorporated in the book.

The island profiles are useful development documents for individual islands and the nation as a whole. Whether they are used by students, businesspersons, tourists, politicians, or planners, I can say with conviction that it will prove a useful resource on Kiribati.

Te Mauri, Te Raoi and Te Tabomoa to everyone.

ACKNOWLEDGEMENTS

The preparation of this profile involved the hard work and commitment of various individuals, Government ministries and external development agencies. At the outset, the initiative and financial support of the United Nations Development Program (UNDP) must be acknowledged with deep appreciation. UNDP financed the revision of the profiles through a joint UNDP-GoK project known as *Strengthening Decentralized Governance in Kiribati (SDGiK).*

Other regional organizations that have been very supportive to the profiling exercise include the South Pacific Geo-science Commission (SOPAC), who provided technical support in relation to the incorporation of GIS and CHARM in the project. The South Pacific Commission (SPC), who assisted in the establishment of POPGIS for use in data sourcing and analysis, provided input to the structure of the profiles, recommends the incorporation of valuable data and information, and generously offered to publish the profiles. The Kiribati Adaptation willingly came on board after the SDGiK ended, to continue funding completion of the outer island profiles and to incorporate Climate Change and Sea level rise information in the profiles that were otherwise non-existent. Without all the above assistance, the profiles as you see them now would not have attained such a high quality in terms of content and appearance. The Ministry of Internal and Social Affairs owes much gratitude to these organizations particularly their concerned staff, for their readiness to assist even if it was beyond their terms of engagement.

The project office of the Commonwealth Local Government Forum (CLGF) based in Fiji, through its Pacific Project, also contributed invaluable assistance to the project, in particular to Component 3, which focused on capacity development of local government bodies on the outer islands. Several of the activities under this component were jointly funded by CLGF, thereby absorbing much in terms of financial costs and time. For these contributions, we are very much thankful.

The various ministries of Government have helped in one way or another, especially in the furbishing of valuable data and information used in this profile. The project has been successful in maintaining the good relationship that had developed with other ministries and civil organizations. In addition, inter-agency committees were established for monitoring and technical support during the implementation phase of the project. The most important of these committees is the Outer Island Project Coordinating Committee (OIPCC), which serves as the overall steering body of SDGiK. Other technical working committees were also instrumental in getting some of the difficult tasks done. These working committees include the committee on the review of the Local Government Act, and the committee on the review of development procedures. One of the important lessons learned from the establishment of these committees is that it is possible to cut across borders to get the kind of commitment and cooperation that are reflected in the achievements of the project.

Hopefully the network of cooperation, which is necessary in sustaining and improving the profiles in future, is maintained between the various ministries of Government. As the leading agency in the production of this profile, the Ministry of Internal and Social Affairs must ensure that the linkages between the statistical units of various government departments remain intact.

Due to its multi-dimensional nature, far too many people are involved in the profiling exercise to allow acknowledgement on a personal level. It is hoped that by according merit to their respective agencies will somehow convey the deep sense of gratitude, which the project owes to these committed individuals. With this in mind, we would like to acknowledge the great contribution and support of the Ministry of Internal and Social Affairs (MISA), in particular the Rural Planning Division (RPD), the Local Government Division (LGD), the Community Development and Services Division (CDSD), and the Accounting Unit, who spearheaded the various activities related to their areas of expertise. The successes that have been achieved in the different project components are indeed the result of their

collective work.

The greatest contribution and sacrifice in the production of these revised Island Profiles is offered by a few committed individuals, both within the Ministry as well as from outside who deserve to be acknowledged. Nei Terautete Tareti, the computer operator in the Rural Planning Division who collected the initial data, Nei Buraieta Tekabwaara who worked hard to collect and update data required for the profiles as well as the GIS data maps. Nei Ruta Ioata, who assisted in data collection, designed the graphic formats in the profiles, willingly assisted in collection of outer island data and pictures and had to work extra hours to complete her profile responsibilities.

Phil Bright and his colleagues at SPC in Noumea generously offered to edit and publish the profiles, besides arranging for a work attachment with SPC for two of MISA staff. The profiles will have not attained the very high quality in which you see them now without their assistance. In addition, the improved layout and presentation of information is also based on their professional views and guidance.

The strong support and leadership of the Minister of Internal and Social Affairs, Honorable Amberoti Nikora has been a significant factor in the successful undertaking and completion of the profiling exercise, and for the whole SDGiK project for that matter. His support would have not been that strong without the equally solid support and guidance of the former Secretary of MISA, Karib'aiti Taoaba, and Rikiaua Takeke, the current Secretary.

The Deputy Secretary, Manikaoti Timeon spearheaded the profiling and completed the first prototype on Makin after which project staff continued drafting the other outer island profiles. His immense effort and guidance in the profiling is a major contribution to the completion of these profiles. The unwavering efforts and dedication of Nei Erimeta Barako in the completion of the profiles even after the SDGiK project had ended culminated in the completion of these outer island profiles. Tebwania Taateri came in later and assisted in data collection and compilation. Ultimately, the KAPII project under the directions of Kautuna Kaitara, the KAPII Coordinator, Kaiarake Taburuea, the Project Manager and Paul Craig, provided the required funds and support in the eventual completion of the profiles.

To everyone who have contributed in one way or another to the production of this useful document, including the many people and island councils on the outer islands, the Government of Kiribati is deeply indebted, and wish to thank you immensely for your useful contributions.

AMI BAU TE MAURI TE RAOI AO TE TABOMOA.

KAM BATI N RABWA.

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LIST OF ACRONYMS

SDGIK	Strengthening Decentralized Governance in Kiribati
MDGs	Millennium Development Goals
MOP	Ministry Operational Plan
NDS	National Development Strategy
UN	United Nations
GOK	Government of Kiribati
SOPAC	South Pacific Geo-Science Commission
CHARM	Comprehensive Hazard and Risk Management
GIS	Geographic Information System
CLGF	Commonwealth Local Government Forum
OIPCC	Outer Island Project Coordinating Committee
MISA	Ministry of Internal and Social Affairs
RPD	Rural Planning Division
LGD	Local Government Division
CDSD	Community Development and Services Division
SPC	Secretariat of the Pacific Community
MOH	Ministry of Health
MELAD	Ministry of Environment Land and Agricultural Development
MEYS	Ministry of Education Youth and Sport
MFED	Ministry of Finance and Economic Development
POPGIS	Population GIS
RC	Roman Catholic Church
KPC	Kiribati Protestant Church
SDA	Seventh Day Adventist Church
LDS	Church of Jesus Christ of Latter Day Saints
COG	Church of God
KHLP	Kiribati Handicraft and Local Produce Company
KSECL	Kiribati Solar Energy Company Limited

CHAPTER 1: INTRODUCTION

The first Island Profiles were published in the late 1980s, about 20 years ago. Apart from being used as a resource book by project personnel in the Rural Planning Division, it remained largely unutilized, and the information quickly became obsolete as the years passed without any attempt to update a lot of the statistics contained in them. This is the first time that the profiles are being updated and upgraded to suit today's need for information. In addition to the upgrading exercise, the profiles will also be updated, annually if possible, depending on the regularity and availability of reliable statistics. The current revision is based on a mixture of methodologies including importation of data from different government ministries (MOH, MELAD, MEYS, and MFED), the use of PopGIS software to analyze and map data, face to face interviews, questionnaire surveys, the use of reference materials and the internet.

While the purpose of the profiles is to serve as the basic information tool for planners and decision makers, it can also be used to meet the needs of students, business people, politicians, tourists, planners, and the public in general. This is possible due to the fact that it contains unique and interesting information on the island's culture, economy, natural resources, environment, infrastructure, social services and various other features. With the incorporation of MDG indicators in this new version, the profiles will now serve a very useful purpose of becoming an important tool to monitor the country's performance in respect of achieving MDG targets. Island-level statistics enables more specific analysis of the situation faced by Kiribati in the different sectors of health, education, poverty reduction, gender equality, the environment, and HIV/AIDS. These are the issues embodied in the eight goals set by the United Nations which countries are expected to achieve by the year 2015.

Another new feature of the profiles is the introduction of a computerized back-up system, which is made up of an electronic copy of the profile, as well as a GIS program, which enables detailed analysis of statistics right down to the village and household levels. The ultimate objective of the whole exercise is to have an efficient and reliable source of information about the outer islands, that is not only available in hard copy, but better still one that could be accessed immediately by the push of a keyboard button. This will enable professionals and lay people alike to acquire information quickly, for whichever purpose they may have. The profiles will be made available on the Ministry's website – www.misa.com, or alternatively through PRISM. This will enable international access to the profiles for the use of traveling officials, overseas students, potential investors and visitors. Apparently the website will contain information other than the island profiles, from the various divisions of the Ministry and perhaps additional relevant information from other government ministries. Upon completion of the website two goals will be achieved, first, that the information will be available on line for the first time and, second, that such useful information will be accessible from anywhere in the world in electronic form. This is going to be a significant achievement in itself.

The continual usefulness of the profiles, and other information contained in both the hard and electronic versions, will depend to a great extent, on a reliable system of updating and upgrading. After all, information changes all the time, as do the technology upon which it depends. Finally, it is hoped that the profiles in their new format and accompanying electronic features will serve the purpose for which they are designed, and much more. We wish every user of this profile enjoyable reading, and trust that they find it interesting and rewarding.

1.1 Summary of Main Socio-Economic Indicators

	NATIONAL			MARAKEI		
	Total	Males	Female	Total	Male	Female
Total population (November 2005)	92533	45612	46921	2741	1375	1366
Urban population	40311	19435	20876	NA	NA	NA
Percent of national population				3	3	2.9
Percent urban (%)	43.6			NA	NA	NA
Rate of Growth (%) of total population 2000-2005				NA	NA	NA
Population density	127			194	NA	NA
South Tarawa population density	2558			2558	NA	NA
% population younger than 15years	37	38	36	43	45	42
% population 15-24 years	21	21	20	16	17	15
% population 15-59 years	58	57	58	50	50	50
% population 60 years and older	5	5	6	6	5	8
Age dependency ratio	74			76	72	80
Households						
Number of private households	13999			437	NA	NA
Number of persons in private households	88644	43749	44895	2664	NA	NA
Average household size	6.3			6.1	NA	NA
Number of institutions (non-private)	43			NA	NA	NA
Number of persons in institutions	3889			NA	NA	NA
Labor market activity	36969	20013	16956			
Employed population	34715	18883	15832	1,549	758	791
Cash workers	13133	8095	5038	183	125	58
Village workers	21582	10788	10794	612	421	191
Unemployed	2254	1130	1124	14	9	5
Non-labor market	21069	7926	13143			
Students	7323	3496	3827	114	55	59
Persons engaged in home duties	6077	793	5284	390	21	369
Inactive persons	3662	1996	1666	97	76	21
Retired persons	3227	1179	2048	111	38	73
Disabled or sick persons	709	398	311	24	12	12
Prisoners	71	64	7	0	0	0
Labor market participation rate	63.6	71.5	56.3	52	73	32
Employment-population ratio	22.6	28.9	16.7	NA	NA	NA
Unemployment rate (%)	6.1	5.6	6.6	77	NA	NA
Education						
School enrolment rates 6-15 year olds (%)	91.0	89.1	93.0	NA	NA	NA
Proportion of population 15 years and older with secondary or higher education	50.5	51.6	49.5	NA	NA	NA
Proportion of total population with secondary or tertiary qualification	19.4	18.2	20.5	NA	NA	NA

Source: National Statistics Office and SPC PopGis

CHAPTER 2: GENERAL BACKGROUND

2.1 LOCALE

2.1.1 Location, Size and Land Area

Marakei is one of the Northern islands of the Gilbert group, situated 71.49 kilometers north west of Tarawa and 39.53 km north east of Abaiang. It is the fourteenth biggest island in the Kiribati group having a total land area of 14.13 square kilometers. A round trip around the island would cover 26 kilometers while the length of the island from the airport and running through the lagoon to the opposite side of the airport is 9.93 kilometers.

