



16. Onotoa



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PHYSICAL FEATURES

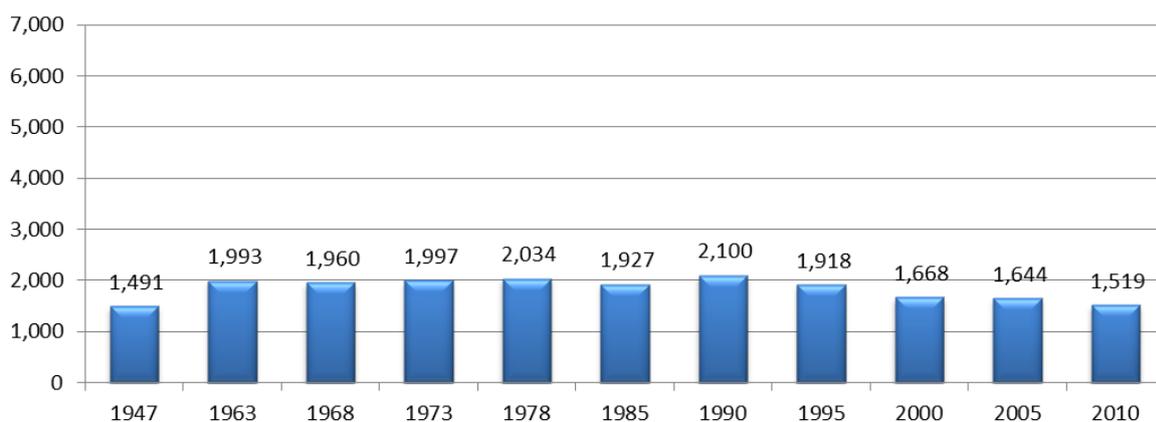
Onotoa is a low lying atoll with a land area of 15.62 sq.km. It has 7 villages with Tabuarorae, an islet, located at the southernmost end of the island followed by Aiaki, Otoae, Temao, Buariki, Tanaeang and Tekawa at the northernmost end of the island. The villages are located along the lagoon coastal area throughout the island. The combined islets of Otoae and Aiaki are now easily accessible after construction of a causeway from Temao to Aiaki. Tabuarorae is still not connected to the rest of the mainland.

Facilities are spread right across the island, with the airport close to the northernmost village of Tekawa, the boat channel and wharf at the southern islet of Tabuarorae, the Junior Secondary School located between Otowae and Aiaki, and the main Council offices located between Temao and Buariki.

POPULATION

The population of Onotoa in the 2010 census was 1,519. Compared to the 2005 population of 1,644 and the 2000 population of 1,668, the population is declining. The population of Onotoa declined by 125 people between 2005 and 2010, an annual population decline of - 1.6%. Onotoa is one of several islands in Kiribati with declining populations.

Figure 16-1: Onotoa population 1947-2010



There are 332 households in Onotoa, and the entire population of 1,519 people lives in private households – there are no boarding schools, residential prisons or other institutions there. The decline in people on Onotoa between 2005 and 2010 was not due to households moving away – the number of households has stayed exactly the same at 332. Instead the number of people per household has declined slightly from an average of 5.0 to 4.6.

Onotoa has a combined land area of 15.62 square kilometers and a population (in 2010) of 1,519, giving a population density of 97 people per square kilometer. Onotoa is the 17th most densely populated island in Kiribati.

