



NONOUTI ISLAND



SOCIO-ECONOMIC PROFILE

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



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NONOUTI ANTHEM

E a tia Te Waa

*E a tia te Waa
E a bobonga raoi
A matoa nako bwaina ngkai
Bwa a nang ka ieie ni biribiri
Inanon te nama i- Nonouti*

*Tara aron butina ngkai
Tara aron birina ngkai
Tatanako iaon naona te naomoro
Ao ko a kan aki oaa mwina*

*Tina teirake ngaira i-Nonouti
Ma ni kanenei n tokaria
Tina noria bwa butira ngkai
E kare matoa angina*

Canoe completed

*The Canoe is completed
In all ways required
All materials well fixed and tightened
Ready to sail and to run
In the lagoon of Nonouti*

*See how it sails
See how it runs
Parting the waves rough as they are
You will not be able to catch up with it*

*We will stand up all of us I-Nonouti
And come in flocks to board the canoe
To witness its swiftness
As it flies with the firm wind*

FOREWORD

*by the Honorable 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 Nonouti 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 more importantly, useful for education, planning and decision making. The profile is meant to be used as a reference material for leaders both at 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, businessmen, 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 are 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, and 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. Without their assistance the profiles as you see it now will 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 is 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 (CSDS), 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.

Ultimately 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, worked very hard to collect the updated statistics which now appear in the current profiles. A lot of times she had to work extra hours to input and analyze these statistics. Nei Ruta Ioata, who took over this task when the profiling exercise was transferred from RPD to SDGiK, was similarly forced by the heavy load and limited time to work overtime and in many instances well into the evening when everyone has gone home. Most of the initial analysis and graphic representations that appear in the profile are her design.

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 of 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 have 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, Karibaiti Taoaba, and Rikaua 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. 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 organizations on the outer islands, the Government of Kiribati is deeply indebted, and wish to thank you immensely for your useful contributions.

AMI BAU TEMAURI TERAOI AO TETABOMOA.

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
CDS	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, MFED), the use of PopGIS software to analyze and map data, face to face interviews, questionnaire surveys and 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.

Summary of main socio-economic indicators

	NATIONAL			Nonouti		
	Total	Males	Female	Total	Male	Female
Total population (November 2005)	92533	45612	46921	3179	1622	1557
Urban population	40311	19435	20876	NA	NA	NA
Percent of national population				NA	NA	NA
Percent urban (%)	43.6			NA	NA	NA
Rate of Growth (%) of total population 2000-2005	1.8			0.02		
Population density	127			160		
South Tarawa population density	2558			NA	NA	NA
% population younger than 15years	37	38	36	38	40	37
% population 15-24 years	21	21	20	21	22	20
% population 15-59 years	58	57	58	55	56	55
% population 60 years and older	5	5	6	6	5	7
Age dependency ratio	74			73		
Households				NA	NA	NA
Number of private households	13999			540		
Number of persons in private households	88644	43749	44895	3179		
Average household size	6.3			5.9		
Number of institutions (non-private)	43			NA	NA	NA
Number of persons in institutions	3889			NA	NA	NA
Labor market activity	36969	20013	16956	1,962	977	985
Employed population	34715	18883	15832			
Cash workers	13133	8095	5038	223	148	75
Village workers	21582	10788	10794	1,186	622	564
Unemployed	2254	1130	1124	1	0	1
Non-labor market	21069	7926	13143			
Students	7323	3496	3827	282	138	144
Persons engaged in home duties	6077	793	5284	211	45	166
Inactive persons	3662	1996	1666	9	6	3
Retired persons	3227	1179	2048	41	13	28
Disabled or sick persons	709	398	311	9	5	4
Prisoners	71	64	7	0	0	0
Labor market participation rate	63.6	71.5	56.3	72	79	65
Employment-population rate	22.6	28.9	16.7	NA	NA	NA
Unemployment rate	6.1	5.6	6.6	84		
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

CHAPTER 1: GENERAL BACKGROUND

1.1 Location, Size and Land Area

Nonouti is the third largest island in the Gilbert Group according to land area and the fifth largest in the country when counting Kiritimati (1st largest) and Tabuaeran (2nd largest). It is located in the southern district of the Gilbert group, 39.23 kilometers northwest of Tabiteuea North, 97.13 kilometres southeast of Abemama and 259 kilometres southeast of Tarawa.

Alternative Names: Sydenham Island
Area / Country: Southern Gilbert group, KIRIBATI

Coordinates: Latitude (DMS): 0° 39' 14. 22" S
Longitude (DMS): 174° 22' 13.99" E
(Degrees, minutes and seconds)

Area: Total land area: 19.85 sq.km
Widest width: 0.92 km
Narrowest width: 0.07 km
Length: 36.72 km

The atoll is located in the South Gilbert Islands, 38 km north of Tabiteuea, and 250 km south of Tarawa. The eastern side of the atoll is the primary permanent landmass. There is an islet on the northwest side of the atoll called Noumatong. Noumatong is uninhabited and is reserved as a bird sanctuary. The eastern area of the atoll consists of tiny islets and islands which form a continuous line with a length of 35 km and a width of 15 km.

1.2 Physical features

Nonouti is a typical atoll. The island is bow shaped with a half loop at each end. From Temotu to Rotimwa, it runs north and then curves sharply west. This is not at all favorable to navigation. To get back from the northern point, you have to struggle against the prevailing southeast wind, a problem that applies to most of the island. The irregularly shaped lagoon at Nonouti is fifteen kilometres across at its widest point.