Alternative Names:	Maraki, Mathew Island
Area / Country:	Southern Gilbert group, KIRIBATI
Coordinates:	Latitude (DMS): 2° 00' 55.83" S Longitude (DMS): 173° 16' 27.04" E (Degrees, minutes and seconds)
Area:	Total land area: 9.48 sq.km Widest width: 2.27 km Narrowest width: 0.08 km Length: 9.86 km Circumference: 27.06 km

It widest width can be found in the village of Rawannawi and narrowest width at Temotu. It is the only island in the Gilbert group that has a lagoon in the centre like Teeraina in the Line group that also has a lagoon in the centre of the island. Where the lagoon in Teeraina is freshwater and not very deep, the lagoon in Marakei is saltwater and deeper.

2.1.2 Physical features

Marakei is one of the islands in the northern Gilbert group with Abaiang as its nearest southern neighbour and Butaritari its next northern neighbour. The island is composed of a central lagoon that contains several moderately deep basins and is almost completely surrounded by the island's two narrowly separated islands. This lagoon opens to sea at two narrow passages known as Baretoa pass located between the villages of Tekarakan and Baretoa and Reweta pass located between the villages of Bwainuna and Norauea. Bridges have been built at these two passages for better inter-village transportation and communication. 'Nei Keina' bridge was named after President Teburoro Tiito's wife and connects the villages of Tekarakan and Baretoa. 'Nei Tangangau' bridge is named after the Marakei goddess of the passage and connects Bwainuna and Norauea.

The island villages comprise:
1 Rawannawi
2. Temotu
3. Raweai
4. Tekarakan
5. Bwainuna
6. Norauea

7. Antaai
8. Tekuanga

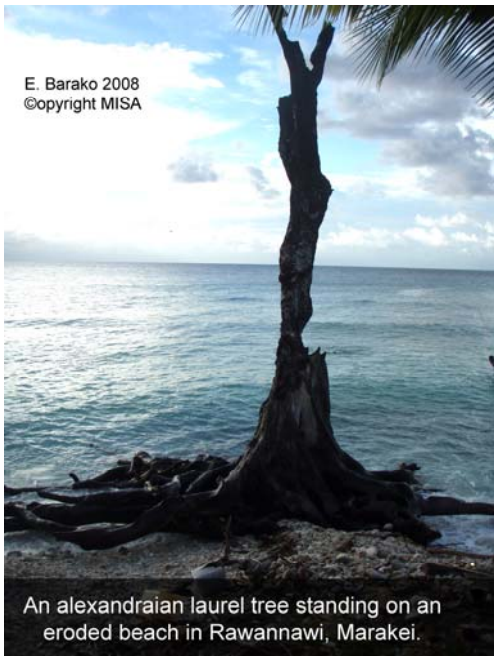
Rawannawi, at the northern most end of the island is the biggest and central village on the island where the Marakei Island Council is stationed and where the seaport and airport are also located.

Unlike Teeraina (Washington Island) in the Line group, Marakei lagoon is seawater with a lot of marine resources whereas Teeraina lagoon is freshwater and with limited water resources. Like most of the outer islands, there is a lot of space and free stretches in between the villages with the longest stretch between Tekarakan and Bwainuna. Most travelers from Rawannawi prefer the road going via the village of Tekuanga when going to Norauea or Bwainuna due to the fact that in times when motorbikes or pushbikes break down, there is always a much higher chance of people going that way plus it is easier to reach the next villages for assistance when required.

Islets within an island
Marakei

Like all the outer islands, access to the villages is by a gravel road that can be risky to all means of transportation on the island comprising coral stubs and pots here and there. Traveling by car around the island is generally slower than by motorbike and pushbike because of the stated reason. At the northern end of Rawannawi, the lagoon is hard to access as the land there is very wide compared to the other islands villages which narrower in comparison. The status of water is rarely an issue except for villages that are located in the narrow parts of the island especially Antaai and Temotu but is more a matter of not being able to establish a water system from the central parts of the land where the water is fresh.

2.1.3 Climate



An alexandraian laurel tree standing on an eroded beach in Rawannawi, Marakei.

With the exception of Tarawa that has its own meteorological office, the non-availability of rainfall measuring equipment on the outer islands has resulted in the lack of rainfall data for all the outer islands of Kiribati including those in the Phoenix and Line group and Marakei. Like the other islands in Kiribati, Marakei is amongst the islands scattered astride the equator with tropical climates. It is hot and humid all year round with east trade winds moderating the temperatures throughout the year. November to April is the rainy season, with high humidity and stronger winds.
Like most Kiribati islands, the strong influence of El Nino and La Nina events on the climate is prevalent throughout and Marakei is no exception. El Nino Southern Oscillation (ENSO) variability is defined as the Southern Oscillation Index (SOI) that measures the difference in pressure between Darwin, Australia and Tahiti. Simply defined, El Nino is the warming of the sea-surface temperatures in the equatorial Pacific Ocean that influences the atmospheric circulation

and consequently rainfall and temperature in specific areas around world. Depending on this complex interplay of sea surface temperatures (SSTs) in the equatorial Pacific ocean, atmospheric circulation is affected which either then moves eastward or westward producing either of the two events, El Nino or La Nina which in turn either results in rain or drought on the islands depending on where the atmospheric circulation is headed. (*http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/nino_regions.html).*

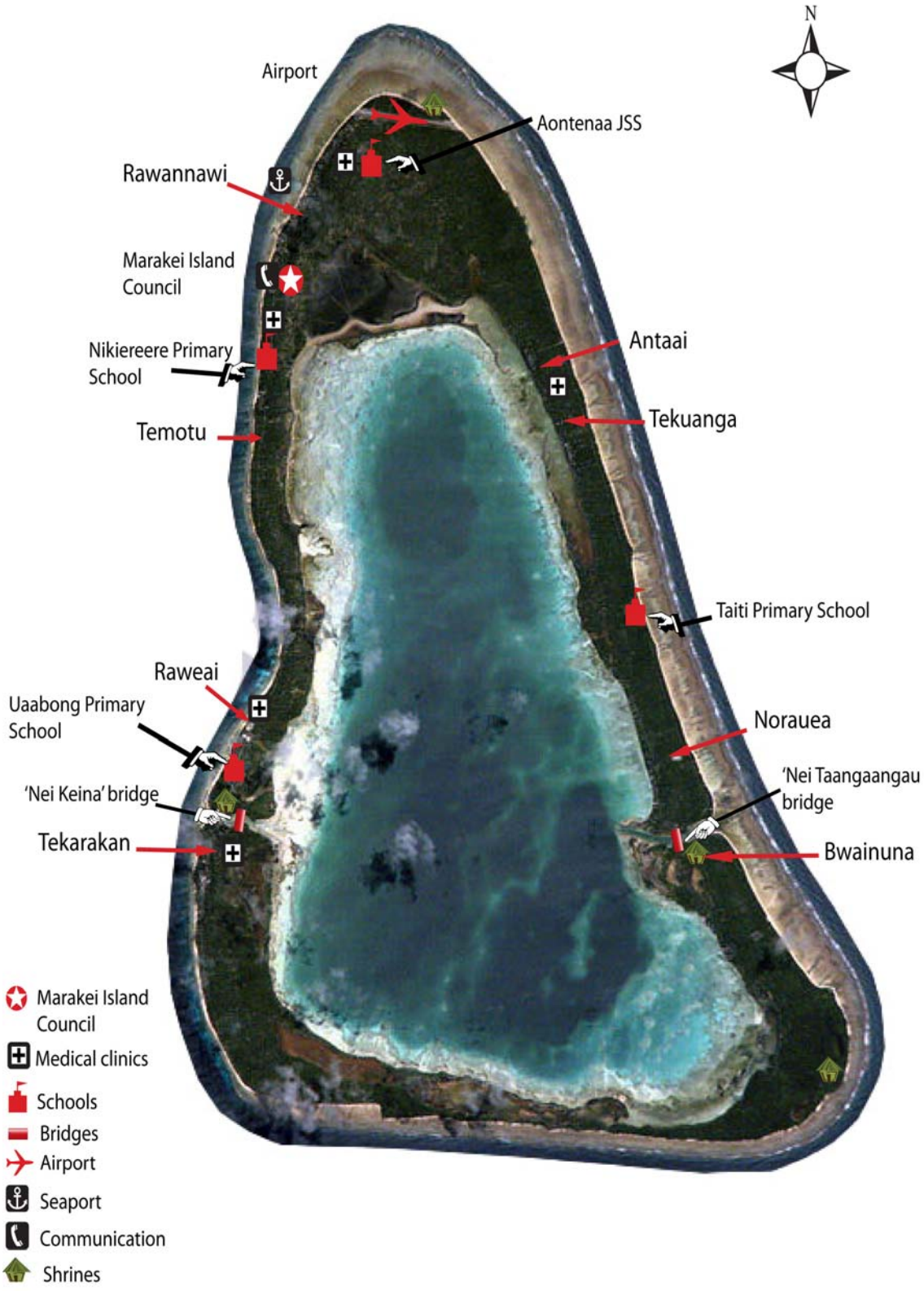
Drought spells in Marakei are also a common occurrence as prevalent throughout the southern islands. Generally in Kiribati, the wet season, according to records, falls between the months of September to February, while the dry season begins in March and ends in August. The temperature ranges between 28˚ Celsius at dawn to 32˚ Celsius in the early afternoon but have been known to get hotter or warmer than 32˚ C. Cool ocean breezes play an important role in keeping the temperature down during hot days.