Figure 16-2: Map of Onotoa



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

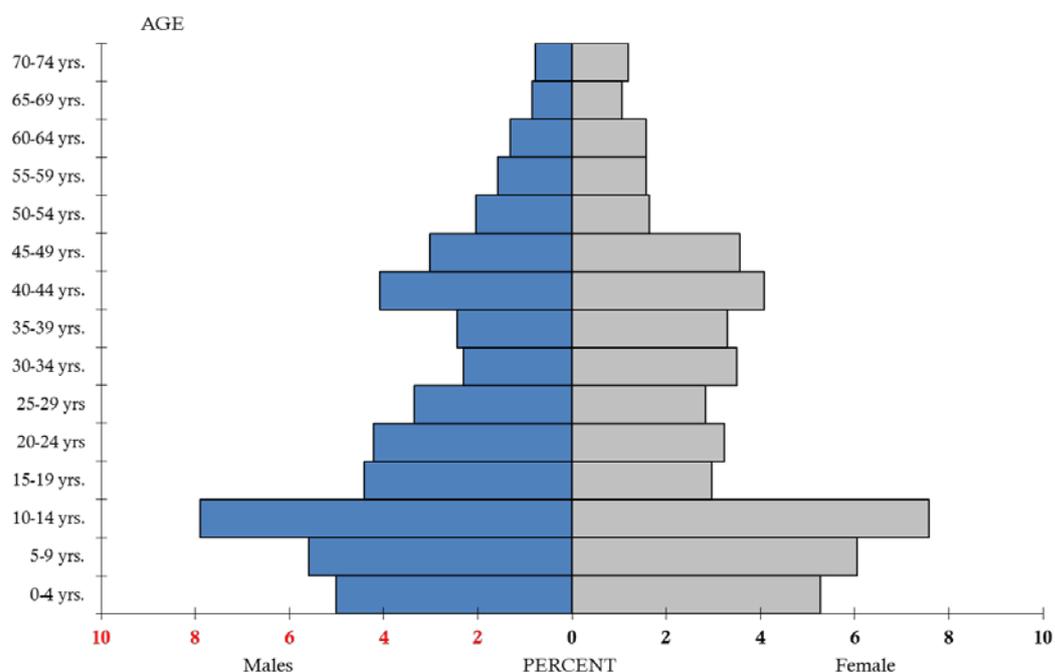
The population of Onotoa is very evenly spread across the seven villages, with no one village predominating – the largest village of Buariki has 299 people which is not quite double the population of the smallest village, Tekawa.

Table 16-1: Onotoa population by village, 2010

Onotoa	Village	Population
	Tekawa	162
	Tanaenag	186
	Buariki	299
	Temao	226
	Otowae	210
	Aiaki	202
	Tabuarorae	234
Onotoa total population		1519

Onotoa has an unusual age distribution, with a lot of young adults aged 10-14 years, and fewer younger children. Because the overall population is small, this may not be particularly significant as random variations are quite likely. There are few young adults aged 15-19, especially girls, and this is likely to be because there is no secondary school on the island so young people need to leave Onotoa to continue their schooling. In the older age groups (60 years and above) there are more women than men, consistent with women’s longer life expectancy.

Figure 16-3: Age distribution, Onotoa 2010



LAND AND MARINE RESOURCES

LAND RESOURCES

Land is owned by families, with most households (82%) living on lands that they themselves own or partly own. Inheritance is the common form of conveyance of title with the eldest receiving more lands and male heirs given preference over females. Land is also conveyed as gifts. Some lands have been disposed by sale. Lands are inherited as willed from the parents and the pattern of inheritance has changed over time; where once it used to be a preference that lands were willed to male heirs only, because of the tradition of women going to live with the husbands, now both male and female heirs can inherit land.

A smaller proportion of households (12%) live on Government-leased land; often these households will be headed by Government or Council workers living in the Council compound or near schools or clinics. There are also some private leases and other land arrangements but these are not common on Onotoa.

WATER

The main water sources for drinking and sanitary purposes on the island is the groundwater lens, which is replenished by rain. From the 2010 census, only 2% of households have a rainwater tank, and use rainwater for drinking. All other households use well water. Toward the center of the Onotoa, the water is generally potable and is where most of the wells used for drinking are dug. Wells for other general purposes such as washing, cleaning and gardening are dug next to households for convenient use. The fresh water wells however are subject to brackishness during drought times. During these times, potable water can be fetched from up to two kilometres away.

About two thirds of households drink from a protected (covered) well and the remaining third drink from unprotected wells. These proportions are reversed for washing water, with about two thirds of households using an unprotected well as their main source of water for washing and general household use.

MARINE RESOURCES

Size of Reef/Lagoon Size

Island	Reef (square km)	Reef base (square km)	Lagoon (square km)	Land (square km)
Onotoa	21.56	54	75.38	15.62

Onotoa has a large reef and lagoon area, and a relatively small population, so seafood resources are plentiful and are the mainstay of the island diet.

