



17. Tamana



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PHYSICAL FEATURES

Tamana is second southern-most island in the Gilbert group and the smallest inhabited island in Kiribati. The island is approximately 6 km in length, 1 km at its widest point, and has a total land area of 4.73 sq.km.

Tamana has only one minor road and a network of tracks running into the bush from this main road that runs all the way around the island. These network tracks are used for accessing lands and transporting coconuts, pandanus and to get from one end of the island to the other.

The Island Council is located at Bakaakaa, the central village of the island and this is also where the rest of the Government facilities are located such as the CB radio for inter-island communication, the hardware, and the fuel depot. The schools (Primary and JSS) and the Medical facilities are also located in the same village but can be found further inland towards the uninhabited side of the island.

In Kiribati, people sometimes describe an island as “te aba n aine” (a women’s island) if it has abundant food resources that are traditionally collected by women – a wide lagoon reef rich in shellfish, and good soil and regular rainfall which can support breadfruit, banana, pawpaw and other crops which grow close to the house. Tamana has none of these qualities and is an extreme example of “te aba ni mwane” - a man’s land where lazy people cannot survive. Tamana has no lagoon at all, a narrow reef, poor soil and is prone to droughts.

The men of Tamana fish almost every day when the weather permits, women have their traditional chores, cultivating *bwabwai* (swamp taro), weaving mats and house thatches, and preparing food as well as looking after children at home. The men wake up around five in the morning, cut toddy, then take their canoes to the sea for fishing trips using paddles only, they come home before noon with a catch, do men’s chores and to harvest coconuts for food and copra, and start cutting toddy around 3 in the afternoon after which they go out to fish again. The family salt or bake-cook the fish for long keeping in times of rough weather. The men of Tamana pride themselves on being the hardest working community in Kiribati, and the first to rise each morning.

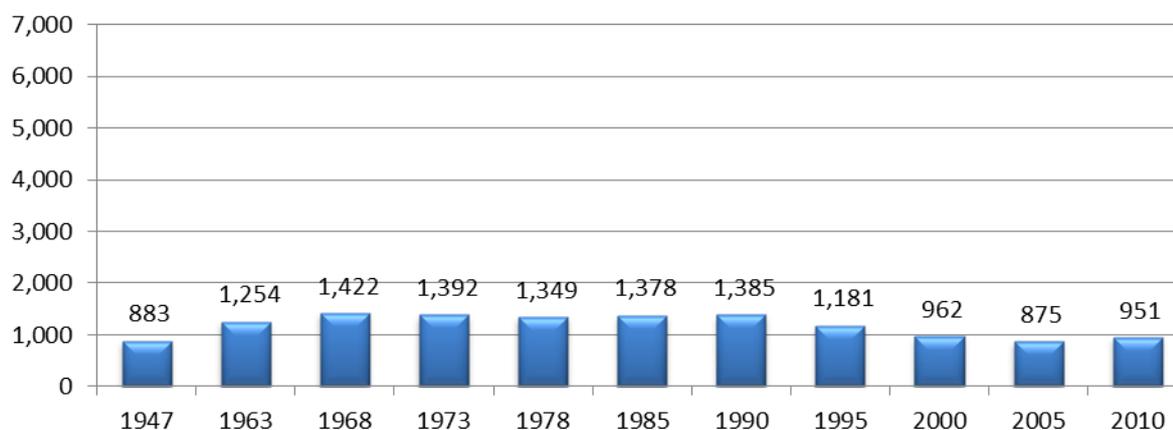
Figure17.1: Map of Tamana



POPULATION

The population of Tamana in the 2010 census was 951. Compared to the 2005 population of 875 and the 2000 population of 962, the population is fairly stable.

Figure 17.2: Tamana Population 1947-2010



Tamana has a combined land area of 4.73 square kilometers and a population (in 2010) of 951, giving a population density of 201 people per square kilometer. Although the population is small, the land area of Tamana is also small. Compared with other islands in Kiribati, Tamana is quite densely populated and is in fact the 7th most densely populated island.