2.1.4. Soil

Kiribati atoll soils are derived from the underlying coral reef and thereby consist mainly of calcium and magnesium carbonates (Town 1982). The soils tend to be shallow and highly alkaline with large soil (grain) particles rendering it highly permeable with low capacity to hold water and highly porous (J. Barr 1991). Because the soil is highly alkaline, fertility is dependent on organic matter for the concentration and recycling of plant nutrients and for soil water retention in such excessively well drained soil. Kiribati soils especially those in the Gilbert group are classed as among the poorest in the world (Frank R. Thomas 2003).

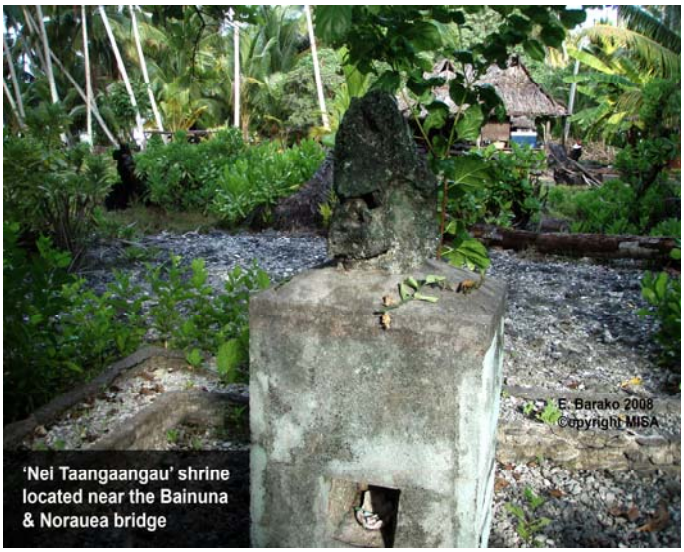
The soils encountered in Kiribati are described as having an AC type profile. The A-horizon consists of sand containing a variable quantity of humus. It is usually about 25 cm deep, has a pH of 7.6-8.0, and is dark grayish to black in color. This rapidly gives way to coarse white and pink gravely sand of the C-horizon, which consists almost exclusively of calcium and magnesium carbonates and has a pH of 7.8-8.3. The soil type is one of coral sediment with varying topsoil that is poor in nutrients. The soil has a high amount of free calcium, locking up most of the necessary nutrients. The soils are very highly permeable and have a low moisture-retaining capacity. The topsoil may have clay-sized particles constituting up to 5 percent of the volume of soil but such particles are formed by the breakdown of the algae shells by carbonic acid in humus. Atoll soils are generally low in N and K, and P tends to be fixed. Deficiencies of micro-minerals (nutrients) such as Cu, Zn, Fe and Mn are very common, however, the levels of sodium, boron and molybdenum are adequate, while sulphur may be borderline in some areas. *http://www.fao.org/ag/AGP/AGPC/doc/Counprof/southpacific/kiribati.htm*

Fig 1: A geographical map of Marakei



2.1.5 History and Culture

The discovery of Marakei between the historians Sharp and Maude was argued with Sharp arguing that the island was first sighted along with some others by Captain Hernando de Grijalva (Spain) in 1537 while Maude argued that it was discovered by Captain Louis Duperrey in 1824. Captain Duperrey along with Admiral Adam von Krusenstern had named the Kiribati archipelago the Gilberts after Captain Thomas Gilbert who had crossed the archipelago in 1788.



'Nei Taangaangau' shrine located near the Bainuna & Norauea bridge

Marakei is one of the most well known islands in the northern group that has goddess shrines around the island that have to be traditionally visited by new comers to the island including national and international visitors. These goddesses used to have different skills or powers but the most well known of these is 'Nei Tangaangau' whom is popularly known as the goddess that can grant one a good fishing catch if asked. The other goddesses are known as 'Nei Reei, Nei Naantekimam and Nei Rotebenua'.

Generally, throughout the country, islands have shrines mostly of gods and goddesses relating to the history of the island or the location but rarely are there goddesses when compared to Marakei whose shrines are those attributed to goddesses only. All newcomers to the island have to make the traditional visiting rounds to these goddesses and thus require one to bring cigarettes or tobacco as gifts to these goddesses. Round trips are normally organized by the Island Council if you are a Government Official or by Marakei natives and families that one is visiting. Initially, the tradition of giving an in-law (especially if not a Marakeian by nature) a round trip involved the family married into carrying the bride around on the shoulders and the strong male members of the family had to take turns in carrying the in-law for the whole 26 kilometers! This tradition has however evolved into round trips on trucks, motorbikes, pushbikes and even walking.

In the old days a piece of land was also usually given away by an old man who had slept with the wife of his nephew, and the recipient can either be the woman herself or the husband. Lands were also won by victors in wars between clans. This tradition is similar to the Abemaman tradition 'te tinaba' where the king sleeps with someone's wife and gifts her with a piece of land in return, probably to appease the husband and show appreciation. When someone killed another in a fight, the killer lost his best land to the surviving family of the deceased on the basis that the family had been deprived of the man and thus better livelihood. These old practices have stopped but lands acquired in the manners described have remained with beneficiaries up to this day. Marakei had also been governed by a King but this, like the rest of the islands in the northern and central groups of the Gilbert group were banned during colonial times in the 1960s when island councils were established on the outer islands.

Like the rest of the Kiribati islands, the people are friendly, kind and generous. The people are known for a lot of things including:

- Staring at newcomers to gather all the physical details and later describing them to others according to how they saw them without regard to the persons' feelings. This description most of the time sticks for a long time to come.
- Being persistent, willful and forward especially in matters that they deem wrong or inappropriate. A

lot of Island Council Clerks have been transferred away from the island as a persistent will of the islanders and councilors who deemed them incapable of managing their island.

- 'te toka ni Marakei' – basically this describes the peoples habit of getting rides on boats or trucks where they will fill up the truck or boat to the brim and then turn a deaf ear to reasons of over-filling. However, this is only during times when a lot of people are there requiring rides e.g. a new couple to the island hired a truck to go on the traditional shrine round. Once the truck arrived, the people just crowded into the truck and when the new couple arrived, there was no room for them on their hired truck and those on the truck refused to get off. This was however solved by hire of a bigger truck which the new couple quickly got on before it was again full to the brim.

At one point in time before medical facilities were established on the outer islands, the people of Marakei must have suffered a lot from bad skin ulcers, locally called 'urokou' and thus Marakei used to be known as the 'island of ulcers' or 'Marakei te urokou'. This has however been resolved when medical facilities, drugs and health awareness programs were introduced to the island.

The 'bwabwai' from this island is renowned in the country as being tastiest and most delicious in the whole country, according to local ratings on South Tarawa.

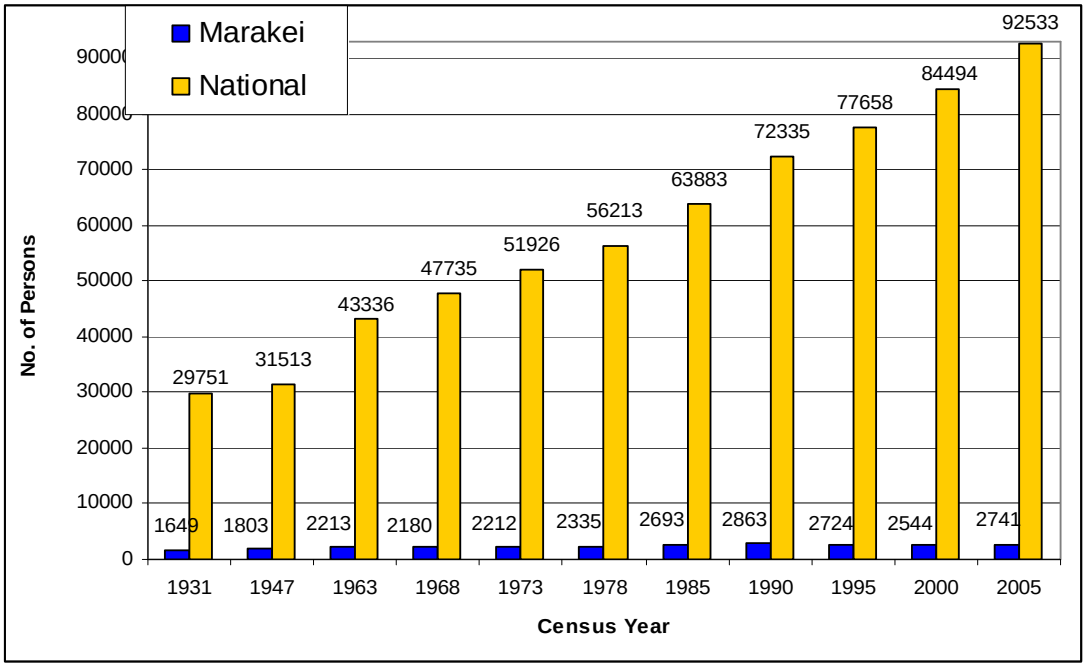
CHAPTER 3: TE MAURI – ENVIRONMENT, RESOURCES AND SOCIAL SERVICES

3.1 DEMOGRAPHY

3.1.1 Total population

The 2005 census recorded a total population of 2741 people on the island, an increase of 197 people since the 2000 census when the population was 2544. Of the 2741 population, there are 1375 males and 1366 females scattered throughout the island's eight villages as well as those working at the Marakei Island Council.

Fig 2: Marakei population trend since 1931-2005



The population of Marakei represented 3% of the total 92,533 population of Kiribati with South Tarawa having the greatest number of people at 44%. As evident from the 2005 census, the population of Marakei had increased by 197 people since the 2000 census, an increase of nearly 8%. Its population trend has pretty much fluctuated between 1600 and 2800 since 1931. The census 1931 recorded the lowest number of people on the island at 1649 while the highest count was in the census of 1990 when the population reached 2863, 122 more people than those in the recent 2005 census.

Marakei is conveniently located near to South Tarawa and thus is easier and cheaper to travel to and from the island to the urban area of Tarawa when compared to those islands in the southern Gilberts. Even though drought can be an issue on the island, it does not suffer as much when compared to the southern islands of the Gilbert group and on top of this, the land resources are abundant especially that of bwabwai and marine resources are easily accessed. These attributes would be a most probable attribute to the population fluctuating. If population changes were to be assessed and compared by island, it would be generally seen that the population changes in the Southern islands are continuously depleting by year as in the cases of Onotoa and Arorae. The Government has been trying to stem the flow of people from the outer islands to urban areas and the establishment of junior secondary schools and upgraded teacher teaching skills are some of the things that it has done to assist in this. Most

parents are willing to send children to South Tarawa for better and quality education opportunities which they thought was lacking on their islands including employment opportunities when educations are completed.

