



7. Maiana



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PHYSICAL FEATURES

Maiana is to the south of Tarawa, measuring 14 km in length. It is an island with a medium sized lagoon. It is protected from the ocean waves by a narrow strip of fringing reef at the windward side and a submerged reef at the leeward side. Some parts of the island are swampy; some are dugout pits in which residents grow *bwabwai*, banana, and other food crops. At times swampy areas are vulnerable to seawater intrusion that occurs every high spring tide. Most of the important food crops such as coconut, giant taro, pandanus and breadfruit grow well and require minimal cultivation.

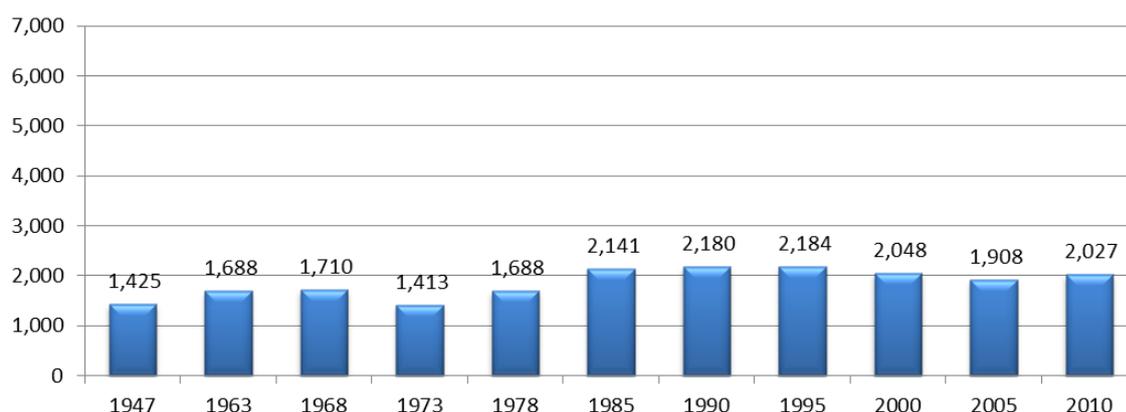
The main source of drinking water is from groundwater reservoirs which can be tapped by digging wells 3-5 meters into the ground. The quality of groundwater is easily affected by droughts, heavy rains replenish them. There are over 330 wells on Maiana and 38 rainwater catchments. Most of the uncovered wells are close to *bwabwai* pits and therefore prone to contamination. More recently, the increasing incidences of unusually high tides have caused saltwater intrusion into communal pits, resulting in salt contamination and damage of food crops. This is becoming a source of grave concern to the people of Maiana who have depended on *bwabwai* as a source of food for many generations.

POPULATION

The population of Maiana in the 2010 census was 2,027; this is 2% of Kiribati's total population.

Compared to the 2005 population of 1,908, the population is growing. The population of Maiana grew by 119 between 2005 and 2010, but the longer term trend is for a stable population; since 1985 the population has remained a little above 2,000 people.