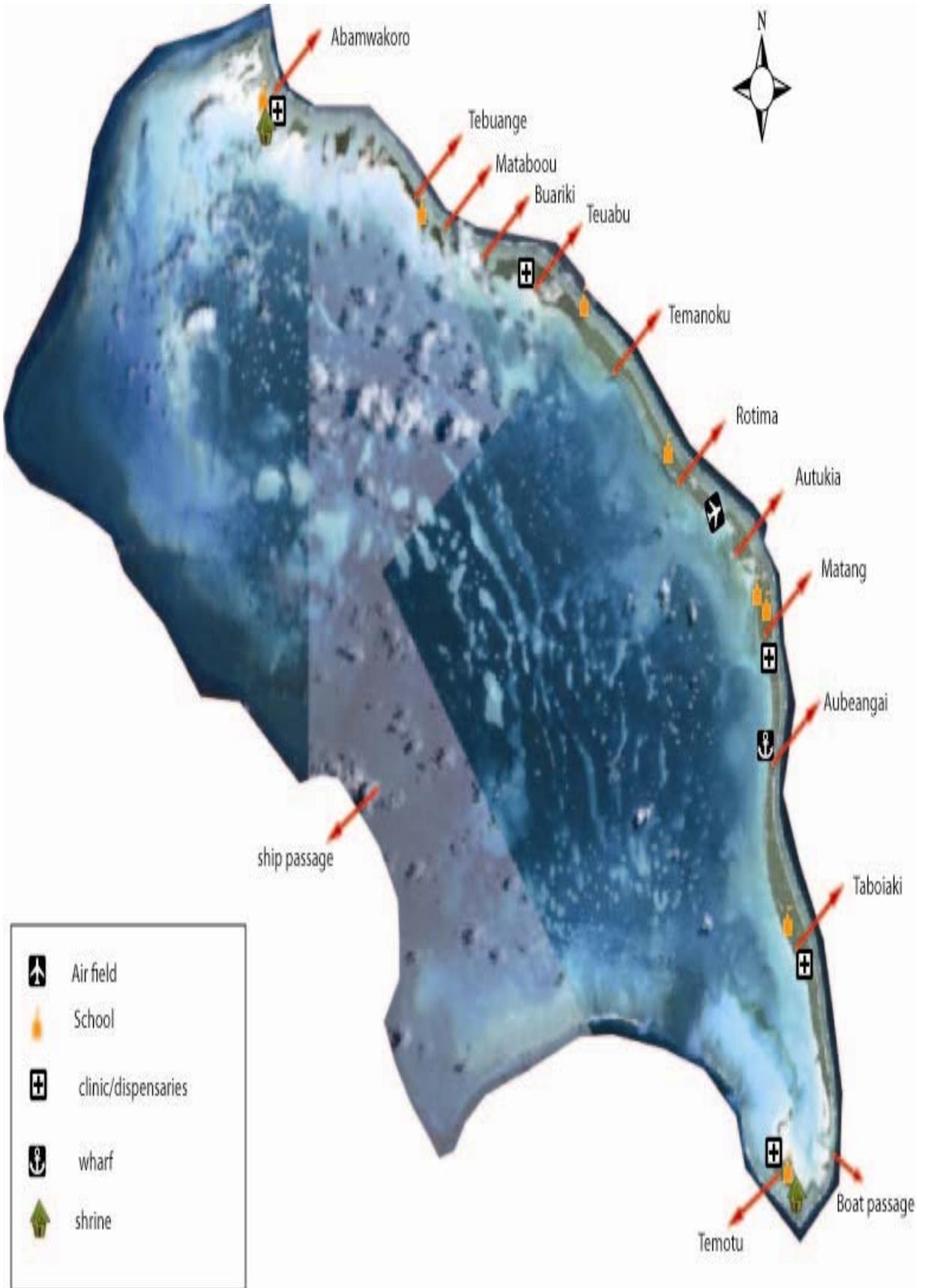
It is sprinkled with rocks and sandbanks. A cleft in the reefs near the middle, only allows access to ships of less than a thousand tons. The northern part of the island is cut off by several passages, forming a

series of islets that is very difficult to reach. Canoes can only reach the shores on high tides. The lagoon waters ebb a long way, uncovering blindingly white beaches.

The government station on the island is located in the village of Matang. The island clerk is the highest ranking government official on the island while the Mayor is the highest ranking island official. The former and first president of Kiribati, Ieremia Tabai, is from Nonouti.

Nonouti hosts a number of primary schools and one Junior Secondary School, and is home to George Eastman High School, run privately by the Kiribati Protestant Church. The largest and oldest traditional mwaneaba in Kiribati, 'Te Aake' ('The Ark') can be found in the village of Taboiaki. This mwaneaba is locally said to have been built by Father Joseph Leray who pioneered the Roman Catholic Church in Kiribati with some others. As such, the woodwork/frame of the mwaneaba is very different to local mwaneaba woodwork. The Roman Catholic community on the island now uses and maintains the 'Ark' for meetings and social functions.

Typically, coral islands and atolls are small, averaging 2 meters above sea-level, with sandy and porous soil. The main source of drinking water is the underground water that is tapped by wells dug 3-5 meters into the ground. The quality of groundwater is easily affected by both droughts and heavy rains that either render it unfit or fit for drinking. Not only is the livelihood of the population dependent on the quality of groundwater but so is the terrestrial fauna and flora. Coconuts dominate atoll vegetation along with other common shrubs found along the coast such as saltbush and messerschmidia.



1.3 Climate



Like other islands in Kiribati, Nonouti has an equatorial climate where temperatures are high all year round and there is a distinct wet and dry season. The dry season, according to records, falls between the months of September to February, while the wet season begins in March and ends in August. The temperature ranges between 28° Celsius at dawn to 31° Celsius in the early afternoon. Cool ocean breezes play an important role in keeping the temperature down during hot days. Due to its geographic position Nonouti is generally drier and

hotter than most islands in the north and central of Kiribati.

Most of the Kiribati islands are located in the dry belt of the equatorial oceanic climatic zone, between 5° on either side of the equator (Frank R. Thomas: 2002). The strong influence of El Nino and La Nina events on the climate is therefore prevalent throughout and Nikunau is no exception. El Nino Southern Oscillation (ENSO) variability is defined by 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).

With the exception of Tarawa which 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 the outer islands including Nonouti. Government has future plans to establish and equip meteorological stations on some selected outer islands but it is not certain at this stage if Nonouti is going to be one of them.

1.4 Soil

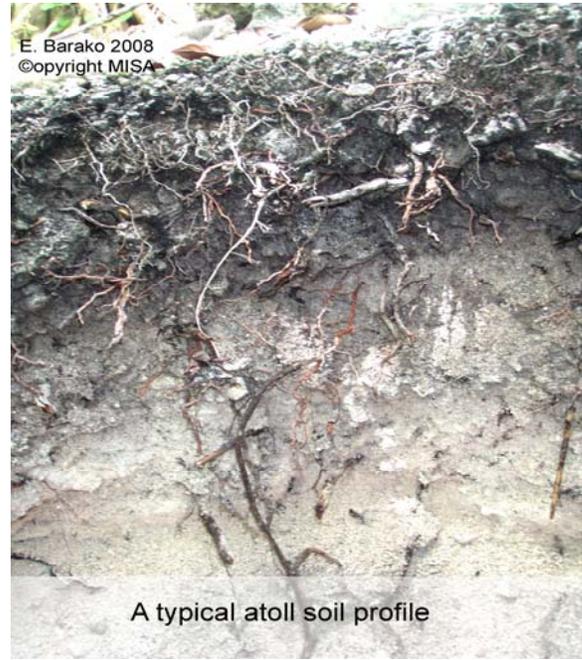
Kiribati atoll soils are derived from the underlying coral reef and thereby consist mainly of calcium and magnesium carbonates (Town 1982) and are among the poorest in the world (Frank R. Thomas 2002). The soils tend to be shallow and highly alkaline with large soil (grain) particles rendering it highly permeable with low capacity to hold water, 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.