3.1.2 Growth rate

Statistics show that Marakei's population in the previous census of 2000 had declined by 180 people while the recent census in 2005 recorded an increase in population of 197. The population was at 2724 in 1995 which declined to 2544 in 2000 and then increased to 2741 in 2005. The increase has shown a deviation in the trend of out migration from the outer islands to search for better service opportunities in South Tarawa and the Line Islands. Where people from the outer islands are leaving their islands, depopulating their islands in the process, Marakei population, though it has been fluctuating over the years has instead increased slightly.

Where it's annual growth rate in 1995-2000 was at -1.4%, Marakei's recent growth rate between 2000-2005 was 1.5%. Nationally, the Gilbert islands population growth was 1.7% in 2000 and 1.8% in 2005. Kiritimati in the Line Group has the fastest national growth rate of 8% on average (*2005 Analytical report)*

3.1.3 Population Density

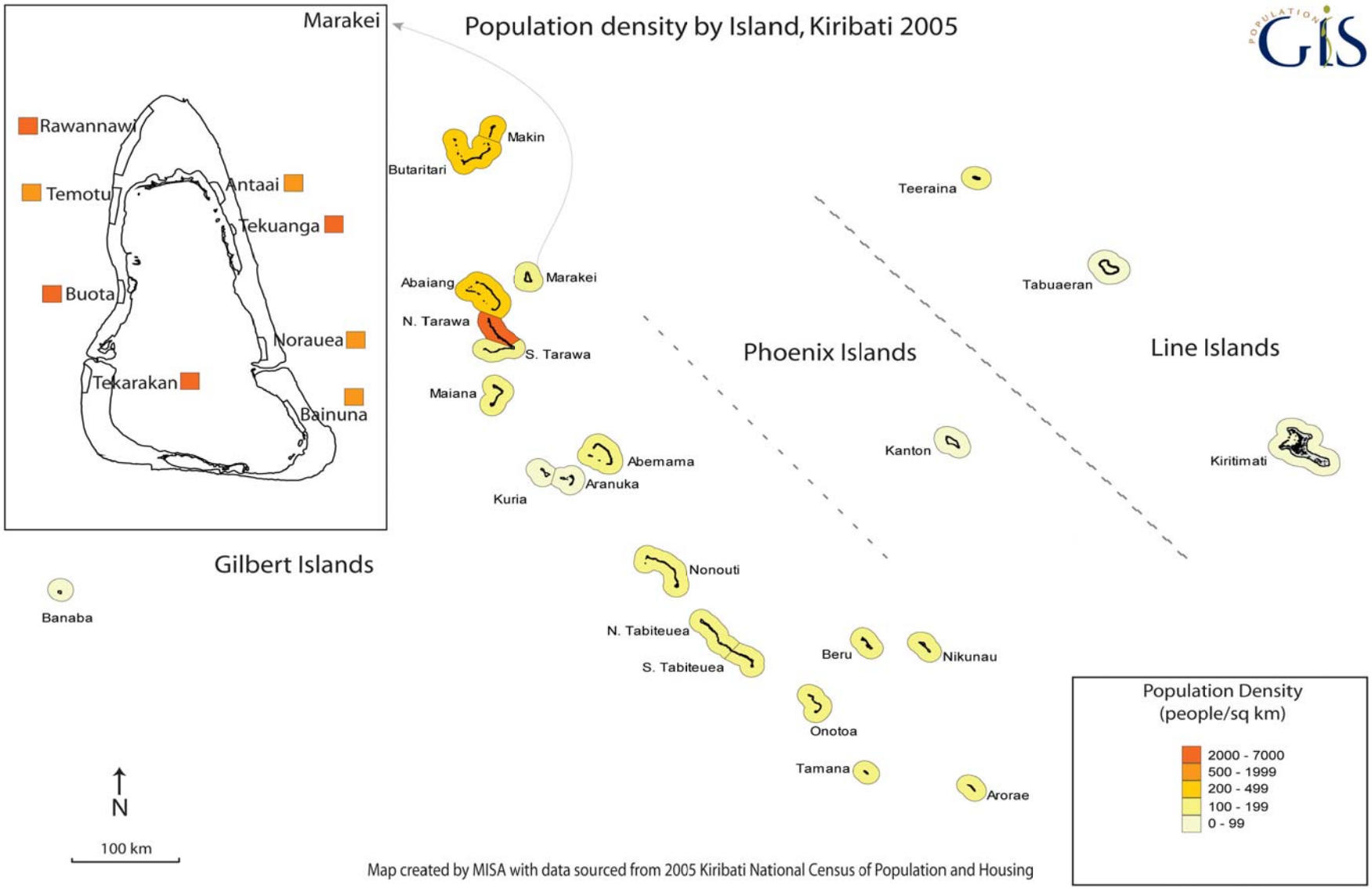
Population density is defined as the number of people living within a square kilometer of land that is calculated by dividing the number of people in a given location with the area of land. Table 2 below presents the population density on Marakei showing that where the density declined in 2000 by -7% (180 people/sq. km), it increased to 194 (8%) people per kilometer since the 2005 census.

Table 1: Population Density by village since 2000

Village/Marakei	Village Land Area	Pop 2000	Pop 2005	Density 2000	Density 2005	Density Change (%)
Rawannawi	0.47	1052	1075	2238	2287	2
Temotu	0.17	116	116	682	682	0
Buota	0.09	257	259	2856	2878	1
Tekarakan	0.13	390	362	3000	2785	-7
Bwainuna	0.14	128	246	914	1757	92
Norauea	0.09	254	311	2822	3456	22
Tekuanga	0.02	148	207	7400	10350	40
Antaai	0.11	199	165	1809	1500	-17
Total	*1.22*	*2544*	*2741*	*2085*	*2247*	*8*
MARAKEI	14.13			180	194	8

Source: PopGis 2005 SPC Noumea

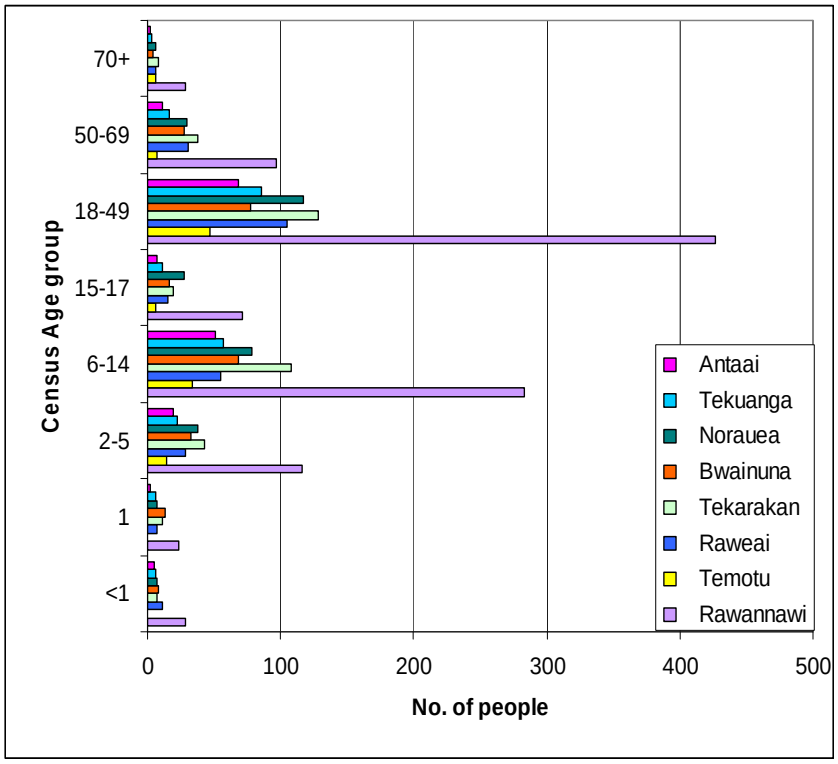
Marakei has a total land area of 14.13 sq. km of which approximately 1.22 sq. km (PopGis 2005) comprises the village areas therefore 12.91 sq. km is freely owned individual arable land. Like the rest of the islands in Kiribati, people live in village areas giving the idea from statistics such as that in the above table that people on Marakei are congested in the villages when they are actually not. It is more a voluntary need to live in village communities rather than being forced to live in congested circumstances such as in living conditions of Betio where people are congested because there is lack of living space on the islet. Furthermore, unlike Betio where there is hardly any space surrounding any one house, Marakei households are placed linearly to each other and have heaps of space at the front and back including lands in the bush areas, not counted for in the village land areas as in the above table.


Population density by Island, Kiribati 2005
Marakei
Rawannawi
Temotu
Antaai
Tekuanga
Buota
Norauea
Tekarakan
Bainuna
Gilbert Islands
Banaba
Butaritari
Makin
Abaiang
Marakei
N. Tarawa
S. Tarawa
Maiana
Abemama
Aranuka
Kuria
Nonouti
N. Tabiteuea
S. Tabiteuea
Beru
Nikunau
Onotoa
Tamana
Arorae
Phoenix Islands
Teeraina
Tabuaeran
Kanton
Line Islands
Kiritimati
N
100 km
Population Density
(people/sq km)
2000 - 7000
500 - 1999
200 - 499
100 - 199
0 - 99
Map created by MISA with data sourced from 2005 Kiribati National Census of Population and Housing

3.1.4 Breakdown of Population

The following chart depicts the breakdown of the population in the eight villages of Marakei.

Fig. 3: Marakei Population distribution by age group in villages



The majority of the population in 2005 was of the mature age 18-49 numbering 1055 (38%) and the majority of this figure, 427 were residing in Rawannawi while the least 47 were residing in Temotu, the southern village next to Rawannawi. Overall, 1075 (39%) reside in Rawannawi, 362 (13%) reside in Tekarakan, 311 (11%) reside in Norauea, 9% each live in the villages of Raweai and Bwainuna, 8% live in Tekuanga, 6% live in Antaai and the rest 4% live in Temotu.

Source: 2005 Census of Population, NSO/MFED, 2007

The newly born ones not yet a year old numbered 74 (3%) of the total population, slightly more than the elderlies who numbered 64 (2%) of the Marakei population.

The age dependency group is defined as those unable to live on their own and generally those below 15 years and those over 64 years of age. There are 1301 (48%) of people in the age dependency group. 92% of these are those aged 14 or younger while 8% are the older folk. On the other hand, those that are not dependent on others for their livelihood number 1440 (52%) whom the very young and very old folks have to depend on for their livelihood.