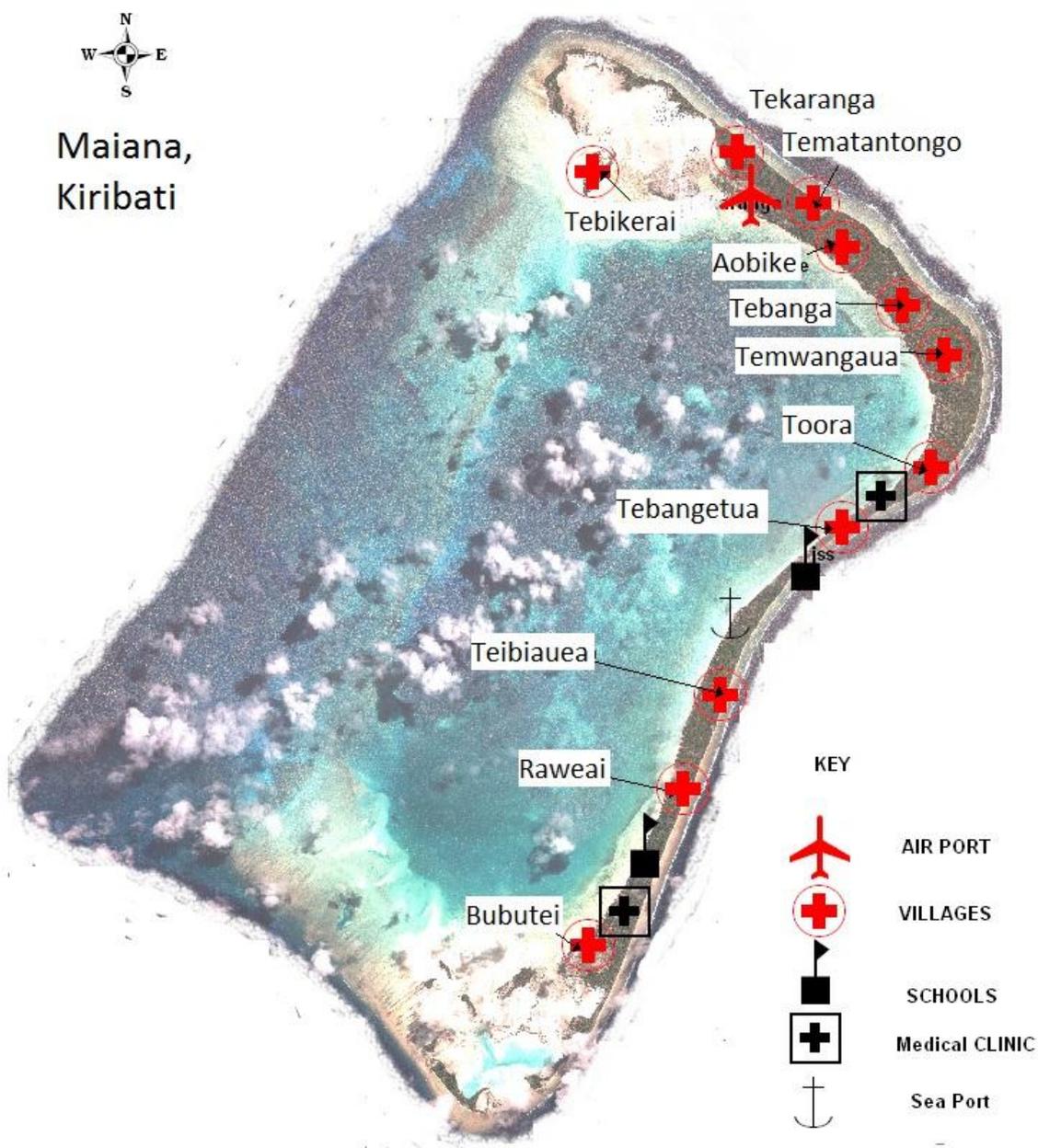
Figure 7.1: Maiana population 1947-2010



Maiana has a combined land area of 16.72 square kilometers and a population (in 2010) of 2027, giving a population density of 121 people per square kilometer. Compared with other islands in Kiribati, Maiana is the 12th most densely populated island.

There are 383 households in Maiana, and the average household size is 5.3 people.

Figure 7.2: Map of Maiana



Note: Refer to Maiana Island Profile 2008 for problem areas and sites of significance.

The largest village in Maiana is Bubutei village, which is home to 489 people or almost a quarter (24%) of the island's total population.