The villages of Aiaki and Tabuarorae in the south and Tanaeang and Tekawa in the north of the island are conveniently near to the large sand flats where the popular sea-worms (*Sipunculus indicus*) can be found in abundance. Unfortunately, these are not harvested from the sea as much as in some of the outer islands such as Tabiteuea but instead are harvested mostly as bait. One major reason why mud-worm is declining is that the vast

mudflat area opposite the Temao-Otoae causeway is covered with algae, void of worms and clam (*Tridacna maxima*). The water is stagnant and polluted as there is no fresh oxygen from the ocean through the passage.

All households in Onotoa are involved in harvesting the sea in one way or another, initially to satisfy their own subsistent needs and to send salted fish (fish jerky) to relatives in other parts of Kiribati mostly South Tarawa and lately for domestic sale to teachers, island council and government employees, and the community at large.

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

- Lack of fishing equipment
- Depletion of the different species of sea cucumber especially the white teat fish
- Remoteness of the island makes it hard for to access fish markets in South Tarawa
- Absence of an ice-plant has made salting, their only way of preserving fish

ENVIRONMENT

The most threatening environmental issue on the island is soil erosion that has been greatly exacerbated with the increasing sea level, increased beach mining for sand and aggregate for buildings and household use, and land reclamation. Other issues such as unsafe dumping of rubbish and effects of drought and bushfires are but some of the issues that are facing Onotoa and the rest of Kiribati.

Drought is common on the Southern islands of Kiribati and is an ever-present threat to crops and human health. Coastal erosion is a rising reality and concern. The construction of the causeway in the early 1990s joining Temao to Otoae has been one of the contributing factors to the increasing erosion experienced around the island, not to mention the initial dying of lagoon marine resources when it was first constructed without culverts. A couple of culverts have since been incorporated into the causeway but still, this repair is rather superficial and it would be near impossible to introduce enough culverts into the design to allow the currents to return to their original forms. The negative impact of the causeway on coastal erosion and marine resources will remain unless it is completely removed. It is going to be costly in the short and long terms to try and recover the original form, so in many ways the changes associated with the causeway are irreversible and the multitude of problems associated with it will remain.

In addition, the Otoae-Tabuarorae causeway will compound the existing problem impacting on marine resources, coastal processes and exacerbating the coastal erosion which is threatening the southernmost islet of Tabuarorae. There is so much damage being done on the island as a result of human ignorance and greed as is also occurring in other islands in the group. Short term benefits will be outweighed by serious problems for future generations.

A summary of problems as identified by island representatives is included at the end of this report, and a full list of environmental problems and affected locations (GPS co-ordinates) is included in the 2008 Island Profile.

EDUCATION

In 2011, there were a total of 267 pupils attending the three primary schools on Onotoa, 132 girls and 135 boys. 67 of the 267 students were enrolled at Biken Aioto Primary School, 36 were enrolled at Otan Kariraia (Tabuarorae) and the majority of 191 were enrolled at the mainland primary school, 'Te Wii n Oota'.

Table 16-2: Primary School Enrollments, Onotoa 2011

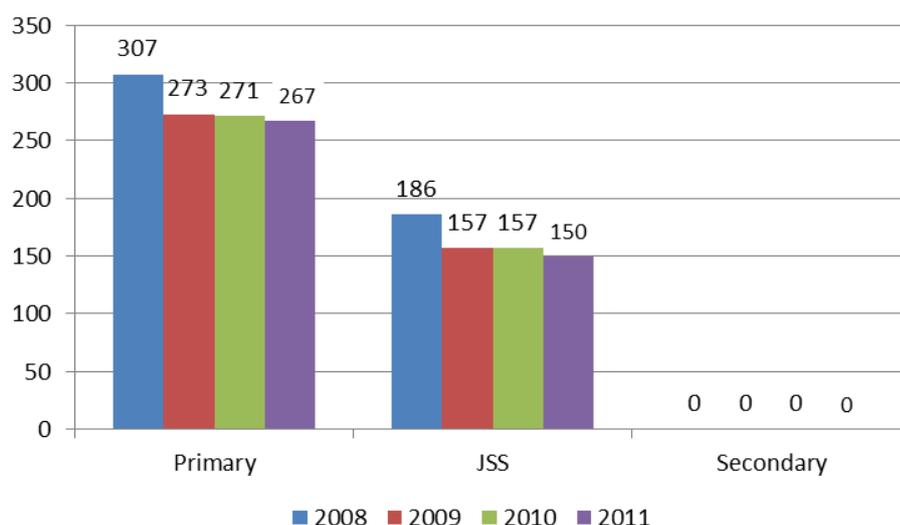
Onotoa	No. of Pupils			No. of Teachers		
	2011		Total	2011		Total
	F	M		F	M	
Bikenaioto Primary School	30	37	67	3	2	5
Otan Kariraia Primary School	14	22	36	2	1	3
Tewinnota Primary School	88	76	164	6	1	7
Total	132	135	267	11	4	15