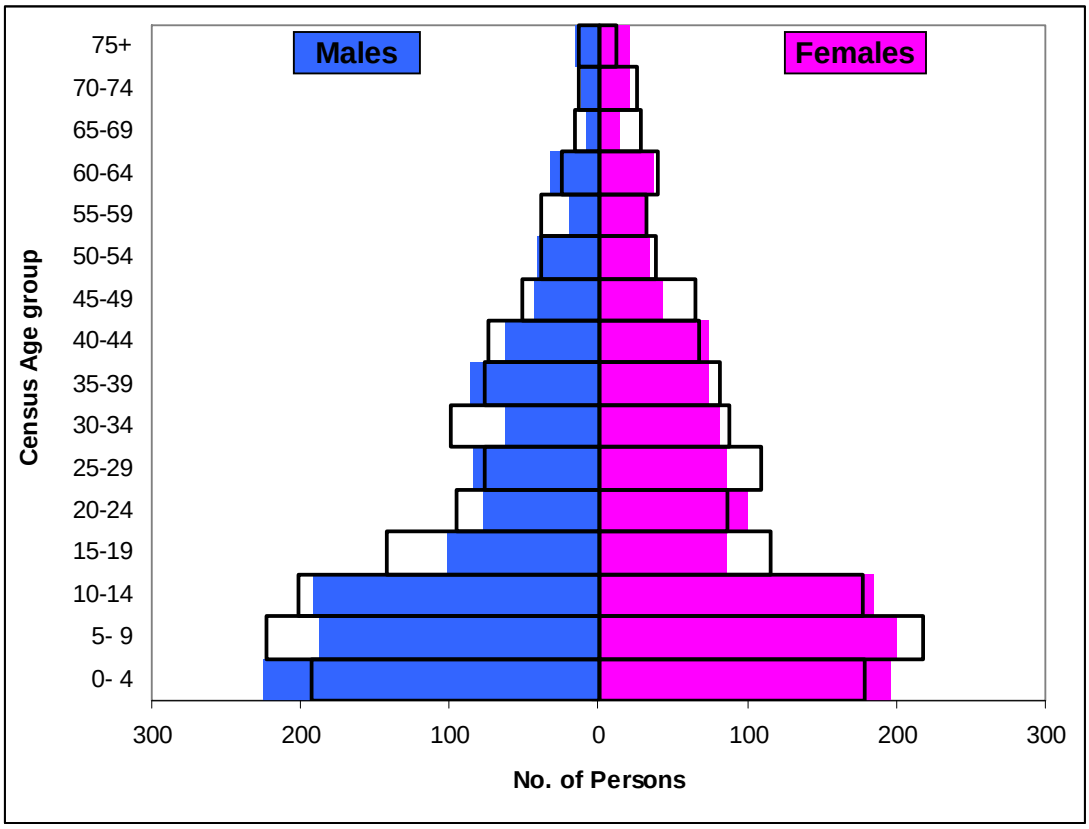
3.1.5 Population by Gender

Statistics indicated that in 2005, females were outnumbered by males by 9 males with the males numbering 1375 (50.2%) while the females had a count of 1366 (49.8%) as further depicted in the population pyramid in Fig 12 for Marakei, (*Kiribati 2005 Census2: Analytical Report*, SPC, Noumea, 2007). The sex ratio for Marakei in 2005 was therefore 101 males to 100 females (total number of males/total number of females * 100 ==> 1375/1366*100).

Marakei, like the rest of the islands has got a young population with the majority aged between 0 years and 49 years old summed up to 2420 (88%) of the total 2741 population. Compared to 2000 statistics as portrayed in the population pyramid (below), increases are evident starting from those 5-9 year old males and females up to females 70-74 years old (further illustrated in the table following the population pyramid). The most significant changes can be seen in those aged 5-9 females and males, 15-19 females and males, 25-29 females, 30-34 males' 45-49 females and 55-59 males.

Of the 1301 people in Marakei in the age dependency group, 659 (51%) are males and 642 (49%) are females.

Fig. 4: Marakei population pyramid (2005 outlined, 2000 patterned)



Source: 2005 Census Analytical Report, SPC, 2007

3.1.6 Population distribution by religion

Captain Davies recorded the Marakei denomination in 1892 as predominantly Protestant whereas nowadays Marakei is predominantly Roman Catholic like most islands in the country apart from Tamana, Arorae, Onotoa, Beru, Nikunau, and Kuria. Tamana and Arorae are outstanding in that not only are they the smallest islands in the country but they are also the only two islands that have kept promises made by their forefathers to hold and keep true to the Protestant as the only religion on their islands. The predominantly Protestant islands are those in the Southern Gilbert group including Kuria in the Central while Aranuka on the hand has a 50:50 KPC and RC congregation.

Statistics showed that 450 (16%) of the Marakei population are Protestant, 2135 (78%), more than three quarters of the island population are Roman Catholics, 68 (3%) are Seventh Day Adventist followers, 27 (1%) are Bahai, while 12 (0.4%) are Church of God followers. Mormons are slowly increasing in Marakei

with statistics showing that there are now 43 (2%) Mormon followers on the island and the rest belong to other denominations not stated in the census. These other denominations include the Assemblies of God, Jehovah's witness, Pentecostal church and Islam.

Table 2: Marakei Population by Religious denomination 2005

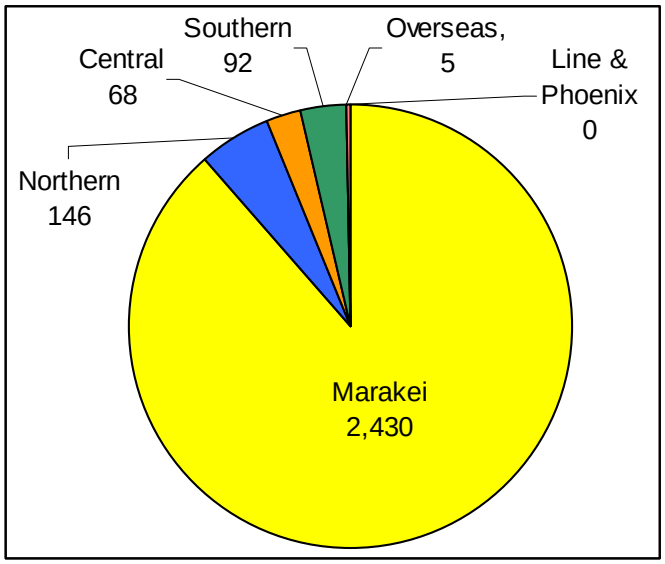
Religion	Number	% Religion of Marakei Population	% National Church Representation
Kiribati Protestant Church	450	16.4	1.4
Roman Catholic	2135	77.9	4.2
Seventh Day Adventist	68	2.5	3.9
Bahai	27	1.0	1.3
Church of God	12	0.4	1.7
Mormon	43	1.6	1.5
Other	6	0.2	0.5
MARAKEI	2741	100	

Source: 2005 Census of population, NSO/MFED

3.1.7 Migration

Since the 1990 census, the Marakei population has fluctuated from 2724 to 2544 and then recently to 2741 in the 2005 census.

Fig 5: Population makeup by district

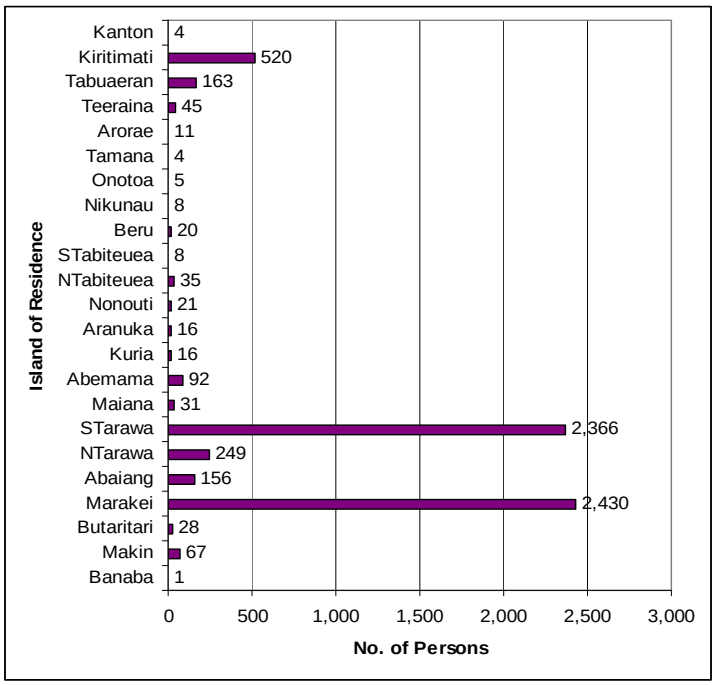


From the record of 2741 population in 2005 of those residing on Marakei, 2430 (89%) are from Marakei itself, 146 (5%) are from the northern islands, 68 (2%) are from the central islands, 92 (3%) are from the southern islands while only 2% are from the Line & Phoenix group and a further 5 (1%) are foreigners (depicted in the chart left)

Statistics also showed that 6296 (7%) Marakeians make up the Kiribati population of 92533 and where 2430 (39%) reside on the island itself, the rest 3866 (61%) are scattered all over the rest of the Kiribati islands as depicted in the chart (below). Those scattered amongst the islands of Kiribati are there as Government employees working on these islands, through marriage to people from these other islands, are attending higher education schools or are generally visiting members of the families on those islands. It should also be noted that the Line and Phoenix group were re-settled from the people of the Gilbert group during past re-settlement schemes and therefore nobody living on those islands can say for sure that they are from there as they all originated from the Gilbert group.

The distribution of the Marakeians during the 2005 census is further displayed in the following chart.

Fig 6: Population distribution on islands



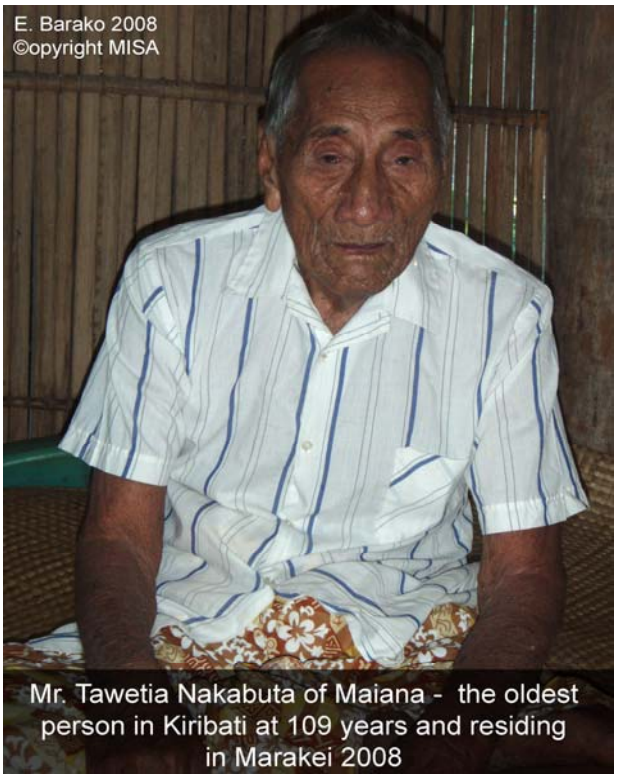
Records show that of the Marakeians living on the island itself (2430) and 3866 scattered around the country, a considerable portion (36%) of the 3866 scattered around the islands are residing in South Tarawa, again implying the trend of migration from the outer islands to South Tarawa in search of better opportunities and services.