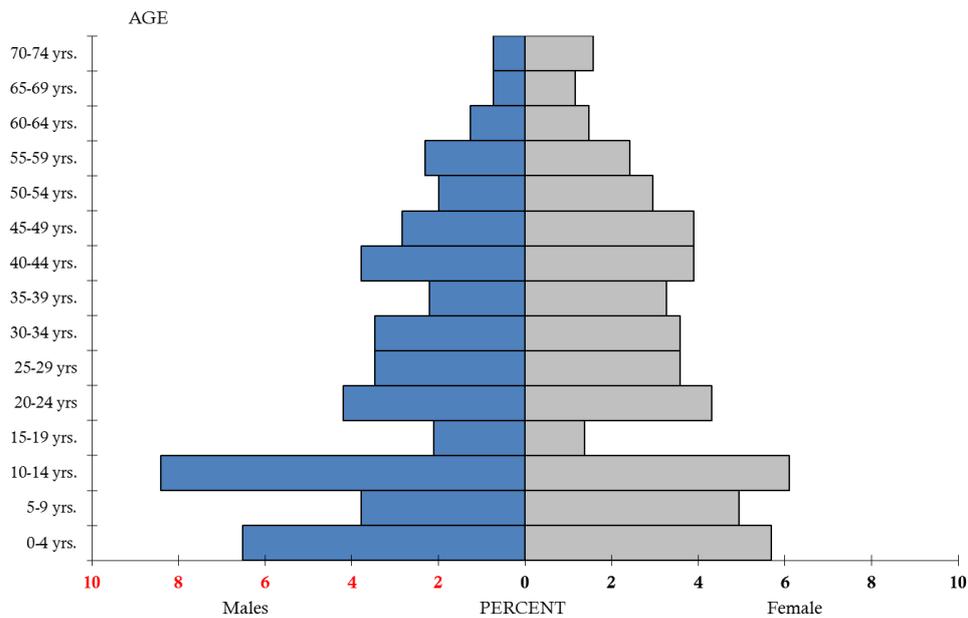
Table 17-1: Tamana population by village

Tamana	Village	Population
	Barebuka	269
	Bakaka	405
	Bakarawa	277
Tamana total population		951

The three villages of Barebuka, Bakaka and Bakarawa are evenly spaced on the leeward side of the island, and the island services – the boat passage, primary school, JSS (junior secondary school), Council offices and medical clinic – are arranged along a road running across the centre of the island from the village of Bakaka towards the uninhabited ocean side of the island. Just under half the population of Tamana, 405 people, live in the central village of Bakaka and the remainder of the population is split almost evenly between Barebuka and Bakarawa.

The distribution of Tamana's population by age and sex is quite uneven; because the number of people overall is small, these differences are probably just random variation rather than having any special significance. For example there are more boys in the age range 10-14 (80) than girls (58), but more girls aged 5-9 years (47) than boys (36). The most striking feature of the population graph is that there are so few young people aged 15-19 years; this is likely to be because there is no secondary school on the island, so for these young people to continue their schooling past Form 3 (Year 7) they need to leave Tamana.

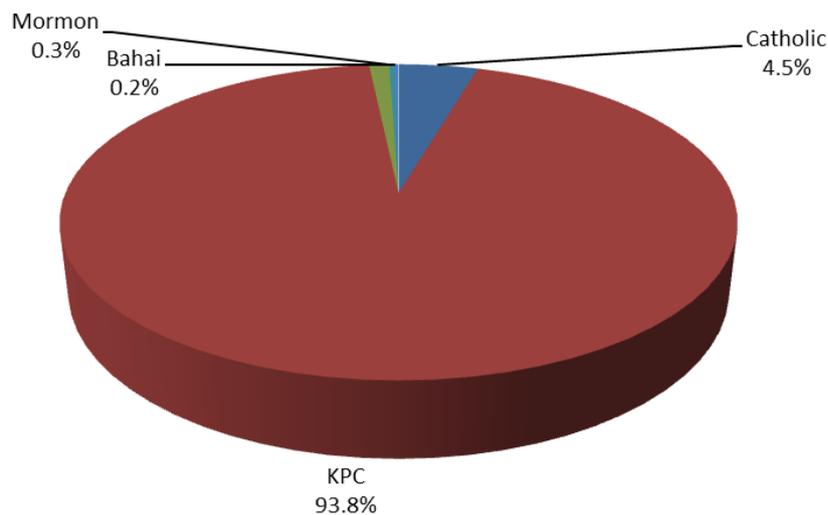
Figure 17.3: Tamana Population by Age and Sex 2010