Table 7.1: Maiana Population by Village 2010

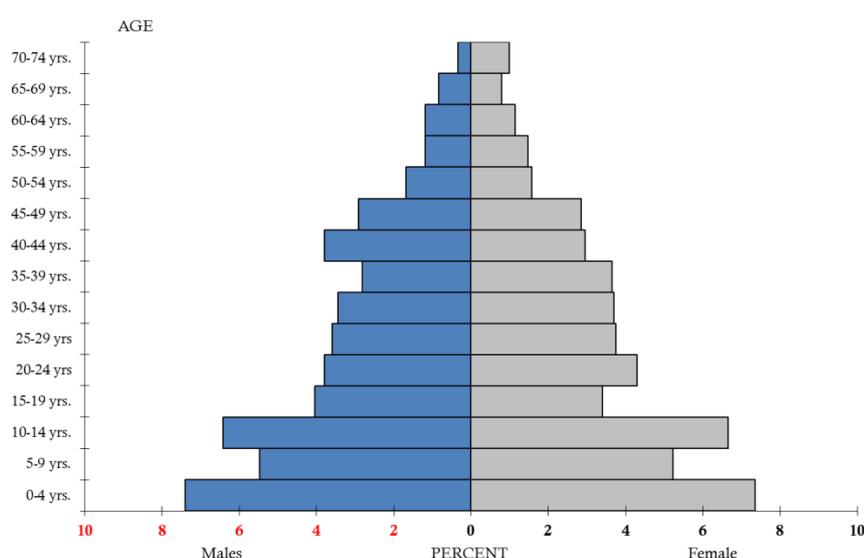
Maiana	Village	Population
	Tebikerai	93
	Tekaranga	139
	Tematantongo	164
	Aobike	110
	Tebanga	264
	Temwangaua	115
	Toora	115
	Tebwangetua	65
	Teitai	48
	Tebiauea	211
	Raweai	214
	Bubutei	489
Maiana total population		2,027

Source: 2010 Census

Maiana, like the rest of Kiribati, has a young population with 37% of the population aged under 15, and the largest age group being very young children aged 0-4 years. An issue specific to Maiana is that the age group from 5-9 years is much smaller; there are 299 babies aged 0-4 years but only 217 children aged 5-9.

Maiana has no secondary school, so there are fewer young people aged 15-19 as many in this age range will be attending school on other islands.

Figure 7.4: Maiana 2010 Population by Age and Sex



Data source: 2010 census

LAND AND MARINE RESOURCES

LAND RESOURCES

A large portion of the land in Maiana is overgrown with wild bush, alternating with areas of cultivated *bwabwai* and breadfruit. The dominant fruit tree is coconut which grows everywhere. Other plants including pandanus (*te kaina*), breadfruit trees (*te mai*) and bananas grow mostly in village areas. The vegetation grows well because of fairly high annual rainfall, however fewer households cultivate banana and pawpaw as compared with northern islands. Inhabited homes are well maintained and tidy while unoccupied ones are deteriorating with time with tall grass and fallen leaves around them.

WATER RESOURCES

Almost all households use well water both for drinking and for washing; only 1% of households have access to rainwater. Open wells are much more common than protected wells.

Groundwater reserves on Maiana are threatened by saltwater pollution through surface intrusion. Already the freshwater pond which serves as an important food-producing area for most villages has been overflowed with seawater several times, causing destruction to *bwabwai*, banana, coconut and other food crops. Surface intrusion of seawater leaves the groundwater reservoir completely vulnerable to pollution and contamination; this is slowly spreading out to other groundwater reservoirs. Despite efforts to build seawalls around the island, seawater still seeps in through porous sand and is not being contained to minimize damage to crops and water supplies.

There is no sewage reticulation on Maiana but almost half of all households have a flush toilet system with a septic tank.

MARINE RESOURCES

Maiana island is of simple coral formation and therefore has a very big lagoon with area of 73.95 square kilometers. Shellfish can be found on the mudflat at low tide, and abundant schools of small fish live among the roots of the mangroves during high tide. Maiana also has a large reef area of 27 square km. The abundant marine resources pose a great advantage to the people whose major source of protein is fish.