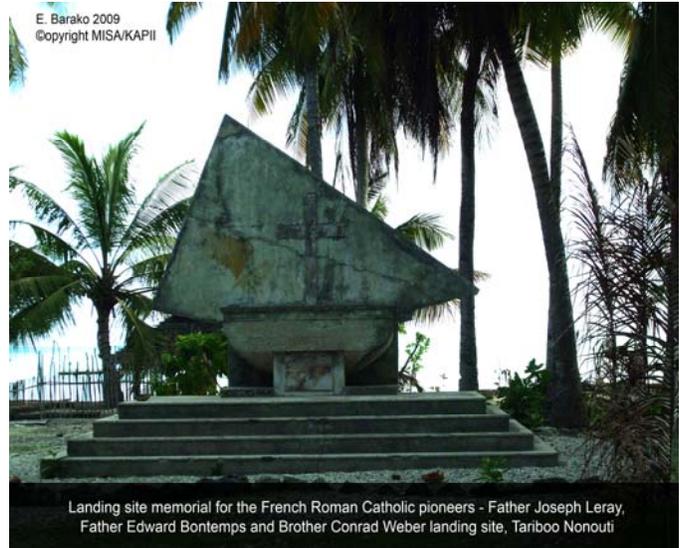
This rapidly gives way to coarse white and pink gravelly sand of the C-horizon, which consists almost exclusively of calcium and magnesium carbonates and has a pH of 7.8-8.3. The soil type is one of coral sediment with varying topsoil that is poor in nutrients. The soil has a high amount of free calcium, 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. The 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>



1.4 History and Culture

Among the people recruited in the 1870's as workers to Tahiti were Betero and Tiroi from the island of Nonouti. During their stay in Tahiti, they became members of the Roman Catholic Church. Their belief was so strong that when they returned to Nonouti in about 1880, they started to convert the people of their island. A number of people were converted and baptized by Betero and they decided to build churches in their villages; they built eight small churches altogether. When the churches were completed, Betero and Tiroi sent a request to Samoa for missionaries to be sent to Nonouti.



Father Joseph Leray

In response to the request, three missionaries from the Sacred Heart Mission, which had its headquarters in France were sent in 1887 and arrived at Nonouti in 1888. They were Father Joseph Leray, Father Edward Bontemps and Brother Conrad Weber. Father Leray was later appointed as the first Bishop in the Gilberts.

After the first Catholic Mission had been established on Nonouti the priests visited other islands trying to spread their faith. Other priests and later some nuns arrived to help them. Because of the strength of the London Missionary Society in the Southern Gilberts, the Catholic Church could not make much progress there, but in the Northern and Central Gilberts, where the American Mission were reducing its efforts, the Catholic Church won many followers.

In 1913, Nonouti celebrated the silver jubilee of the first mass set on the lagoon in 1888 in the presence of fourteen missionaries and two thousand Gilbertese; Mr. Leray recalled the various stages of the mission's work and urged the people of Nonouti to remain steadfast in their faith.

He pointed out six graves behind the apse of the church. First, there was Father Gaillard's grave. He was a fine old man who came to Nonouti when he was already sixty, rather late to learn a new language. He did what he could for five years, busying himself with manual work so as to be useful.

The Mission's founder died in the same year as Father Gaillard. Next there were two brothers and two sisters, taken one by one, before they had even become acclimatized. From the occupants of these graves had come the beginnings of the Catholic faith in Nonouti. (Quoted from Jane Resture site Kiribati home page)

In the old days Nonouti was ruled by *'Te kainga'* the eldest in the village where they come together as the administrative body of the island. No chiefly system existed in the atoll except when the time Abemama King conquered the island and drifted out by the British warship



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'Te Unimwane' shrine



In earlier days, magic was practiced as a way of life and people had confidence in their different spirits. The most well known of these spirits is called 'Te Unimwane' ('The Old man'), believed to be powerful in granting one the love of his/her life but particularly in protecting one from other spirits and black magic misdeeds from others. Pictured left is his shrine, built where he was said to have first stepped on the island. His name is not spoken and thus is not unusual to find natives particularly the younger generation not knowing his name. Traditionally, new arrivals (those who have never) to the island are required to visit the shrine on their first day of arrival.

The people's traditions are similar to Tabiteuea and Onotoa traditions and thus like keeping to themselves. According to locals, the rich marine resources in the lagoon has rendered the men neglectful of ocean or line fishing with most preferring to net fish. However, like other island communities, ocean fishing is mostly popular to those living at the ends of the island, in this case, Abamwakoro, Tebuange and Temotu.

A favorite pastime of the children and particularly the men is a game of 'te katua' that involves throwing a heavy oval shaped stone at a coconut tree trunk from a certain distance. Points are awarded to how the stone lands but is complicated with terms used for one to catch on quickly.

Like the rest of Kiribati, the people are the kindest and most hospitable that anyone can come across.