520 (8%) of the 6296 recorded Marakeians were recorded as residing in Kiritimati while 163 (3%) were residing in Tabuaeran in the Line group, a most probable attribute to the Line group of islands re-settlement in the early 1990s.

Unfortunately, data is not available and the census does not indicate when these people arrived on the islands for a more detailed expression of in and out migration from individual islands including Marakei.

The improvement and extension of inter island transport and other services has also made inter island migration and cross marriages easier for all in the country thus a lot of the islanders are intermarrying with those from the other islands resulting in a dispersed island community such as the chart left.

As statistics show, 11% of the people residing on Marakei in 2005 are from other parts of the country who are there as Government employees working with the Marakei Island Council, teaching at the primary and junior secondary schools or there as medical workers (Medical Assistant and Nursing Officers). Amongst these emigrants is the oldest person in Kiribati, Mr. Tawetia Nakabuta (pictured right) of Maiana who lives with his daughter, who is working in Marakei as the Court Clerk for the Marakei Island Council. The oldest person of Marakei in Marakei is Ms. Tiua Tabeaua, a 86 year old female, who by comparison looks just as old as Mr. Tawetia or older.



Mr. Tawetia Nakabuta of Maiana - the oldest person in Kiribati at 109 years and residing in Marakei 2008

3.2 LAND RESOURCES

The island's main resources like the rest of the islands are its limited tree resources predominantly coconut trees, pandanus, land crabs and its vast marine resources.

3.2.1 Terrestrial Flora

Plant life plays a great role in livelihood of the islanders and as limited as they are, they all have significant uses as sources of:

- Subsistence and commercial materials and products
- Ingredients for medicines
- Symbols of individual welfare
- Ingredients in traditional cultivation
- Soil improvement
- Provision of shade and groundcover
- Materials for toys

Coconut trees (*Cocos nucifera*) are generally the trees of life for islanders as all parts of the tree provide their mainstay of food, shelter, medicine and income for the people in Kiribati including the people of Marakei. Coconuts have adapted well to atoll and dry conditions and will still remain standing after years of drought even though they may not be producing fruit. However, without fruits, these trees during drought times can still provide toddy spathes that have provided the people for centuries with their initial source of vitamin C found in the toddy.

Children up to harvest the ripe pandanus - Marakei

The pandanus tree (*Pandanus tectorius*) comes second after the coconut as one of the very important tree crops on the islands that people hack their living out of. The most common pandanus species on the island of Marakei is the 'araoanimaai'.

There are two distinct species of breadfruit, the common breadfruit (*Artocarpus altilis*) and the Mariannas breadfruit (A. mariennensis) plus a hybrid of the two The breadfruit tree comes third after the pandanus as the popular fruit trees in the islands but unfortunately the most vulnerable to prolonged droughts (*R.R. Thaman 1990*). Breadfruit are therefore propagated and looked after carefully around the homes where it is easier to look after and rarely found inland and away from homes except for northern islands that have a lot of rainfall with breadfruit grow wildly around homes and in the bush. Given that these fruit trees are vulnerable to prolonged droughts, they are preciously looked after especially on islands with less rain than northern Butaritari and Makin,

Like most of the northern islands that experience a lot of rain all year rain, 'bwabwai' grows well and abundantly in Marakei. As a fact, it is locally said that the best 'bwabwai' comes from Marakei. Requiring a great amount of water to grow, 'bwabwai' is therefore grown in pits dug to the water table which in Marakei is not that hard to get to when compared to islands in the southern Gilbert group. This has made 'bwabwai' a luxury food item in the southern islands, that is not included in the daily staple food but instead cultivated and reserved for very important functions. It is however the opposite for Marakeians as well, for whom 'bwabwai' is a staple food like Butaritari and Makin. So where 'bwabwai' pits in the southern islands are guarded, rarely seen as all are located in the bush, and very private

properties, the Northern island bwabwai pits can be seen in abundance alongside the road and in the extreme northern islands, are known to be community owned. The location of the 'bwabwai' pits deep in the forest is because its cultivation is surrounded in traditional secrecy and intensive care. As such, it is exclusively reserved by the islanders for ceremonial purposes only (R.R. Thaman 1990).

Other general terrestrial flora comprise papayas, local fig, bananas, uri (*Guettarda speciosa*), casuarinas, leucaena, non (*Morinda citrifolia*), saltbush (*Scaevola sericea*), heliotropes (*Tournefortia argentea*), Alexandrian laurel (*Calophyllum inophyllum*), sea trumpet (*Cordia subcordata*), iron tree (*Pemphis acidula*), beach almond (*Terminalia samoensis*), great lettuce tree (*Pisonia grandis*), privet (*Clerodendrum inerme*) and a variety of ornamental plants, grass and weeds. The flower of the *Guettarda* locally called 'te uri' is the national flower of Kiribati. Individually, all these plants play a great role in the subsistence and economic life of the people on Marakei and Kiribati as a whole.

3.2.2 Terrestrial fauna

Like the rest of the Kiribati islands, Marakei is not rich in its land fauna and comprise the common pigs, chickens, dogs, cats, birds and island insects such as rats, lizards, ants and crabs amongst others. The marine fauna on the other hand is rich in its share of fish, octopus, flying fish, tuna, sharks, lobster, and oil fish to name a few.

An exotic crossed bred sow (Tamworth X Large White)

The local pigs and local roosters are generally priceless domestic animals that all households have to own and they are kept and managed well. Introduced breeds of pigs, chickens and other livestock (goats and ducks) have been introduced to the islands by the Division of Agriculture but have limitations. These limitations include not being able to strive well on a local diet of coconuts and household remains and being vulnerable to the hot climate and diseases.

Dogs are also kept domestically and to a lesser extent cats. Where dogs are kept as pets because of their role in guarding territories, cats are kept to control rats around the home as rats are abundant throughout Kiribati and in some places such as in Butaritari, they are devouring more coconuts and pandanus fruits than can be harvested for consumption and copra.

3.2.3 Land Tenure, Use and Ownership

During colonial times, people of all the Kiribati islands were brought together for easier census and administration resulting in the formation of villages throughout the islands in the country. The rest of the island, not used for settlements or infrastructure (airport, schools etc) is individually owned agricultural land where coconuts, pandanus, and bwabwai are cultivated. All land tenure is catered for under the laws of the 'Native Lands'.

Some acres of freehold land are leased by the Island Council and Government alike to accommodate administrative buildings, schools and health centers. Disputes over land ownership and boundaries are settled in a Lands Court that is present on every island in the country. The areas where the churches stand were freely given away during the initial establishment of the LMS on the island in the early 1900s and therefore remain solely the church properties and the surrounding areas where there is not a record of whose land plot it is. An interesting factor of the outer island land records is that they are measured by 'mwaneaba', (an approximation of an acre) as ancestral 'mwaneabas' were huge and would cover a whole acre at minimum thus if the size of a land is recorded as 'one mwaneaba', it basically means that the land plot is approximately an acre in size.

Off to collect coconuts for copra, pig feed and general household use

Individual land plots are marked by stones, boulders, trees and specific land marks such as beachrocks, lakes, pits or shrines and land use for such lands are planned by the landowners. On some islands such as in Onotoa in the southern Gilberts, land plots are also taxed whether one lives on the island or not. Fish traps that are basically walls of coral rocks strategically placed in patterns to a certain height can be found on the reef and these are also legally recognized as belonging to individuals. Land is owned by individual landowners and inheritance is as willed by the parents. However, land can also be conveyed as gifts especially when one has done the landowner a big assistance such as in looking after an elderly till death because he was neglected by his own next of kin. Some can be given away to adopted ones who also can inherit lands from their own biological parents. Some lands have been disposed off by sale (rare) but most will willingly lease it to the Council or Government for the income that can be generated from the lease.

Due to the increasing population, lands on the outer islands are as precious as they were in the olden days with some preferring to leave their lands as family lands for all members to utilize as required for reasons such as:

Division of parental lands would mean that some would get the best lands while others could get barren

ones
Division of lands could leave one with as few as 2 plots of land or less, especially now that the lands have been divided so many times over the generations

Nowadays, anybody can inherit lands regardless of whether they are sons or daughters but this depends on the parents, the landowners. In cases where a parent ceases without leaving a will, his or her children will divide the lands between themselves in court if they so wish to get individual shares otherwise, the lands are left as family lands. In family lands, all the children and grandchildren of the parent whose land it is are free to harvest or use the land as necessary however, one cannot give it away or sell it without prior consent of all the family members.

3.3 MARINE RESOURCES

3.3.1 Size of reef and Lagoon area

Table 3: Size of Reef/Lagoon Size

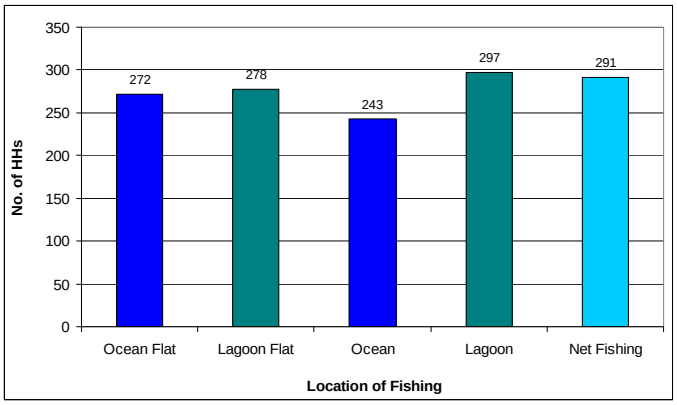
Island	REF(sq/km)	REF base (sq/km)	LGN (sq/km)	LAND (sq/km)
Marakei	13.31	10	295.77	14.13

3.3.2 Fish resources and status

It is difficult to quantify the fish resources of Marakei, or any island for that matter. However, it is generally accepted that the bigger the reef area the larger the fish resource, particularly reef fish. It could therefore be concluded that due to its limited reef area, Marakei will not have an abundance of marine resources. Nevertheless, free migratory fish such as skipjacks and yellow fin tuna (*Katsuwonus pelamis, Thunnus albocores*) flying fish (*Cypserulus sp.*), shark (*Ginglymostoma ferrugineium*), oil fish (*Ruvettus pretiosus*) and lobsters (Panurillus sp.) are always abundant.. Where Tamana in the South for some years did not allow boats to be brought onto the island, Marakei has been using boats to access the ocean resources after introduction of these fishing vessels. Blessed with an all encompassed lagoon, Marakei people do not have problems whatsoever when it comes to fish. When the ocean is rough, the lagoon then provides other marine resources for food.