Table 7.2: Size of Reef/Lagoon Size, Maiana

Island	Reef (square km)	Reef base (square km)	Lagoon (square km)	Land (square km)
Maiana		27	73.95	16.7

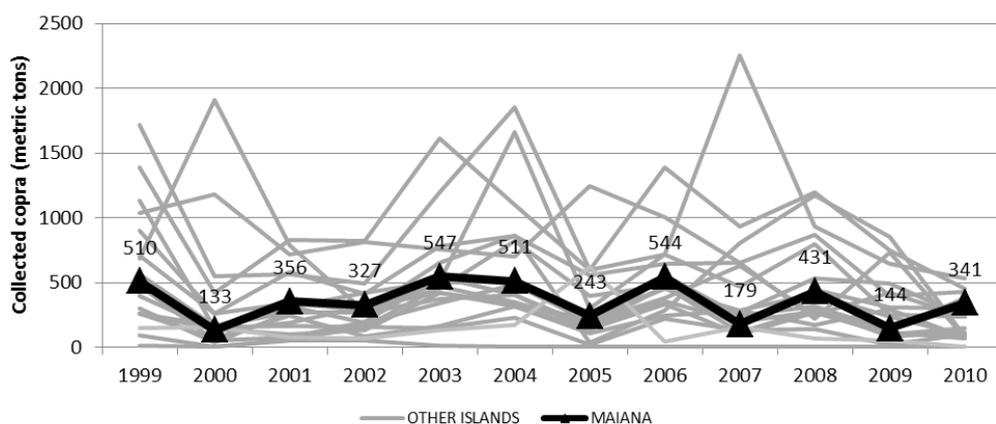
Source: Ministry of Fisheries & Marine Resource Development

ISLAND ECONOMY

COPRA CUTTING

Copra cutting is an important activity which provides a steady source of income for many people on Maiana as for other outer islands. In 2010, 341 tonnes of copra was collected from Maiana, which at \$0.70 per kilogram means an income of \$238,700 for the island, or \$118 per person.

Figure 7.5: Maiana copra production (collected copra) 1999-2010



Source: Statistics Office, MFED

Copra remains the main export commodity from the island. Other smaller commodities include shark fins and sea cucumber which will run out soon if conservation measures are not put in place.

EMPLOYMENT

The Island Council serves as the biggest employer for Maiana islanders, employing 57 staff in 2010 including the Island Clerk and senior staff from the Ministry of Internal and Social Affairs as well as village wardens, village nurses, drivers, hotel keepers, and office assistants. The most common projects which generate jobs for the young men of Maiana include construction of buildings, roads and other large infrastructure.

AGRICULTURE

The predominant food crops on Maiana are *bwabwai*; banana, pandanus, coconut and breadfruit. Each family has its own *bwabwai* pits, which are usually located some distance away, in less populated parts of the island. Most households cut toddy as well as collecting coconuts both close to home and further afield, and cultivating breadfruit and toddy trees. Home gardening is not common and only about half of households cultivate banana and pawpaw trees.

The main animals reared by the islanders are pigs and chickens, for home consumption. The people of Maiana believe that they can produce more meat and vegetables for export to

Tarawa if the problem of transport, communication and marketing are resolved. They also believe that training on vegetable and livestock production is important if trade in these primary produce is going to be undertaken.

In terms of replanting fruit trees, there is little agricultural activity on the island. Coconut and pandanus replanting are done in pockets at household level, but many senile coconut trees remain. Island residents believe that replanting initiatives will require incentives from government and NGOs, or programs that will encourage individual land owners to work their land for their own good.

ENERGY

Firewood, mainly from coconut, remains the most common energy source for cooking and household use, but residents are increasingly purchasing pressure lamps, kerosene stoves, power generators, motorbikes and outboard motor engines. . There were also 4 cars, 145 motorcycles and 19 outboard motor engines. In 2011, the Kiribati Oil company KOIL supplied Maiana with 132,000 litres of unleaded petrol, 16,800 litres of diesel and 16,800 litres of kerosene.

ENVIRONMENT

Coastal erosion is a major environment issue for the people of Maiana. Many areas on Maiana have been seriously eroded, resulting in the relocation of infrastructure (road, buildings, etc.) or the recurrent high expenditure of maintaining seawall protection.