CHAPTER 2: TE MAURI – ENVIRONMENT, RESOURCES AND SOCIAL SERVICES

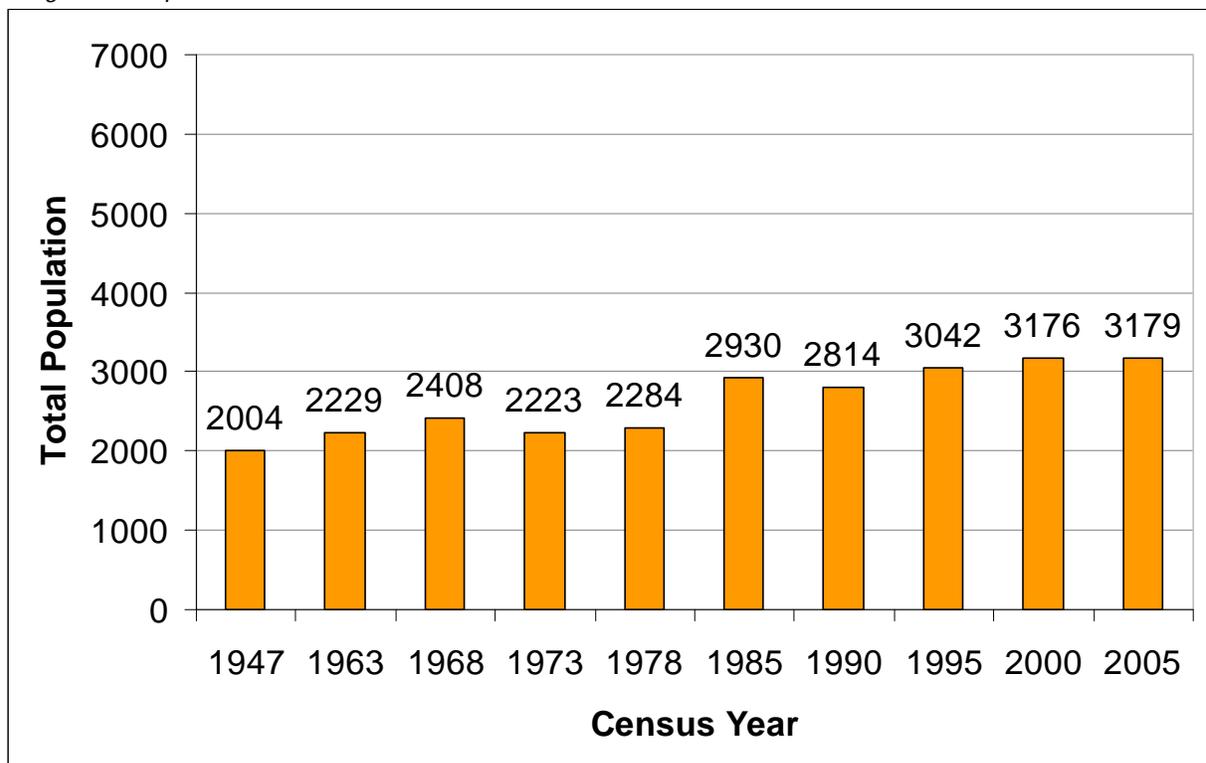
A. ENVIRONMENT AND POPULATION

2.1 Demography

2.1.1 Total population

The 2005 census recorded a total population of Nonouti of 3179. Around 1947 Nonouti had 2004 people as total population after 10 years it increased to 2408, an increase of 404 people born or migrating back to the island. At 1947 is the period of the Second World War outburst in the world affecting many islands of the Gilberts and also marks the end of it where later in the years an increase is nevertheless taking place. In fact after 10 years it decreased to 2284 is due to the fact that a famine strikes most of the islands of Kiribati where death incident may have gone higher during those years. A sudden increase occurs in 1985 has more land hence food crops, plenty of freshwater, a larger fishing zone, and is the main administrative and commercial centre of the island. The Island Council is located here, as well as the health center, the Junior Secondary School, the post office, satellite telecommunication center, police outpost and branch of the main wholesalers that provide the island with essential supplies.

Figure 1: Population of Nonouti 1947--2005



2.1.2 Growth rate

The annual population growth rate for Nonouti between 2000 and 2005 is 0%. Compared to the previous inter-censal annual growth rate of 0.9% this is by far not surprisingly unusual, especially since the trend over the past years suggests a tendency for the population to increase (refer to Fig. 1 above). As already explained earlier, some visitors of Nonouti origin were coincidentally on the island during the census for undefined or personal reasons.

Compared to other islands, Makin as small as it is recorded the third highest annual growth rate after Kiritimati and Tabuaeran who had 8.0% and 7.4% respectively while Nonouti is recorded as the island with steady population increase which below the national annual growth rate. These annual growth rates are well above the national rate of 1.8%.