Fig 7: Household location of fishing

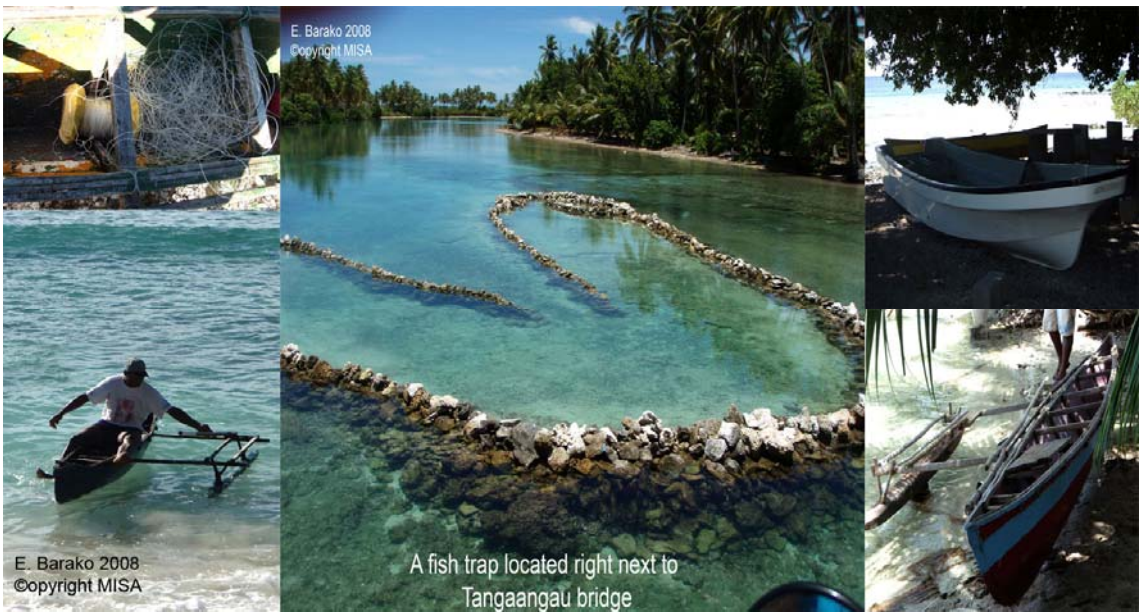
The main and major source of protein to atoll islanders is ocean and reef fish as hardly any other animal apart from pigs and chickens can live and survive in the atolls with their limited vegetation and poor climate. Pigs and chickens on the other hand take time to grow and are kept for special functions or family celebrations.



3.3.3 Pattern of fishing

The proportion of fresh fisheries resources caught and locally consumed in Kiribati ranks amongst the highest in the Pacific region (Frank R. Thomas 2003). Fishing is largely a man's responsibility even though women are not restricted from fishing. Not every man owns a canoe or boat but most households own a canoe or have access to one. Having access to one implies that one can borrow a neighbor's or a family member's canoe.

The above chart categorizes the most popular fishing sites as both the ocean and lagoon with ocean fishing recorded as the least fishing activity by the islanders as this requires the availability of fishing vessels and diving and swimming skills if such vessels are not to be used. Unbelievable as it is, there are still people who cannot swim properly even though all grew up amidst the vast Pacific ocean. Nonetheless, 272 (62%) of the Marakei households fish on the ocean flats, 278 (64%) on the lagoon flats, 243 (56%) fish in the ocean, 297 (68%) in the lagoon and 291(67%) of the 437 Marakei households engage in net fishing for their livelihoods.



Canoes are highly priced items as they are hard to make and equally hard to get materials to construct one. The frames and planks are made up from imported timber obtained from Banaba, Nauru and South Tarawa while the outrigger is made from local wood mostly those that are light most of the time breadfruit, sea trumpet ('kanawa') and the great lettuce tree trunks. Canoes are handled generally by men in Kiribati with hardly any women heard of having manhandled a canoe by herself thus leaving ocean fishing as a man's job.

The fishing catches are generally used for subsistence living only and where surplus, they are either shared with neighbors, sold to local consumers mostly Government council staff or salted and preserved for later consumption, sale and sending to relatives outside the island specially those in South Tarawa. The absence of an ice-plant has greatly limited the marketing opportunities for fishermen on the island but this has however been rectified for the

people of Marakei by the Ministry of Fisheries and Marine Resources building and completing an ice-plant (right picture) for the island in 2008. Most of the fishing catches observed on the island included tuna, flying fish, 'kimokimo' (different color from the Butaritari kimokimo but same size) and trevally (small). The shellfish 'te rabino' is also abundant in the lagoon and is harvested by diving in the deeper parts of the lagoon.

There is only one boat channel on Marakei, also located in Rawannawi where the Island Council is.

Back from fishing in the cool waters of Marakei

3.3.4 Marine Developments

The Ministry of Fisheries & Marine Resources Development is responsible for marine development nevertheless; Island Councils on individual islands have their own marine developments especially trying to maintain their marine resources from over fishing. The most recent popular development by the Ministry of Fisheries & Marine Resource Development (MFMRD) is the promotion of sea cucumber harvesting for income generation purposes. Marakei does take part in sea cucumber harvesting but not the same extent as some other outer islands such as Tabiteuea North and Onotoa in the south and Butaritari in the north.

The Fisheries Department in Tanaea is also carrying breeding trials of some marine resources for dissemination throughout the islands of Kiribati as fitting. Mother pearl oysters are being bred in artificial tanks in Tanaea and are presently supplying young oysters to Butaritari, Abemama and Onotoa for oyster farming trials on these islands. The first island to have undergone this kind of pearl oyster farming trial was Abaiang and having been a success, it is now being taken to the other islands of Kiribati as required by the Island Council and island community. The white teat-fish (Holothuria sp.) is also being bred in the artificial tanks for further distribution to the outer island waters (sea) as stocks are slowly depleting on the outer islands with the increase in export of sea cucumbers from Kiribati. A shellfish locally known as the 'bwaraitoa' is also being bred simply because it is not abundant in Kiribati waters but has great export potential as the shell is usually processed into buttons.

The 'rabino' - a type of shellfish found in the lagoon of Marakei. Quite different from the 'rabino' of Butaritari and said to be unique to Marakei

The shellfish in the right picture is found in the lagoon of Marakei and called the 'rabino', similar in name to the 'koikoi n anti' in Butaritari when it rolls off the rock where it lives and grows. The Butaritari 'koikoi n anti' and Marakei 'rabino' however look very much different in size and make. This lives in the deeper parts of the Marakei lagoon and are dived for when harvested. It tastes similar to the general 'koikoi' but bigger and a lot more fibrous.

3.3.5 Issues facing fishing and development of marine resources

Even with the decline in population, there are still marine resource issues on Marakei such as:

- Lack and cost of fishing equipment
- The only two channels/passages into the enclosed lagoon are prone to beach accretion and thus blockage of freshwater from the ocean. Even though the Island Council is assisting in maintaining the island, the problem is the lack of equipment or machinery.

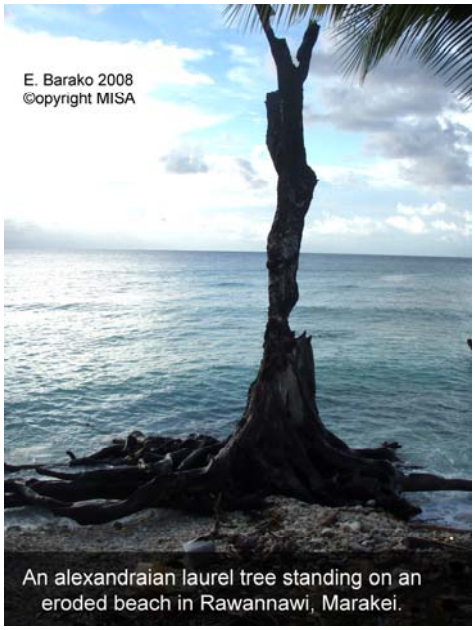
3.4 THE ENVIRONMENT

3.4.1 Environmental Issues

Seawalls have been one of the contributing factors to escalating coastal erosion problems around the islands

Consistent with climate change, the most threatening environmental issue on the island is soil erosion, and flooding of land during high sea surges. Other issues also exist in the form of safe dumping of rubbish and lack of proper sanitation facilities that will not affect the water lens. Kiribati has been assessed and considered as being at relatively low risk from cyclones, but storms can create major damage to food crops on the islands that are mostly mere strips of rocky coral land between the ocean and a lagoon (*SPDRD Case studies of the Pacific 2002*). These storms concur mostly with the rainy seasons which are towards the end of the year until the early months of the year and most are experienced as strong winds that could uproot or break coconut trees and even known to blow roof houses off.

Drought is an ever-present threat to the islands of Kiribati specifically the southern islands and a lesser extent Marakei and islands in the northern part of the Gilbert group. Drought kills off land vegetation and where it does not, the fruits are affected in size and thus production that in turn results in decreased income and livelihood resources. Wells providing the main source of water for the islanders turn brackish and the dry vegetation makes the bush vulnerable to bushfires. Fortunately for Marakei, it is also located in the northern and thus wet zone of the group and does not suffer much from droughts.



An alexandraian laurel tree standing on an eroded beach in Rawannawi, Marakei.

It has however suffered from coastal erosion over the years reflected in its coastal environment as further portrayed in the pictures. Locals tell that a great seawall had once stood on the reef of Rawannawi. Built in the time of their forefathers, the seawall had actually prevented erosion according to the Marakei locals. This seawall broke down and disintegrated in the early or mid 1990s (nobody could remember the exact date) and has never been re-built since. Boulders for the seawall have long been dispersed along the reef or used for other seawalls around the village of Rawannawi. The Alexandrian laurel tree (pictured right) is a legacy of this seawall for where it

stands, it is said to have been land before the great seawall disintegrated. Initially, the tree was located opposite the Council resthouse but has over the years moved north and can now be seen under the Roman Catholic residence in Rawannawi.

3.5 Education

The data used in this section are derived from the Educational Statistical Yearbook for the years 2004 to 2006, census data from the National Statistics Office (NSO) and SPC 2005 PopGis statistics derived from the NSO data. The National Statistics collects such data during census times while the education data are compiled by head-teachers and, submitted to the Statistical Unit of the Ministry of Education who update their database every year from data received from the outer island schools.