Source: 2011 Education Digest

The three primary schools are located between villages. 'Te Wii n Oota' is located between Buariki and Tanaeang, 'Ootan Kariraia' located at Tabuarorae islet and 'Biken Aioto' located between Otoae and Aiaki. Pupils from the villages of Tekawa, Tanaeang, Buariki and Temao attend the 'Te Wii n Oota' Primary School, Aiaki and Otoae pupils attend the 'Biken Aioto' Primary School and 'Ootan Kariraia' Primary School accommodates the Tabuarorae pupils. Tebuota JSS is located near to Biken Aioto primary school, located between the villages of Otoae and Aiaki for equal access to students from both ends of the island.

School enrollments are declining in Onotoa, due to the overall declining population and the unusual age distribution. In 2010, Onotoa had more older children in the JSS age range of 10-14 years and fewer young children, this is likely to drive declining rolls in the Onotoa JSS for some years to come. Because there is no secondary school on the island, young people need to leave Onotoa if they are to continue their education past Form 3 (Year 7).

Figure 16-4: School enrollments, Onotoa 2008-2011

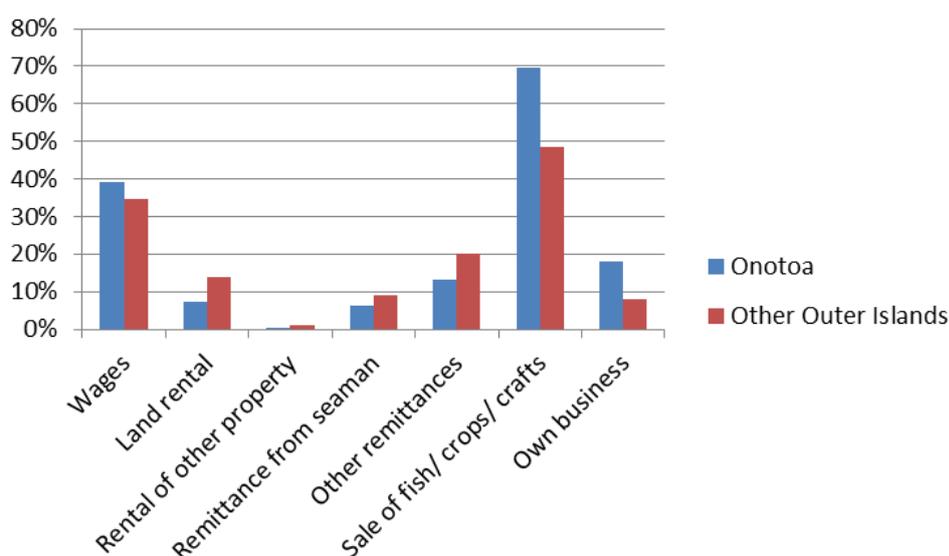


ISLAND ECONOMY

SUBSISTENCE

Subsistence is the main way of life on Onotoa, and most household members spend most of their day on 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. Fewer than 40% of households receive income from wages, and the number of households receiving income from rental, remittances and business activities is also quite small. The striking thing about Onotoa is the high proportion (70%) of households receiving cash income from “sale of fish/ crops/ crafts” – due to the limitations of agriculture in Onotoa, and few opportunities to sell fish for cash, this is likely to mean that most households are participating the copra industry.