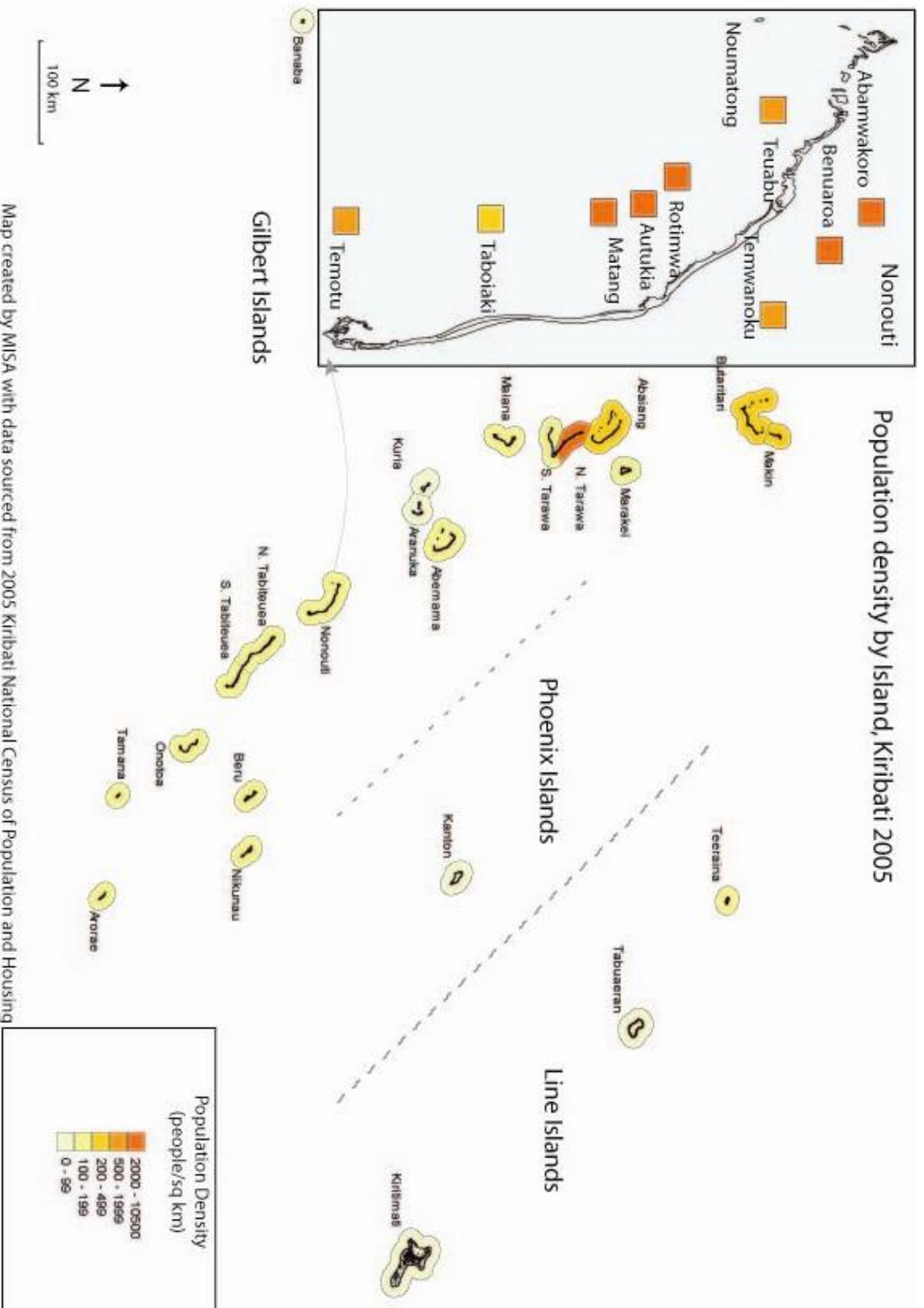
2.1.3 Population Density

Population density is defined as the number of people living within a square kilometer of land. This is calculated by dividing the number of people in a given location with the area of land. Table 1 below presents the population density by village, showing each village with its land area and total number of people it is holding. Out of the 9 villages Rotimwa is however the most densely populated village among all with density of 2840 people living in one square kilometers. This density is calculated based on the size of the village boundary. The least densely populated village on Nonouti is Taboiaki with 386 people living per square kilometers. The table below evaluates density as in order of the first village up north down to the south.

Table 1: Population Density by village

Village Name	Village Land Area	Pop 2005	Density 2005
Abamakoro	0.02	210	10500
Benuarua	0.05	162	3240
Teuabu	0.27	304	1125.93
Temanoku	0.34	289	850
Rotimwa	0.22	625	2840.91
Autukia	0.07	163	2328.57
Matang	0.26	548	2107.69
Taboiaki	1.73	668	386.13
Temotu	0.14	210	1500

The figure below illustrates the national distribution of density over the islands and then stripping down to the villages of Nonouti only. At national level Nonouti had an average density of 160 people per square kilometers, however looking closely to the villages it is somehow complete different picture where it shows that almost all of the villages are above the island itself average density. At village level number of people living in village is divided by the total land area of the village where it gives an enormous number as depicted in the table above. Overall for Nonouti as an island, the actual land area of the island itself which is 29.2 divided into the total population 3174 giving what has previously noted as 160. Such villages have very limited land area yet more people are living in that particular limited space which happens in most of the islands. Population is not well distributed over the island's land area.

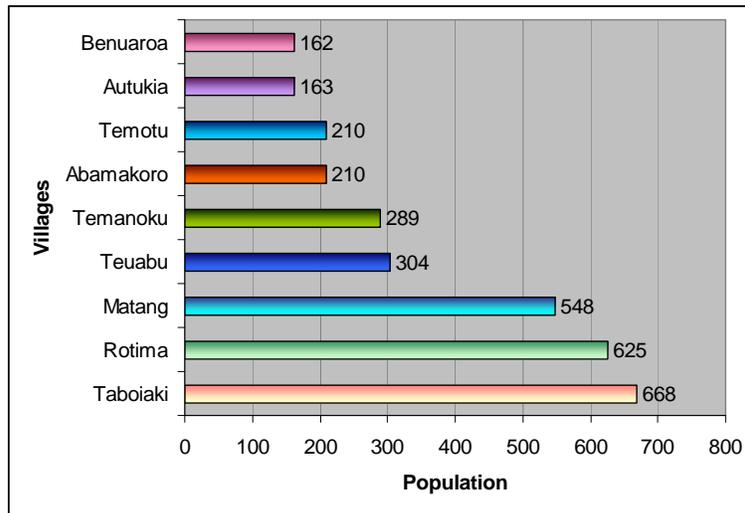


2.1.4 Breakdown of Population

The following is the breakdown of the population of Nonouti looking at its age, sex, village and religious composition.

(a) Population by Village

Figure 2: Population by village



The population chart shown in Figure 2 compares the distribution of population by villages. It is clear from the chart that a large proportion of the people live in Taboiaki village numbering 668, 21% of the 3179 Nonouti population. Taboiaki is the largest village of Nonouti and thus holds the most population of the island. Benuaroa (a combined name for the islets of Mataboou and Tebuange) village held the least number of the island's population of 162, 5% of the total population.

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

Matang village is the administrative centre of the island and as such has better infrastructure and facilities. It also comes third in village population after Taboiaki and Rotimwa with a population of 548, 17% of the island population.

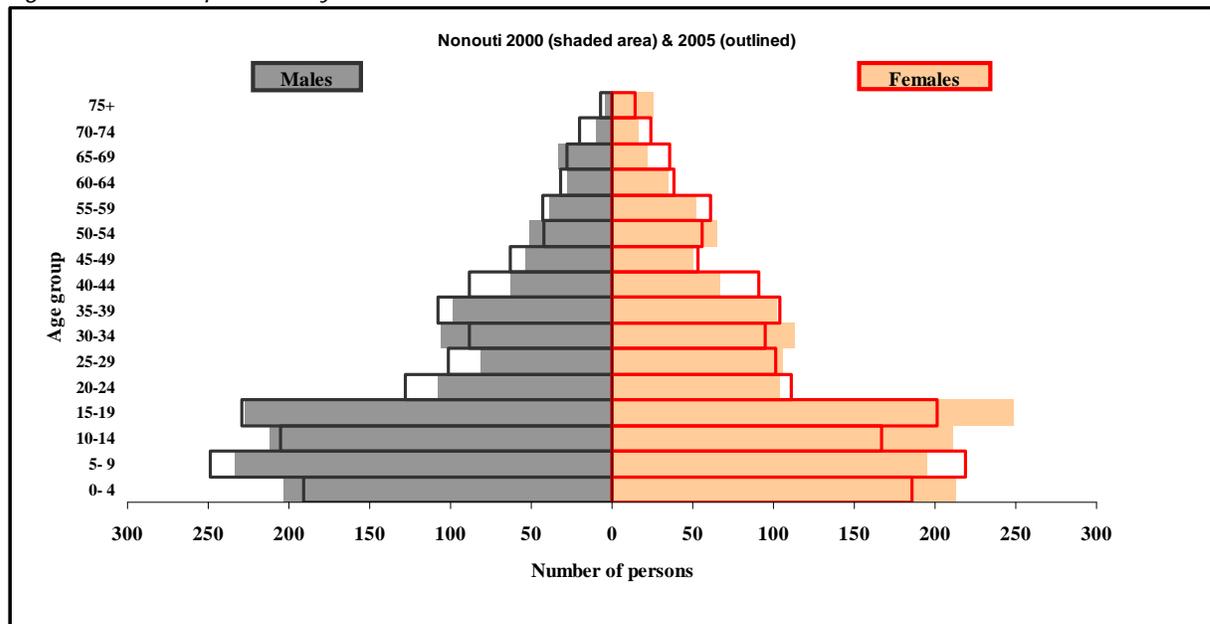
The figure above gives clear distribution on how the population of Nonouti is distributed over its nine villages. The village proportion however does not show the island constitution of population where the sections below will briefly evaluate the population in terms of age, gender and religious composition. As with the rest of the islands in the country, Nonouti also has a young and growing population. The following population pyramid further confirms Nonouti having a young and growing population.