There are 4 types of schools (not counting tertiary schools) within the formal education system in Kiribati, namely primary, junior secondary, combined junior/senior secondary, and senior secondary and two of these types of schools are present on Marakei including preschools. The primary and junior secondary schools were established on the outer islands by the Government for accessibility by all children of school age. However, pre-schools are not yet included in the Government school system as yet even though they support them anyway. The Island Councils as such have to provide and outfit their own pre-schools and pay their own pre-school teachers. The national/universal junior secondary schooling program started in1998 initially with four schools established on different islands and by 2002, all islands in Kiribati had one JSS established whence free absorbing of primary school pupils straight into junior secondary school. Class 1 to Form 4 is also free education services by the Government of Kiribati to the nation.

Uaaboong Primary School accommodates children from the villages of Tekarakan and Raweai

Pre-school attendance generally starts at the age of 3 when the children are still learning to talk and continue until the child is 5 years old. At 6, formal education officially commences at Class 1 in the primary school for the children until they reach Class 6 at the age of 11. At the age of 12, the children then automatically enter Junior Secondary School after completing Class 6 in Primary schools. They remain in JSS for 3 years (Form 1-3) before competing for a place in Form 4 in one of the various Senior Secondary Schools located mostly in South Tarawa and the outer islands of the Gilbert group including Kiritimati in the Line group. There are several church schools belonging to the Roman Catholics, Kiribati Protestants, Mormons and the SDA respectively that are located mostly in South Tarawa, Kiritimati island and others on the outer islands of Kiribati. The Government, after KGV/EBS located in South Tarawa also has another high school, Teabike High School in Tabiteuea North.

To teach in primary school, one has to have at least reached Form 5 (minimum qualification) to be

eligible to enter the Teacher's college whereas to teach at junior or senior secondary schools, one has to have at least reached Form 7 in senior high school. Having undergone the required trainings and having attained the minimum academic qualifications required by the national authorities to be qualified to give classes at schools (*Education Digest 2006*), teachers can then enter the education system as qualified teachers. Teacher trainings are given out at the Kiribati Teachers College in South Tarawa that requires a minimum two year intensive training to be qualified or certified to teach classes in schools. Prevalent on the outer islands in the education system is the recruitment of so called 'monitors' (those who have not undergone or attained qualification to become teachers) to assist in teaching the children especially when teachers are lacking due to transfer and traveling problems.

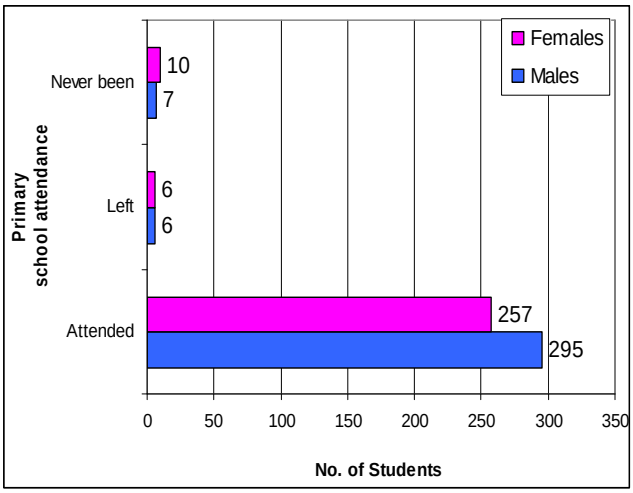
Table 4: Senior secondary schools in Kiribati

	Name of School	School Type	Location
1	Chevalier School	Senior Secondary (SS)	Abemama
2	Church of God High School	SS	South Tarawa
3	George Eastman High School	SS	Nonouti
4	Hiram Bingham High School	SS	Beru
5	Immaculate Heart College	SS	North Tarawa
6	Kauma High School	Combined Junior & Senior (CS)	Abemama
7	King George V & Elaine Bernacchi	SS	South Tarawa
8	Meleangi Tabai High School	SS	Tabuaeran
9	Moroni High School	CS	South Tarawa
10	Sacred Heart High School	SS	South Tarawa
11	St Joseph's College	SS	Abaiang
12	St. Francis High School	SS	Kiritimati
13	St.Louis High School	SS	South Tarawa
14	Stephen Whitmee High School	SS	Abaiang
25	Teabike College	SS	Tabiteuea North
16	William Goward Memorial School	SS	South Tarawa

3.5.1 Number of school age children, proportion enrolled in schools

There are three primary schools and one junior secondary school (JSS) on Marakei. Nikiereere Primary School is located in the village of Rawannawi and accommodates the children of Rawannawi and Temotu. Uaabong Primary School is located between the villages of Raweai and Takarakan for children of the two villages. Taiti Primary School accommodates children from the villages of Bwainuna, Norauea, Tekuanga and Antaai. Aontenaa JSS on the other hand caters for all junior secondary aged children on the island and is located in the village of Rawannawi.

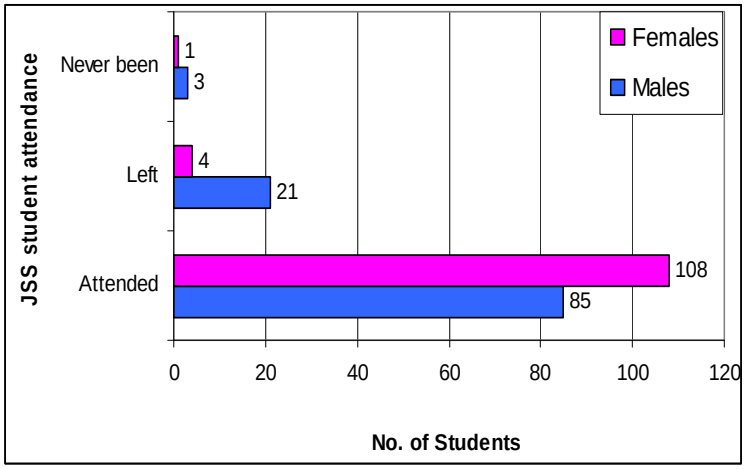
Fig 8: Primary school attendance



Statistics showed (charted above right) that in 2005, 581 children enrolled the three primary schools comprising 273 (47%) females and 308 (53%) males. 248 of the 581 children were attending the Nikiereere Primary School, 130 (22%) were attending the Uaabong Primary School while the rest 203 (35%) were attending the Taiti Primary School.

Proportional attendance of the primary schools according the 2005 statistics showed that where 552 (95%) had attended school, 12 (2%) had left school and the rest 17 (3%) had never been to school. Aontenaa JSS on the other hand catered for 222 students that comprised 109 (49%) males and 113 (51%) females. 193 (87%) of these students had attended school, 25 (11%) had left school and the rest 4 (2%) had never attended the junior secondary school at all.

Fig 9: JSS attendance



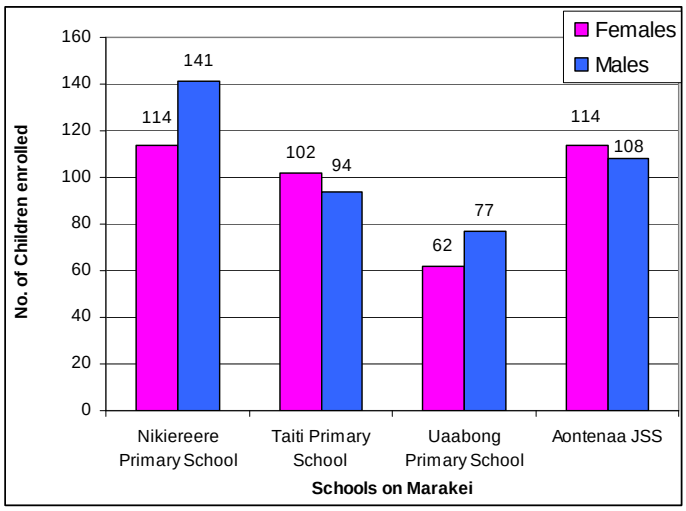
Generally, among reasons such as being disabled, poor beyond reason or plain parental ignorance of the importance of education, it is interesting to know that in this present age there are still children who are not attending school. The Gilbert group trend in the last years of families and parents inviting and sending children to South Tarawa to access schools there that are believed to offer quality training than on the outer islands has slowly been solved through the upgrading of present teacher training and existing teacher qualifications.

Another reason for children having left school includes having parents as Government employees being transferred to another location on another island within the country or migrating to the other island in Kiribati or New Zealand under the Pacific Access Category. This is common for children whose parents are those seconded to island councils, teachers or medical assistants. The stated Government employees are continuously being re-shuffled all over the country including being re-shuffled to the Line & Phoenix group and this re-shuffling can also cause children to leave school in the middle of school terms.

3.5.2. Break-down of school enrolment at different levels

In 2006, the Education Digest statistics showed that 9 more children had enrolled in the primary schools of Marakei increasing the number from 581 (2005) to 590 pupils (2006) distributed among the three stated primary schools on the island. This figure (590) comprised 278 (47%)_females and 312 (53%) males. 117 (20%) of the 590 children were in Class 1, 108 (18%) were in Classes 2 and 3, 98 (17%) were in Class 4, 70 (12%) were in Class 5 and 89 (15%) were Class 6.

Fig 10: Primary and JSS enrolment



Source: Education Digest 2006

On the other hand, Aontenaa JSS had 222 students enrolled comprising 114 (49%) females and 108 (51%) males. 78 (35%) were in Form 1, 56 (25%) were in Form 2 and the rest 88 (40%) were in Form 3.

The chart (above) shows the proportional attendance/enrolment of the Nikiereere, Uaabong, Taiti and Aontenaa JSS and their gender.

Compared to school enrolment in 2005, the primary school children increased by 9 more pupils in 2006 while the JSS students remained as they were, 222 students. With the improvement in inter-island transportation and services, children and parents alike are migrating all the time for visits and searches for better opportunities in the urban areas.

3.5.3 Teacher:Pupil Ratio

Table 5: Teacher:Pupil ratio

Schools	F	M		Teachers	Student:Teacher Ratio
Nikiereere Primary School	114	141	255	10	26:1
Taiti Primary School	102	94	196	7	28:1
Uaabong Primary School	62	77	139	6	23:1
Overall	278	312	590	23	26:1
Aontenaa JSS	114	108	222	13	17:1

Source: 2006 Education Digest

The national teacher pupil ratio was 26 pupils to one qualified/certified teacher in 2006 and this is the same for the overall or average Pupil:Teacher ratio on Marakei and also for Nikiereere Primary School in Rawannawi. However, the teacher: pupil ratio for the Taiti Primary School was slightly higher at 28:1 while Uaabong Primary School's ratio was 23:1. Aontenaa JSS student:teacher ratio stood at 17:1 which meant that there are less students to a teacher and therefore would be easier to manage.