Figure 16-5: Sources of household income, Onotoa 2010

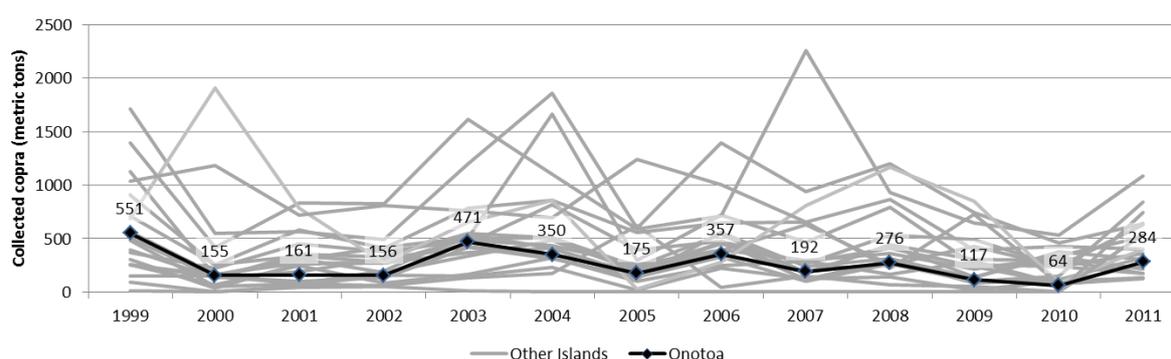


Data source: 2010 census (household tables)

COPRA

Copra cutting is the main income generating activity on the island and builds on a long tradition of coconut farming which is the mainstay of the people. Being an island vulnerable to droughts, the people of Onotoa were known for the tradition of storing coconuts for years in ‘ookai’ or attics (‘bata’). The golden-brown kernels indicate a nut is ripe, left untouched until the next big family function or drought comes. Despite the challenges of drought, the people of Onotoa over the years have learned to harvest and cut copra according to their needs.

Figure 16-6: Copra production, Onotoa 1999-2011



In 2006, the copra production of 357 tonnes would have provided an income in that year of \$255,743, which would have provided each of Onotoa’s 332 households with \$770.00 or just over \$2 per day. Since then, copra production and copra incomes have declined, and in 2010 fell to 64 tonnes which is the first time Onotoa’s annual production has fallen beneath 100 tonnes since 1990. On the other hand, copra is not the only income that the people on the island as there are other means of income such as remittances, fishing and handicrafts.

Table 16-3: Copra income per household, Onotoa 2005-2010

	2005	2006	2007	2008	2009	2010
Copra price \$/kg	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60	\$0.70
Total copra income	\$75,000	\$255,743	\$105,000	\$183,800	\$95,365	\$56,221
Income/ household	\$226.00	\$770.00	\$316.00	\$554.00	\$287.00	\$169.00
Hh income per day	\$0.62	\$2.11	\$0.87	\$1.52	\$0.79	\$0.46

REMITTANCES

The general flow of seafarer’s remittances into the country is continuous and has increased over the years with more engaged in seafaring employment. On Onotoa, 6% of households receive remittances from seamen working overseas, and 13% receive other remittances, for example from relatives working in South Tarawa. Opportunities for overseas employment are slowly increasing with New Zealand and Australia being the main destinations both for seasonal workers and for permanent migrants, and there are strong expectations that those working overseas will help to support their families at home.

AGRICULTURAL ACTIVITIES

Agriculture on Onotoa is mainly subsistence, and is dominated by the traditional food crops of coconut, *bwabwai* (swamp taro) and the local fruits *te kaina* (jackfruit from the pandanus plant) and the fig-like fruit *te bero*.

Agricultural activities are greatly hindered by drought and the tradition of egalitarianism which makes it difficult for households to stand out from their neighbours. In common with other Southern islands, there are very few home gardens and cultivation of cabbage and sweet potato, which has become common on Tarawa and in the central islands, is restricted to just a few households.

Drought is an ever-present issue on the island that hampers the growth and production of all trees including coconut trees. Breadfruit trees are especially vulnerable to drought, and only half of households have a breadfruit tree. Banana and pawpaw are commonly grown on other islands but do not thrive on Onotoa; only about a quarter of households on Onotoa cultivate pawpaw, and only one in ten cultivates banana.

Most households (73%) cut toddy, a sweet sap from the coconut tree that provides the main tree vitamins for subsistence livelihoods as well as fermented toddy for relaxation and income generation. Another indicator of the difficulties of agriculture on Onotoa is the high proportion of households that cultivate food trees on family lands outside the villages, including *bwabwai te kaina* (pandanus) *te bero* and coconut trees for fruit and toddy.