(b) Population by Gender

Statistics indicates that in 2005, out of Nonouti total population of 3179, males constituted 51% (1622) and females 49% (1557). In terms of ratio there are roughly 104 males per 100 females, a trend that differs from the national ratio of 97 males per 100 females (*Kiribati 2005 Census, Vol. 2: Analytical Report, SPC, Noumea, 2007, page 8*). Obviously looking at how the pyramid presents itself, there is quite a large proportion of the 5-9 and 15-19 age groups comprising 250 males aged 5-9 while females with 20 or 30 less females. In the 15-19 age group, there are approximately 230 males and 200 females. Despite the higher number of males in the younger age group, females have the dominant number of older age groups over males. Around the ages of 55 upwards females overran the number of males by 10 and over.

Fig 3: Nonouti Population Pyramid



Source: based on the 2005 Census Analytical Report, SPC, 2007

(c) Population distribution by religion

Table 2 below illustrates the population distribution by religion for Nonouti in 2005. The two most dominant churches on the island are the Roman Catholic Church (RC) with 1599 (50.3%) followers and the Kiribati Protestant Church (KPC) with 1463 (46%). Other religious denominations are the Seventh Day Adventist Church (SDA) with proportion of 20 followers; the Baha'i Faith has around 54 members, while the Church of God (COG) and the Church of Jesus Christ of Latter Day Saints (LDS) and others are all categorized under others total up to only 43 members of their congregation. Altogether these other denominations constitute only 1.35% of the island's population. In other words, provided that Roman Catholic believes first arrived to Nonouti, it is not surprising that there are obviously more RC members as those other following denominations. Table below depicts summary figures on the number of members as in total and



gender.

Table 2: Population by Religious denomination 2005

Religions	Male	Female	Total
KPC	753	710	1,463
RC	802	797	1,599
SDA	10	10	20
Baha'i	32	22	54
others	25	18	43

Source: 2005 Census of population, NSO/MFED

Except for the Baha'i Faith, SDA and Church of God, the two dominating religious groups, Roman Catholic and Kiribati Protestant have their own compounds that normally consist of a church, a pastor/catechist's residence, and a *mwaneaba* (a meeting house).

2.1.5 Out-migration

In 2000 the population of Nonouti was 3176, as compared to 3179 in 2005. This results in an increase of only 3 persons in the last five years. Such an increase as these is believed to be less to occur, provided that there high intense of traveling to and fro the island but as in the case of Nonouti as in regard to the two census different there is only a slight increase or no increase at all when compared with most islands of Kiribati. Unfortunately, information relating to the migratory movement of people from and to Nonouti is not available at the time of writing as is the case with the rest of the outer islands. South Tarawa and Kiritimati are probably the only two islands that keep immigration records of people flying in and out of the country otherwise, inter island travel by air and especially by boat/ship are not properly recorded or kept. Shipping data only turns up the number of people traveling on the boat and their destinations and hardly anything else such as reasons of trip etc. Tarawa and Kiritimati immigration records only show those that were traveling overseas or back and forth between Kiritimati and Tarawa.

However, reliable records show that in 1988 a total of 21 persons migrated to Tabuaeran (Fanning) and Teeraina (Washington) under the Northern Line Islands Resettlement Scheme. Since then, many people from the Gilbert Islands have moved to the Line Islands where there is greater opportunity to earn income and the benefit of free access to state-owned land and marine resources. Kiritimati and Tabuaeran now have the highest population growth rates in Kiribati, while most islands in the Gilbert group are experiencing either very slow or negative growth. In addition, there were absentees at the time of the 2005 census, for some are working in South Tarawa and as seamen on overseas ships, while every year a small number of young people leave Junior Secondary School to attend Senior Secondary Schools (SSS) or other technical institutions on South Tarawa or other islands.

Statistics also show the number of islanders living on other islands which could also give an indication as to the migration of people from individual islands. There are a lot reasons why most are living on islands other than their own amongst which are adoption, marriage, work and migration. These figures however, only includes those that are within the country and not counting those that have migrated overseas due to marriage, work or other ways such as in the New Zealand Pacific Access Category that allows an annual intake of residents from certain Pacific islands including Kiribati.

2.2 Land Resources

2.2.1 Land ownership and Marine Tenure

Land is owned by the families and the people in general. About a quarter of the land area is leased by the Island Council for its clinics, health center, schools, airfield runway and its administrative station. A small area is also leased by the various religious groups and the Cooperative Society.

The islets after the village of Tebuange to Abamwakoro and further, are owned by individuals. However, Noumatong is a bird sanctuary and thus protected as a conservation area and looked after by the Nonouti Island Council. The people living on the islet of Abamwakoro are given the authority of guarding Noumatong and Tabontenaa from poachers.

In the past, certain places on the reef used to be owned by families and the head of the family had a right to distribute and prohibit access to that reef (Lambert B: Land Tenure in the Pacific 1971). This practice no longer exists and the people are free to fish in any part of the reef and offshore. Nevertheless, fish traps are still recognized as land belonging to the families who constructed them. These fish traps are basically built on the reef and made up of rocks placed to a certain height and in a certain pattern to catch fish when the tide goes out.

2.2.2 Land Use

Land use on Nonouti, like other islands in Kiribati, is not planned. A substantial portion of the island is occupied by village settlements (refer to Table 1 on page 14) that were established during the colonial administration. These are normally located on the lagoon side and at the center of the island (leeward side). The villages consist of lines of houses that are built in a linear formation following the general pattern of the island. The main-road is built through the village and runs along the length of the island. Each village contains individual family households that consist of a separate kitchen, toilet, a sleeping house and a canoe shed. At the center of the villages, households are closer to each other with a distance of about 2-3 meters between them whereas they are more sparsely distributed towards the end of the villages.

A large portion of the land is used up by wild bush and cultivated coconut, *bwabwai*, breadfruit, *te bero*, and pandanus tree. The island is covered in shrubs and wide range of coconut tree from small to old where can be found and seen everywhere. Other plants include pandanus (*Pandanus tectorius*), breadfruit trees (*Artocarpus altilis*) and bananas (*Musa sp.*) that grow mostly in village area. Generally, all plants on the islands are limited and their livelihoods depend to a great extent on their being able to adapt to the climate and the soil.