Data source: Census 2010

Almost everyone on Tamana belongs to the Kiribati Protestant Church. This dates back to a promise made in 1870 to missionaries of the London Missionary Society by the ‘unimwane’ and sons of several Southern islands, including Tamana, that the only religion for the island would be Protestant. There is a church in each village and a bell tolls in the village when it is time to worship.

Figure 17.4: Tamana population by religious affiliation



Data source: Census 2010

Generally, Churches have a huge influence in the lives of the islanders and a considerable portion of the people’s time are spent on activities related to the church whether it is fundraising, praying or planning development of the church amongst others.

LAND AND MARINE RESOURCES

The island's main resources like the rest of the islands of Kiribati are its limited land and water resources, and the much more abundant marine resources.

Tamana has very limited tree resources predominantly coconut trees, pandanus and a variety of shrubs and grasses. Because of the frequent droughts, other crops including pawpaw, banana and breadfruit are few in number and are grown within the household compound so they can be tended in dry weather.

The great majority of households (86%) live on land that they themselves own, though some (7%) live on Government-leased land, usually associated with their work as Council officers, teachers or clinic staff. Only a few families live on land that is privately leased or through some other arrangement. Land outside of the villages is also owned by families and is used to cultivate coconuts, *bwabwai* (swamp taro) and the local starchy fruit *te bero*.

WATER

Tamana, like all Southern islands, has very variable rainfall with frequent and prolonged droughts. However the water lens of Tamana is unusually large and deep, covering more than 80% of the island's land area and with a maximum depth of over 16 metres (KAPII water resource assessment 2010). This water resource is enough to sustain the people of Tamana through even the most severe drought.

From the 2010 census, almost all households on Tamana use a protected well as their main source of drinking water. Only two households (1%) use rain water and only one uses water from an unprotected well for drinking. The standard form of well protection is the "Tamana pump" which was invented on Tamana and has since spread throughout Kiribati and to many other countries in the world. It is a simple pump constructed from two close-fitting pieces of PVC pipe and a few other readily available materials. The Tamana pump gives easy and convenient access to well water without the health risks associated with an open well. About 40% of the households in Tamana also use water from unprotected wells, for washing and other household purposes.

MARINE RESOURCES

Tamana has a very narrow reef and no lagoon. While the people of Tamana, like all I-Kiribati, depend on seafood for most of their protein needs, the amount of reef area per person in Tamana is the least of any of the islands of Kiribati – less than 2,000 square metres per person. Even Tarawa has more reef area per person than Tamana.

Table 17-2: Reef, lagoon and land resources, Tamana island

Island	Reef (sq/km)	Reef base (sq/km)	Lagoon (sq/km)	Land (sq/km)
Tamana	1.68	5.2	No lagoon	4.73

Issues facing fishing and development of marine resources include the following:

- Lack of fishing equipment

- Remoteness of the island makes it hard for them to access fish markets in South Tarawa
- Absence of an ice-plant has made salting, their only way of preserving fish
- Depleting ocean resources in the nearby ocean area
- The continuous drifting away of buoys

ENVIRONMENT

Drought is an ever-present threat to the Southern islands of Kiribati including Tamana. Drought affects the water lens, making some wells too saline to drink from and requiring islanders to carry water from wells further inland. Drought also affects the trees that provide sustenance for the island. Pawpaw and banana trees are the worst affected and often die altogether and need to be replanted after the drought ends. Breadfruit trees cease fruiting and die back, pandanus trees do not fruit, and even the hardy coconut trees become much less productive. The impact on coconut trees also means less copra can be produced, which means less income for the community during droughts which is just the time that the need for imported food is greatest.