Bwabwai is kept solely for ceremonial occasions with cultivation methods closely guarded secrets that are passed from father to son. Pandanus, on the other hand, is abundant and there are many local varieties, including certain varieties that have assigned uses such as for pandanus paste ('tangauri' and 'tuaē'), pandanus powder ('kabubu'), pandanus strips ('kaakaa'), weaving and cigarette paper.

There is an Agricultural Assistant and a Nurseryman on Onotoa island whose responsibility is to carry out the Agricultural headquarters outer island plans in agricultural and livestock development. These include teaching home gardens, provision of pigs and chickens, animal health schemes, provision of seeds, seedlings (coconuts) and pandanus cuttings, and coconut replanting schemes. The latter scheme however is not fully supported by the islanders as it is deemed to be a waste of time and effort due to most of the replanting schemes not bearing as much fruit as one would love them to bear. Besides, people have their own traditional cultivation methods. There are no proper inspection codes as yet for transport of foodstuff, plant materials and animals on the ships and planes that visit the island and thus agriculture is vulnerable to introduced pests. The threat from 'bwabwai beetle' has been solved through strict regulations of 'bwabwai' being taken from South Tarawa to the outer islands and anyway, there are rarely bwabwai plants grown in South Tarawa after the 'bwabwai beetle' wiped out most of the bwabwai on South Tarawa in the early 1970s.

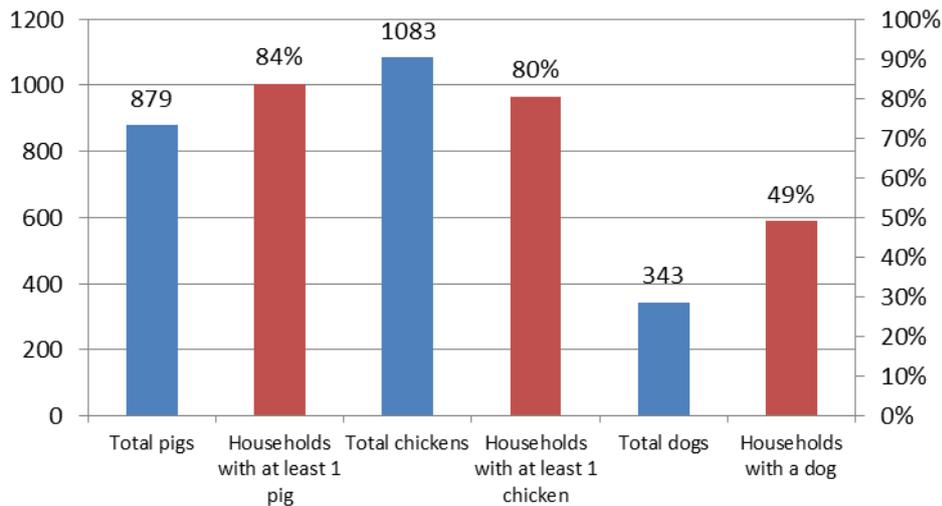
LIVESTOCK

Livestock on the island comprise pigs and chickens of both local and exotic breeds. The local pigs and chickens were documented as having been introduced in the early days before Kiribati became a British protectorate and later exotic breeds were introduced as part of the Division of Agriculture's plans to develop agriculture and livestock on the outer islands of Kiribati. Local pigs vary in color and size and are very short, rarely reaching a height of 1 metre whereas the introduced breeds if managed properly grow higher than a meter and actually are nicknamed as 'horses' by the locals who never cease to marvel at the height and size that these exotic breeds can grow to. Cross bred with a local breed, the progeny are normally faster growing taller pigs with higher food conversion rates and good breeding qualities e.g. more piglets per litter.

Exotic breeds of pigs and chicken have been introduced for cross-breeding with the local breeds. The most in demand are the exotic breeds of pigs that locals would like to own and

cross with their own local pigs and to a lesser extent, exotic chicken breeds. Generally, pigs are more popular as domestic animals because they are the major source of meat during family, church and island feasts. It is extremely rare in the whole country for one to kill a pig solely to eat pork as they are kept specifically for important feast and functions when whole baked pigs grace these feasting tables and is the most sought after food at such times. As portrayed in the chart below, most of the households in Onotoa (84%) own pigs, and there are a total of 879 pigs distributed throughout the island as owned by the households in the 7 villages of Onotoa.