Lands are also leased out to the Nonouti Island Council and the Government particularly for schools, health centers and airports. The island council pays for their own leases while the government pays the rest for schools, clinics and airports. Schools owned by churches such as Kauma Adventist High School, Chevalier High School and Nanonterawa High School either pay their own leases or have purchased the land.

There are two types of land ownership on Nonouti. The first system is where land is communally owned by families, and every member has the right to harvest the produce of the land. To ensure that

everybody has equal access to the resources, no one is allowed to establish residence on the community land outside the village boundary. The second system is where individuals own small plots of land and only they and their immediate families have the right to their land. Family land stay as family lands while individual land ownership is willed to next of kin.

2.3 Marine Resources

2.3.1 Size of reef and Lagoon area

Table 3 shows the size of Nonouti's reef, lagoon and land area in square kilometers. Nonouti has 42 square kilometers of reef. This is quite a large reef area compared to other larger islands in Kiribati. The island is of simple coral formation and has a lagoon area of 420 square kilometers; however one of the larger ocean passages which run through the eastern coast of the island has



become the entrance or a ship passage to the islands lagoon interior, where it enables ships to easily offload and load its cargoes and passengers. Shellfish can be found on the mudflats at low tide, and an abundance of them live among the roots of the mangroves that can be found on the lagoon side of the island. The table provides the sizes of the island, reef and lagoon of Nonouti:

Table 3: Size of Reef/Lagoon Size

Island	REF(sq/km)	REF base (sq/km)	LGN (sq/km)	LAND (sq/km)
Nonouti	42	25.4	420	19.85

Source: Ministry of Fisheries, Marine, Resources Development, Fisheries division.

2.3.2 Status of Fish Resources

It is difficult to quantify the fish resources of Nonouti, 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. Therefore it could be concluded that due to its large reef area Nonouti has a wide variety of fish resources. Free migratory fish such as tuna (*te ati*, *te baiura*, *te ingimea*) flying fish (*te onauti*) and shark (*te bako*) are always available, and an increasing number of people are engaged in lagoon and net fishing, compared to a very small number using the ocean and reef flats.

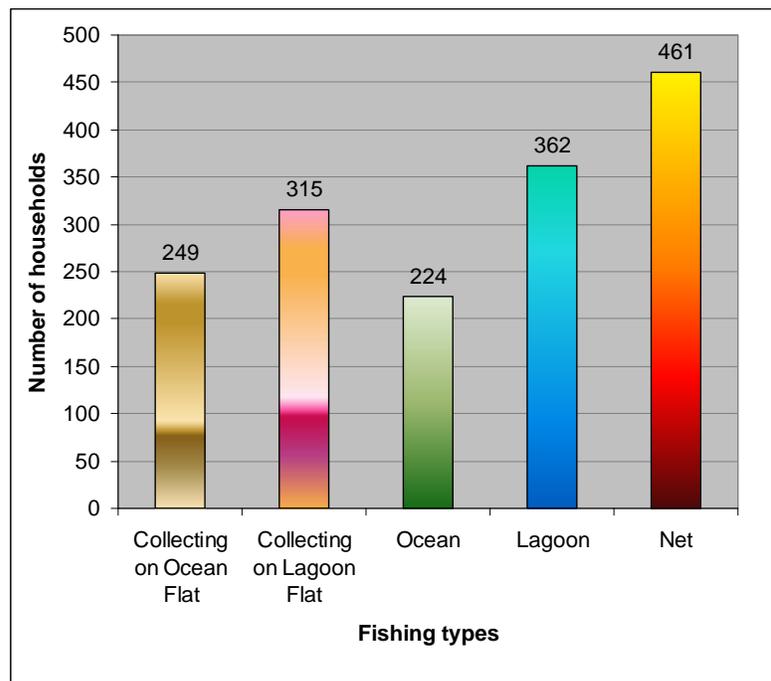
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Nonouti has such an abundance of fish resources in the lagoon that most of the people engage in net fishing most of the time and rarely go deep or line fishing. Of course, there are those who go fishing in the ocean for sharks and tuna but according to the people of Nonouti, most do not see any reason to go far to harvest the fish when they can get it near in the lagoon and faster using a net. It is extremely rare for the people on the island to suffer fish shortage due to rough weather as there is always an abundance of fish in the lagoon most notably bone fish and 'nininwai'.

2.3.3 Pattern of fishing activities

Figure 4 (below) categorizes fishing activity generally by area and method on the island of Nonouti. The chart shows that the most frequented area for fishing is the lagoon just as the most popular fishing method is net fishing.



The lagoon area has mudflats surrounding the island that become accessible at low tide, allowing fishing on the flats. The popular sea worm is commonly fished on these lagoon flats while small fish, eels and shellfish are collected on the reef flats. Fishing methods commonly used on the ocean flat include, among others, collection of shellfish, hooking of octopus, eels and other small fishes, rod fishing (*roarao*), spear-fishing (*katebe*), night fishing (*kibee*), and more. The reason that most people use the lagoon flat for fishing is that the area is the most accessible and the methods of fishing used are simple, cheap and is also where

women can take part in harvesting marine resources for their livelihood.

There are apparently more people fishing in lagoons rather than the ocean, a proportion of 362

households frequenting the lagoon out of 540 is quite high and reflects the abundance of marine resources on the island and the dependence of the people on fishing for their livelihoods. The number of households using the ocean to fish is quite low as further shown in the chart below. Collection on the reef and lagoon mudflat, are two most common and easy form of fishing in most outer islands and is where the women take part in fishing activities that would otherwise be largely a mans job. By far, 461 (85%) households are engaged in net fishing however, net fishing is carried out on both sides of the island, the ocean and the lagoon when the tide is in. There are others who also leave nets overnight at certain places and come back the next day to collect the catch.

2.3.4 Current Developments

In an attempt to improve fish availability and commercialization, Government is embarking on a program to equip outer islands with cold storage facilities. The construction of such a facility is envisaged to provide fresh fish for outer island people during times of rough seas, as well as allow storage of exportable fish before arrival of boats to transport them to Tarawa, the capital. On Tarawa, fish imported from one outer island and other outer islands will either be sold to the urban population, or processed for overseas export. However, this is not working very well on all the islands as is the case with the Nonouti ice plant.