The most threatening environmental issue on the island is soil erosion, though so far Tamana has not been affected as much as other islands. Tamana does not have any causeways or major reclamations, but there has been beach mining for sand, gravel and rocks in order to construct buildings and other infrastructure.

The marine resources of Tamana are not great, and the people depend heavily on ocean fish including tuna, shark and flying fish. These are becoming depleted due to overfishing, including fishing by unlicensed foreign vessels in Kiribati waters. There is an export market for dried shark fin, so overfishing by local fishermen may have also contributed to the decline in shark populations. Reef species including octopus, lobster and various shellfish also appear to be in decline.

As with most other outer islands of Kiribati, there is no provision for the safe dumping of rubbish and as the people move to more of a Western lifestyle, an increasing amount of rubbish simply accumulates around villages or is dumped in the sea.

Further detail of environmental issues on Tamana is available in the 2008 Tamana Island Report, and a table of issues identified by Tamana participants at the Kiribati National Summit 2011 is included at the end of this report.

ENERGY

Firewood is never an issue on the island due to its limited population and woodland that is abundant with drought-affected trees, dying and drying up. However, people still use kerosene stoves especially during rainy days or functions. In the year 2011, Tamana has received a total of 18,000 liters of benzene (unleaded petrol), 6,000 liters of diesel and 4,800 liters of kerosene.

EDUCATION

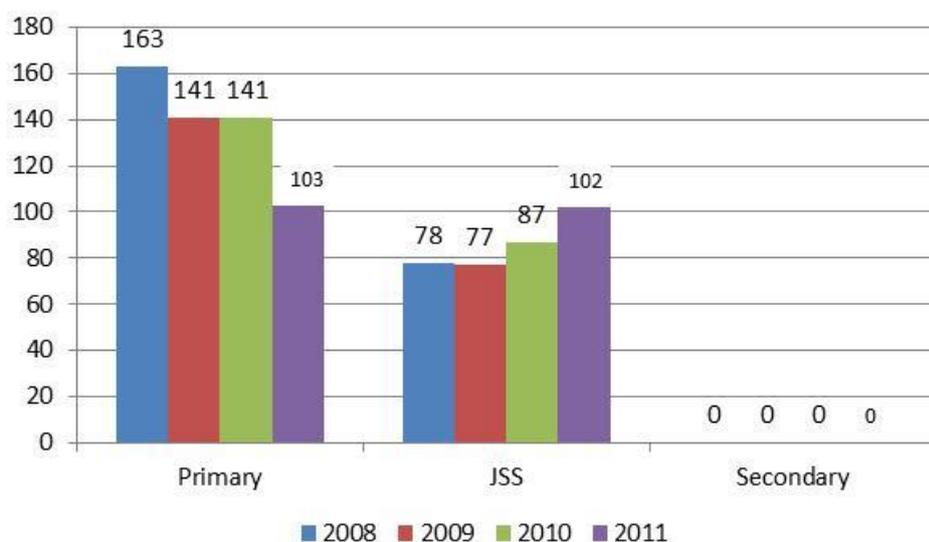
There is only one Primary School and one Junior Secondary School (JSS) on Tamana, the Margaret Field Primary School and Nawai JSS. Both are located at the centre of the island in between the Island Council and Medical centre and are easily accessed by the children on the island. A truck provided for the transport of pupils to the JSS has also made access to the schools very easy.

Margaret Field School has been there longer when compared to the JSS school. JSS schools on all islands were established in the late 1990s and are therefore new and in pretty much good condition. School desks and chairs are however lacking in Margaret Field Primary School as in most of the outer island schools thus children sit on the floor on mats woven from coconut fronds or pandanus leaves. Fortunately all classrooms are equipped with blackboards, the main teaching instrument as whiteboards are a recent development and the schools do not have a generator to use media as an alternative teaching instrument.