Figure 16-7: Domestic animals in Onotoa, 2010 census



Chickens on the other hand totaled 1,083 and 80% of households owned at least one local chicken. Chickens are free-ranged and most are kept domestically for households own meat protein supplements. Like pigs, chickens are mainly kept for special occasions; households eat fish as their everyday source of protein. As free range chickens, they inter-mingle with chickens from other households resulting in crossbred chickens. Where the hens are kept for laying eggs to produce more chickens, the roosters are kept to breed with the hens as well as for their feathers that are popularly used in decorating fish lures. As is quite prevalent in the islands, the free-range management of chickens on the outer islands has impelled marking of chickens to declare ownership of the chickens. These markings include chopping off certain claws of the chickens or tying certain colored pieces of cloth to the feathers or legs.

Unlike pigs, free ranged chickens are liable to fines or confiscation by Council whereas free-ranged pigs on the other hand are considered an offense against the law, liable with fines or confiscation of the pigs. The confiscated pigs can be released to owners at a fee of \$20.00 and where not, they are auctioned off to the general public. There are no known diseases specific to Onotoa livestock but factually, the pigs and chickens alike are free from infectious diseases such as the well known avian influenza in chickens.

FISHERIES

Fishing is a routine activity for the men who carry it out when the seas are calm, and whenever home fish reserves have run out. Fish is plentiful both on the reef and in the ocean waters around Onotoa, and the men will fish whenever they can as a hobby and to pass the time away. There are around 200 canoes on Onotoa and 10 modern boats for fishing. Fewer than half of all households (43%) fish in the open ocean, but almost all households fish in the lagoon and/or the reef, and collect fish and shellfish on both the ocean and lagoon reef flats.

An ice plant has been constructed on Onotoa and when this is operational it can support export of fresh fish to other parts of Kiribati. Fish jerky however, is a common product throughout the island and although it is rarely sold for cash, it is often exported to relatives in other parts of Kiribati mostly to those in South Tarawa, sold to visitors to the island or presented as gifts to guests.

There are many different kinds of fishes that serve as food for the people of Onotoa and frequently special methods are utilized for certain species or groups of species. These methods are standard amongst the fishermen but individual variation does exist. Knowledge about fishing is most of time kept within families, and passed from a father to his sons rather than being shared freely.

Sailing canoes operated by a single or two men are used for trolling which may be undertaken in the lagoon, but the usual site is in deep water just outside of the west reef of the atoll especially the region where there is a large westward projection of this reef. Normal trolling baits are mullet and flying fish while lures comprise hooks with feathers attached. Trolling catches include various species of tuna, wahoo and sailfish.

Lagoon fishing comprises eel trapping, diving, trolling and gill-netting, and these same methods are also used to fish on the ocean reef.

Spear fishing is also common. Traditional spear fishing used a simple long wooden spear with a metal point lashed at one end but nowadays, spear fishers prefer to use an elastic sling device and a steel rod of about ¼ inch in diameter and with a lead of around 5 feet long which requires skill to operate to good use. Modern diving masks and flippers are very sought after items. Some of the fishes caught with this method include: Rereba Trevally species *Caranx sp*; Ikamaawa Parrot-fish *Scarus frontalis*; Bwawe, Takabe, Ingo, Sea perches and snappers (*Lutjanus sp.*); Kungskung Blacktip soldier fish *Myripristis kuntee*; *Holocentrus*; Koinawa Convict surgeon fish *Acanthurus nigricans (xanthopterus?)*; Mako Ring tailed surgeon fish- *Acanthurus triostegus*; Moray eels ; Nimwanang, nimako, nrekereke and more.

Shark fishing, hook and line, night fishing for flying fish as well as reef fishing, fish traps and net fishing are some of the other fishing methods carried out by the islanders. Shark fishing however is not as common as shark fishing in the more southern islands of Tamana and Arorae. Shark meat is highly regarded by the people many of whom actually prefer it to other fish such as tuna or trevally. The most delicious part of it is said to be the tough skin which requires special cleaning and which is sliced, dried and kept as shark skin jerky to be boiled days, months or years later.

The night fishing for flying fish using coconut fronds as sources of light is slowly dying with the introduction of pressure lamps and other sources of light.

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. Fossil fuel is also used on the island.