2.3.5 Issues facing fishing and development of marine resources

Owing to its size, one of the future threats facing Nonouti is the impact of population growth on the supply of fish and other marine resources. Generally speaking the more the population grows the higher the pressure on fish and other marine resources but then this will affect all resources that are available as they will continuously be harvested for the people's livelihood. This is particularly true in the case of Nonouti and most other islands where the population is steadily increasing. Nonouti is neither growing nor declining it is experiencing a zero population growth. Nevertheless, population growth measures are needed to be put in place to safeguard future generations from depleting marine resources. It is likely that as more and more people engage in net fishing, the volume of catch will eventually decrease given that the net catches are not controlled and thus small to large fish are harvested daily. In turn this would lead to more people turning to ocean fisheries, but with the high capital cost of equipment and anticipated increase in climate change, the people would eventually have to increasingly depend on imported food to satisfy their



A traditional canoe

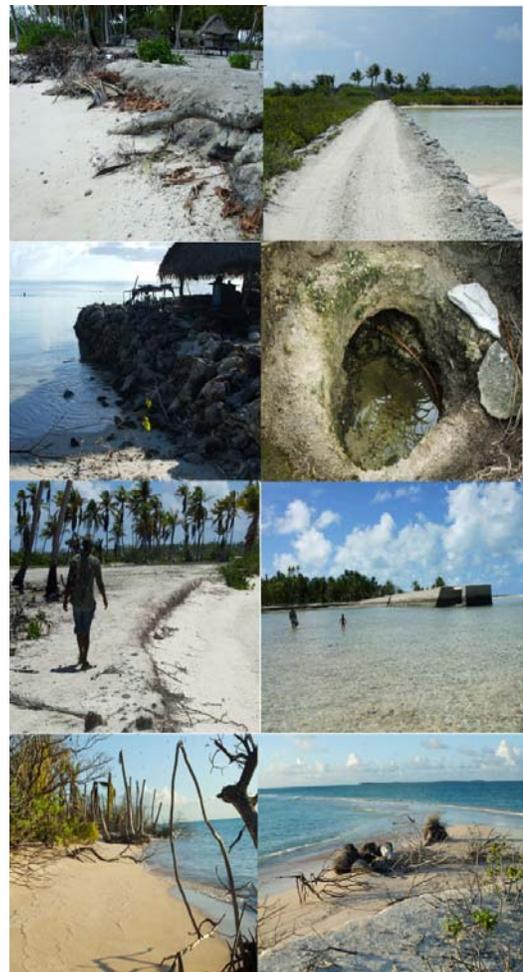
daily fish requirement.

One of the reasons that the ice plant has not been popular in Nonouti is because the island community found it a lot more expensive to buy cold stored fish from the ice plant than to fish for it themselves or buy it straight off the fishermen. This, coupled with the lack of transport to take the fish to markets in South Tarawa to revolve the funds resulted in eventual closure of the ice plant after it broke down.

The increasing export of sea cucumbers is also becoming an issue in the depletion of sea cucumbers in Nonouti that are now hard to see when traveling in the waters of the island. The Fisheries Division is however carrying trials on other marine resources that could provide an income generating activity for the people on the outer islands including Nonouti. One of these includes breeding of a shellfish locally known as 'te bwaraitoa' that is usually processed into buttons. These shellfish are not abundant in the Kiribati waters and it is hoped that those bred in the tanks at the Fisheries research centre at Tanaea in South Tarawa will later be dispersed in the Kiribati waters for later harvesting and eventual export. Oyster pearl farming has also been extended to some outer islands but Nonouti however, has not yet shown interest in pearl oyster farming.

Generally, the main issues concerning fisheries include:

- a. Lack of fishing equipment
- b. Depletion of the different species of sea cucumber especially the white teat fish and other
- c. Remoteness of the island makes it hard for them to access fish markets in South Tarawa
- d. Increase of algae in the lagoon waters has prompted people to fish further for sea worms
- e. Change in lagoon fish sites and migration



2.4 Status of Environment

2.4.1 Environmental Issues

Coastal erosion is a major environment issue for the people of Nonouti. Many locations on Nonouti have been seriously eroded, resulting in the relocation of infrastructure (road, buildings, etc.) or the recurrent high expenditure of maintaining seawall protection. Nonouti is among those islands whose topographical structure makes it particularly vulnerable to high tides and storms. In addition to big waves, the reef flat is however wide, offers minimal protection against powerful ocean waves that are often generated by strong winds or storms of such form.

Nonouti, is one of the biggest island in the Gilbert group and thus over the years the construction of causeways has been carried out to connect the mainland to those on the islets. This has resulted in a lot of coastal erosion problems over the years. Topped up with

land reclamation by the churches and individuals, parts of the island are eroding while others are accreting. The fact that climate change and sea level rising is an impending disaster waiting to happen still has not seriously touched the minds of the people, whom most are leaving the fate of the island to their faiths. However, coastal erosion and inundation during storm surges and high tides is becoming a reality that the people have very low awareness of and see no other solution than to build more seawalls or relocating to other unaffected parts of the village or island.



The bird sanctuary at Noumwaatong (pictured left) is undergoing serious erosion on the eastern side and lately, the birds are slowly moving to the next uninhabited islet, Tabontenaa. It is not only on these two islets that serious erosion is taking place but also along the coastal region of the lagoon side of the island. This has been made worse by the change in climate and rise in sea level that has affected the lower parts of the island that are also settled by people. The worst inundations have been experienced in the village of Teuaabu at the section of Kaaran, Tekatuai and Tekaaroboi where people have been known to walk in knee deep seawater that had seeped in from the lagoon side during one of the high tides in recent years. This area still gets flooded every high tide along with other areas of the same village. The destruction that these floodings do are extreme in the sense that they result in salty wells, dying food trees especially breadfruit and 'bwabwai' and great discomfort to villagers especially those

whose homes are not placed off the ground. However, despite this, the villagers in these affected cannot leave their homes as sometimes it would mean having to leave the village settlements and move further inland and away from the village or leave the village altogether. Village settlements are also allocated in plots and thus a family most of the time have only one village plot to establish homes as the rest of the land plots are either found in other villages or in the bush.

It should be noted that the above sites show only a small extent of how bad climate change and sea level rise is affecting the island and does not include the extent of damage to food trees, fish breeding sites, water status as well as the status of the coast on the ocean side of the island. Some parts of the island are too wide for people to visit or see the ocean shoreline daily. Considering that all village settlements are located on the lagoon side of the island, it should not be a wonder that all the above sites are all on the lagoon side of the island apart from the islets and villages located at the ends of the island.

The community on the islet of Abwamwakoro has been living on brackish water for generations and find