The Nawai JSS on the other hand is better equipped with toilets and furniture i.e. desks and chairs however there are some school facilities still lacking at Nawai JSS such as a library, science laboratory, toilets and also rainwater tanks.

Because Tamana has a small population and an uneven age structure, the number of children attending the two schools fluctuates quite a lot from year to year. Over the last four years the number of children attending primary school has gone down while attendance at the JSS has gone up. This is likely to reverse over the coming years as there are many children who were aged 0-4 in the 2010 census who will be entering primary school.

Figure 17.5: School enrollments 2008-2011, Tamana



Source: 2011 Digest of Education Statistics

HEALTH

There is one medical facility on the island that caters for the medical needs of the people on Tamana. The clinic is staffed with a medical assistant and assisted by nursing aides; the latter are employed by the Island Council.

Data on clinic visits from 2011 shows an interesting pattern; the people of Tamana are quite likely to visit the clinic, making an average of 3.6 clinic visits per person over the year (the average for an outer island community is 2.3 visits per person). However they are unlikely to have anything seriously wrong with them, as rates for almost all of the diseases for which data is recorded separately (the more serious diseases) are very low. The only serious disease which is more common on Tamana than the national average is acute respiratory infection.

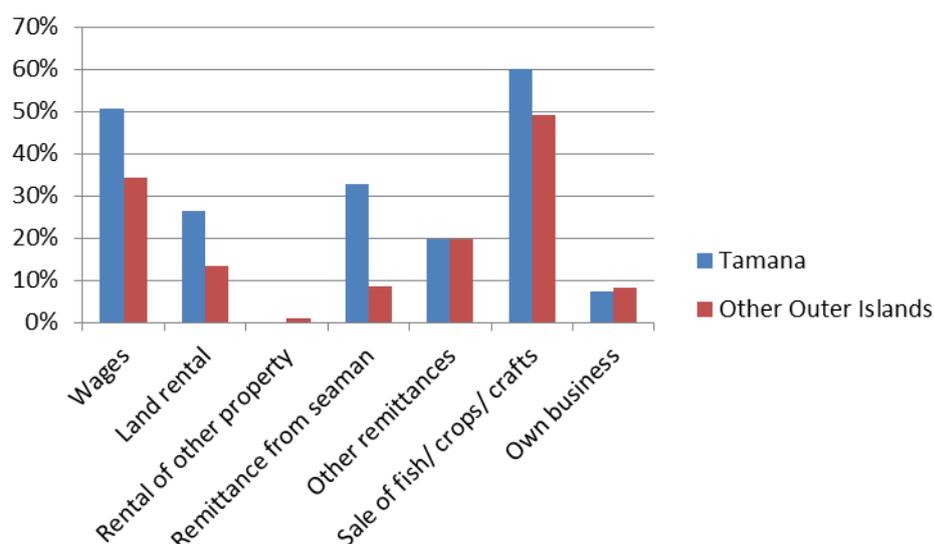
Tamana has among the lowest rates of alcohol and kava use in Kiribati, with only 19% of adults drinking kava “regularly” or “sometimes”, and 11% drinking alcohol. The smoking rate of 41% represents a significant public health problem but is still quite low in comparison with other islands of Kiribati.

ISLAND ECONOMY

On Tamana as on other Southern islands, the main economic activity is subsistence activities including fishing, toddy cutting, cultivation and harvesting of food crops mainly coconut, pandanus, breadfruit and bwabwai, weaving mats, making thatches, rolling string, fetching water, collecting firewood, making fish traps and hooks, cleaning and washing, cooking and house construction amongst others.

The limited cash economy is highly dependent on Government jobs and on remittances from relatives working overseas. Tamana has a number of seamen working for international shipping lines and around a third of all households receive remittances from seamen, and one in five receives other remittances. The most common source of cash for Tamana families, as for all Outer islands, is sale of fish/ crops/ crafts. In the case of Tamana, this is mainly copra, although some families also receive cash from sale of dried sharks’ fins or from selling fish and local food to Government workers for cash.