Whether it is true or not, the people of Maiana do strongly believe that the construction of causeways on the neighboring island of Tarawa is the cause of serious coastal erosion on Tebikerai. This, despite the fact that there is a causeway/bridge on Maiana itself, which has caused erosion and land accretion in the areas located within the immediate proximity of the structure.

Environmental and climate change issues identified by Maiana representatives to the National Summit in May 2011 are listed in Table 7.4 at the end of this report.

EDUCATION

Maiana has a literacy rate of 90%. Of the adult population (those over 15), 21% have not attended school at all; this is well above the average for Kiribati which is 14%. 33% of the adult population hold a Primary leaving certificate, 22% have a Form 3 certificate, and 23% have a Senior Secondary certificate. Only 2% hold a Post-Secondary qualification.

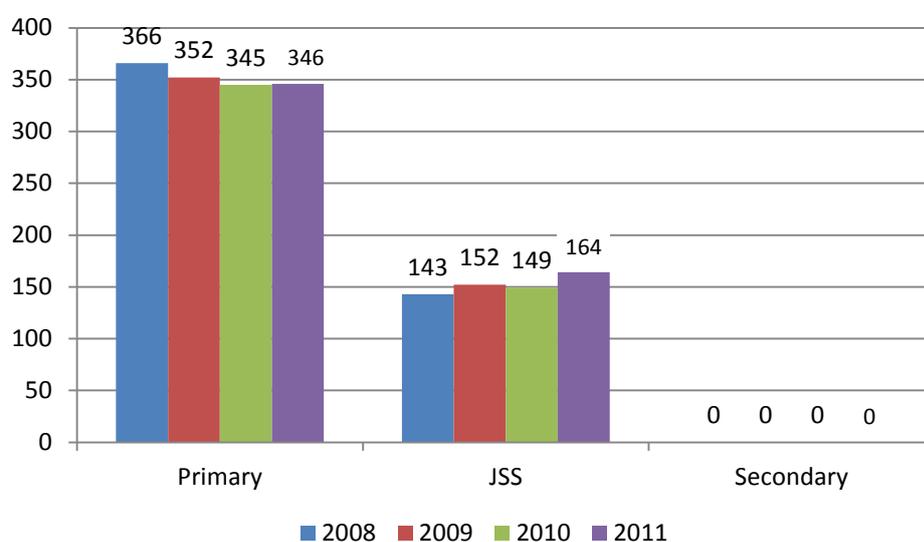
Maiana has 4 schools; 3 Primary Schools and one Junior Secondary School. Karewea Primary School is located in Tebikerai village, Abitabu primary school is located between the villages of Aobike and Tebanga while Urintebura is located at Raweai.

Table 7.3: Primary School Enrollments, Maiana

Maiana	No. of Pupils			No. of Teachers		
	2011		Total	2011		Total
	F	M		F	M	
Karewea Primary School	7	11	18	2	0	2
Abitabu Primary School	79	77	156	6	1	7
Urintebura Primary School	91	81	172	7	0	7
Total	177	169	346	7	0	7

The Junior Secondary school, Tewaiwai, has 164 students, and is situated in the Temwangaua village which is the main administrative center for the island. Other public services are also headquartered here.

Figure 7.6: School Enrollments 2008 to 2011, Maiana



Data Source : Digest of Kiribati Education Statistics 2011

HEALTH

There are five clinics and one health center on Maiana. Clinics are selectively located to ensure all villages are catered for and served. The Health Center is located in Temwangaua, the main administrative center for the island. There is one Medical Assistant (MA) with 2 nurses and 4 nursing aides. The MA and 2 nurses are government employees, nursing aides are island council employees.

The Health Center and clinics cater for patients admitted for medical observation with referrals sent to Nowerewere Hospital in South Tarawa. In addition to the main clinic in Temwangaua, there are local clinics at Tekaranga, Bubutei, Tebikerai and Buota.

Records of clinic visits in 2011 show that in general people on Maiana are less likely to go to a clinic than on most other islands; on average each person visits a clinic less than twice a year. However diseases related to diet including diabetes, hypertension (high blood pressure) and night blindness (associated with Vitamin A deficiency) are more common in Maiana than elsewhere in Kiribati.