Figure 17.6: Sources of cash income for Tamana households, 2010



SUBSISTANCE AGRICULTURE

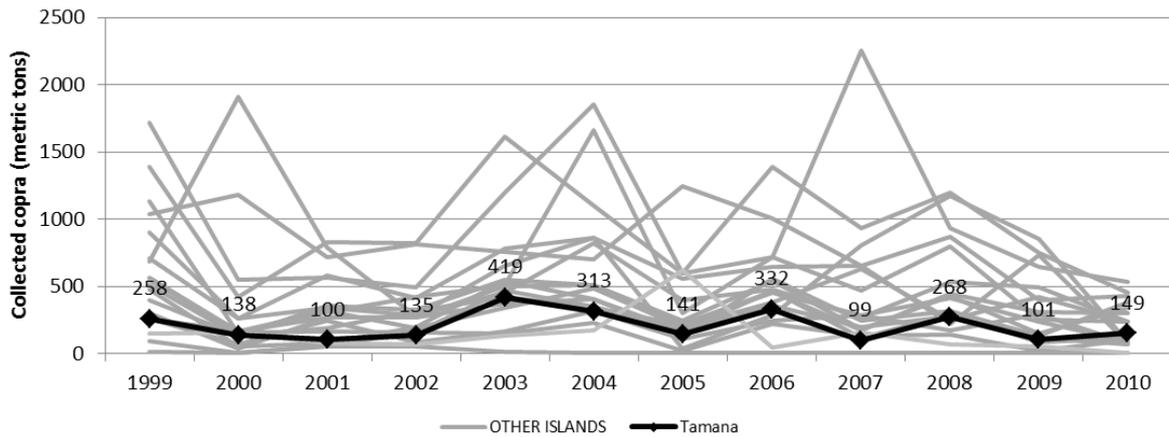
It is harder to provide for a family in the harsh environment of Tamana, and evidence of this is provided by census data on agricultural activities. On Tamana, half of all households cut toddy on distant plots of land outside the villages; this is unusual as on most islands, there are enough coconut trees in or close to the family compound to provide for a household's toddy needs. Almost all households on Tamana cultivate *bwabwai* (swamp taro), pandanus and coconut trees on land outside the villages, and also the local starchy fruit *te bero* which requires a lot of preparation before eating and is not a major item in the diet of the northern or central islands.

As on other islands of Kiribati, most households keep pigs and chickens, however meat is not part of the everyday diet but is kept for special occasions.

The activities of the island's agricultural advisor are greatly hindered by the frequent droughts restricting activities to teaching home gardens, provision of pigs and chickens, animal health schemes, provision of seeds, seedlings (coconuts) and breadfruit cuttings, and coconut replanting schemes. Home gardening has really not become popular on Tamana with only a handful of households growing cabbage, and no households growing sweet potatoes.

COPRA

Like the other outer islands of Kiribati, copra cutting is the mainstay of the cash economy on Tamana. Being an island vulnerable to droughts, the people over the years learned to harvest and cut copra according to their needs, their copra production over the years has been fluctuating with the times of drought and good seasons.



Copra income comes from a subsidy which is set by Parliament. As at November 2011 the subsidy was \$0.80 per kg, and this is paid to producers by the Island Council. In 2010, Tamana received \$153,500 in subsidies which is \$760 per household for the year, or just over \$2 per household per day. Copra is transported to Tarawa and is processed in the Copra Mill to create a range of products including copra oil and pig feed. The actual value of the copra is much lower than the \$0.80 per kg paid to producers, and in the case of Tamana the copra industry would not survive without subsidy as the costs of transport to and from Tamana are very high.