Alcohol use is not as common in Maiana as in other islands, with only 18% people over 15 drinking “regularly” or “sometimes”. Yangona (kava) drinking however is a serious and growing health issue; 30% of the population over 15, or over half of adult men on Maiana drink yangona. Island representatives note the increase in yangona drinking is associated with laziness, and that men who drink yangona are less likely to work cultivating bwabwai, cutting toddy and making copra. This in turn affects the nutrition and health of the whole family.

TRANSPORT

There were no privately owned cars on Maiana at the time of the 2010 census, and no buses. However almost half (42%) of households owned a motorbike and about a third (37%) had one or more bicycles. Trucks are available for hire and are used to transport both goods and people between villages.

The proportion of households owning a boat is relatively low compared with other islands; 13% of households own a canoe and 4% own a boat.

Inter-island sea travel is vital for Maiana people to access urban markets. There are regular ferries calling at Maiana almost every week, but these do not operate to a published schedule. There are also smaller vessels that make trips despite the treacherous sea conditions. On 13 July 2009, the vessel Uean Te Raii II, owned by the Catholic Parish of Maiana and travelling from Teorereke in Tarawa, capsized and foundered off Maiana. The loss of 35 lives touched every family in Maiana. A Government review found many contributing causes of the disaster which were avoidable including unregulated cargo weight, lack of safety equipment and an inexperienced crew.

To avoid more sea accidents, canoes should be barred from running shipping services until a marine license, including a check of sea-worthiness and of safety equipment, is issued.

ISSUES IDENTIFIED BY MAIANA REPRESENTATIVES AT THE 2011 NATIONAL SUMMIT ON CLIMATE CHANGE AND THE KIRIBATI DEVELOPMENT PLAN

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
Water	drought	-Brackish water unhealthy for people -destroying plants and fruits -Tebikerai village would not stand prolonged droughts -all village wells close to shoreline are saline	-concrete cisterns to be built For residents -immediate water enhancement -plastic tanks	-sustainable in the long run -needs training but can be sustainable -sustainable for short and immediate terms, expensive in the long run
Little Agricultural Activity	-village busy with all sorts of fishing -yagona usage makes people lazy	-non availability of land protein and vegetables for a balanced diet -malnutrition and liver disease	-encourage agricultural activity thru Taiwan Technical Mission and Agricultural division -awareness program on impact of yagona on people	-can be sustained -difficult but possible
Capacity Building on climate change and sea level rise	-no consultation previously conducted -no funding for training at island council level	-islanders are unaware of Climate Change and Sea Level Rise -island council employees not familiar with training of village people	-intensifying training and consultation -media training	-sustainable through funding sources -must continue at paced intervals

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
			-contributions from respective govt. Ministries towards Climate Change and Sea level Rise	
Coastal erosion	<ul style="list-style-type: none"> -land reclamation by KPC and RC i.e Bubutei, Tebiauea and Tebanga -sea wall construction -sea level rise -extreme high tides 	<ul style="list-style-type: none"> -a threat to properties and people`s welfare -coconut trees and vegetation disappearing from the beach -Tekaranga and Tematantengo needs immediate attention 	<ul style="list-style-type: none"> -by-law that regulates the protection of coastal areas specific for Maiana island -a project planned to protect these villages to construct concrete seawall 	<ul style="list-style-type: none"> -sustainable but hard to materialise -costly and may have side effects
Dirty Lagoon Seawater closer to Land	<ul style="list-style-type: none"> -dumping of degradable and non-degradable rubbish -sea cucumber gutting in the lagoon -use of sea and beach for toileting purposes 	<ul style="list-style-type: none"> -unhealthy and unclean seawater for bathing -affects shellfish and marine resources in lagoon 	<ul style="list-style-type: none"> -concerted effort from village and island council to counteract these unnecessary actions -by-law to protect marine environment from land-based pollutants in all forms 	<ul style="list-style-type: none"> -takes time to materialise -possible but needs working on right now