FISHING

Tamana has a narrow reef and no lagoon. As a result, it is a daily challenge to harvest from the land and sea enough food for each family and the fishermen of Tamana use all of the available fishing methods. The most common forms of fishing are:

- Net fishing (*karaun*)
- *Te urakaraka*
- Deep bottom fishing (*katokitoki*)
- Hand lining (*katiki*)
- *Tabo n Ao*
- Trolling (*kauaaki*)
- Spearing (*katebe*)
- Octopus catching

There are just over 100 canoes owned by the 202 households on Tamana, but no privately owned boats or skiffs. There is only one boat channel on the island located at the capital village of Bakaakaa. This channel provides safe passage for transportation of cargo and passengers from visiting ships as well as for local fishermen alike.

TRANSPORT

There are no privately owned cars or trucks on Tamana. Island Council trucks provide the main transport for Primary and JSS students to and from their schools and general use by the Council, and are available for hire. The most common form of land transport is the pushbike, and 75% of households own at least one pushbike in working order. Motorbikes are much less common, as they are expensive and fuel for them is not always available. Only one in ten households has a motorbike.

Transport to and from Tamana from other islands is very difficult. Air Kiribati flies to Tamana and Arorae weekly on a Thursday, but the airfare of \$210 one way to the main island of Tarawa is out of reach for most households. Boat services to Tamana do not run to a schedule; this is the case for all islands but on Tamana the boat service is also affected by the island's remoteness (of all the islands in the Gilbert group, only Arorae is further from Tarawa), and the lack of a lagoon which means that it is not always possible to reach land safely in rough weather.

Table 17-3: Environmental and climate change issues identified by Tamana representatives to the Kiribati National Summit 2011

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
Water	<ul style="list-style-type: none"> -prolonged droughts -high temperatures 	<ul style="list-style-type: none"> -major fruit trees for people to eat are affected i.e coconut trees, breadfruits and pandanus -decrease in production so decrease in income -wells affected, some no longer used for drinking purposes 	<ul style="list-style-type: none"> -concrete water cisterns have to be maintained -increase water catchments for residents -overhead tanks and solar pumps with piping systems -refer to KIRBATI WATER AND SANITATIPON PLAN for Tamana island 	<ul style="list-style-type: none"> -costly but sustainable in the long run
Coastal erosion	<ul style="list-style-type: none"> - intensive aggregate mining before year 2000,mined boulders for seawall construction and repairs, reef flat void of boulders 	<ul style="list-style-type: none"> -reduction in landmasses -loss of arable land and agricultural land leaving little land space to live 	<ul style="list-style-type: none"> -plausible solution for Tamana community to sit down with island council and plan what is best to protect the island fragile ecosystems 	<ul style="list-style-type: none"> -it is rather a must but it will take time

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
Reduction in Marine Resources	<p>-overfished of marine resources</p> <p>-excessive fishing by fishermen and humans</p> <p>-relative requirements by relatives from South Tarawa such as “te uakun”</p>	<p>-shortage of marine food for islanders in the following species:-</p> <ul style="list-style-type: none"> ✚ Shark meat ✚ Flying fish ✚ Shell fish like te koumara, te koikoi, te katura, te bun, te nouo ✚ Lobsters and octopus decline ✚ Te kima and te were depleted ✚ Shark fins for export to Asian markets causing repayments for loans unpaid due to scarcity of sharks 	-a need for a regulatory mechanism on the number of catch	-takes time and its sustainability is questionable
Agricultural Activity	-superficial commitment to agricultural activity	-no balance diet	-increase awareness and importance of livestock and agricultural activity through Agricultural Division and Taiwan Technical Mission	-it can be sustained

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
	<ul style="list-style-type: none"> -shortage of feed for pigs/piglets due to delay in receiving orders from Tarawa -limited funding -mismanagement of livestock -pigs slaughtered before they are bred 	<ul style="list-style-type: none"> -no supply of land protein 	<ul style="list-style-type: none"> -provide funding - use of local plants, marine seaweed mixed with breadfruit to supplement imported feed 	<ul style="list-style-type: none"> -can be done, cheap and sustainable, needs creativity