In 2011, Onotoa received 69,600 litres of unleaded petrol (bentiin), 19,200 litres of diesel and 10,800 litres of kerosene. The ULP is used solely to run vehicles such as trucks and motorbikes as well as an energy source for generators and outboard motor engines. Kerosene is used mainly as fuel for kerosene stoves and also as fuel for 'bottled' night lights, lanterns and pressure lamps

TRADE AND COMMERCE

Private enterprise contradicts the traditional island values of self-reliance and conservation of wealth thus buying from private traders is considered wasteful as it may help these traders to be elevated in social and economic standing. However, this tradition is ever so slowly dying out. To carry out any business activity involving trade on Onotoa, requires that one purchase a business license from the Onotoa Island Council and the cost of this license varies depending on the type of business to be carried out. The most common business licenses on record are those of wholesaling, retailing, hawkers and fishing.

HEALTH

The central clinic for Onotoa is located at the Council Office in Buraitan, and there are also clinics located at Aiaki, Tabuarorae, Tekatana and Otoae. All clinics are staffed with qualified nurses and assisted by nursing aides, the latter are employed by the Island Council. A Medical Assistant (MA) oversees the central clinic at the Island Council.

The people of Onotoa seem to enjoy good health, making an average of only 3 visits to the clinic per year and these being mainly for those diseases and injuries which are categorized in the health data under 'Others', and are less likely to be serious. The most common of the serious diseases (those for which data is collected separately) are respiratory infections, with or without pneumonia. Acute respiratory infection, according to WHO, is still the leading cause of acute illnesses worldwide and remains the most important cause of infant and child mortality, accounting for about two million deaths worldwide each year. It is linked to smoking (either being a smoker, or being the spouse or child of a smoker) so may be connected with the high rate of smoking on Onotoa – 57% of all adults (over 15) smoke regularly or sometimes.

Rates of night blindness, which is linked to Vitamin A deficiency, are particularly high on Onotoa which may be linked to the lack of variety in the diet. Of all the local foods, only *te tou* (from the pandanus plant) is rich in Vitamin A, and this fruit is not available all the time. Pawpaw is also a good source of Vitamin A but is difficult to grow in dry conditions.

Similar health data from the outer islands seem to have the same health results in which the most common form of health problem is and followed by acute respiratory infections (ARI). There a variety of health problems that could be grouped into 'others' of which some include general sores/injuries/wounds etc. However, these were not clarified in the data collected and thus cannot be further elaborated to show what the problems are.

Clinic visits recorded as being from sexually transmitted infections (STI) are very low, with only one such clinic visit recorded in 2011. The Ministry of Health and Medical Services believes that due to fear of social ostracism, STIs and HIV AIDS are usually difficult to detect since people keep them secret. Therefore while there may be no record of patients with such diseases, there is no guarantee that there are actually no people infected and living with such illnesses on the island. People are more likely to hide the fact that they are suffering from a STI than acknowledge that they require treatment and counseling.

TRANSPORT

The most common form of land transport is the pushbike followed by motorbikes and trucks. Most households (74%) own at least one pushbike in working order. Motorcycles ranks second in popularity, as they are so much more expensive than pushbikes.

Island Council trucks provide the main transport for Primary and JSS students to and from their schools and general use by the Council. Due to the high cost of truck vehicles, and difficulty in accessing parts and repairs, there were only 3 trucks in working order on Onotoa during the 2010 census survey, and three cars. Two of these trucks are owned by the Island Council of which one was donated by the people of Taiwan for the purpose of transporting primary and junior secondary pupils to and from school while the other is owned by the KPC in Buariki. The KPC truck is used for church functions and local hire. Council charges a small fare for pupils and inter-village travelers in order to raise funds to meet the truck's operational cost and future maintenance - \$0.20/trip while the KPC truck take on member passengers freely and hires it out to the general public including visiting government officials.

Air Kiribati flies to Onotoa weekly on a Tuesday, although the high cost of flights (\$150 one way from Onotoa to Tarawa) puts air travel out of the reach of most households.

The Government has been the major shipping operator since colonial times, and still continues to dominate this service, although private businesses have secured an increasing share of the market. Still, central government attempts, through its shipping line – Kiribati Shipping Services Limited (KSSL) – to serve all islands in the country near and far. There are also an increasing number of privately owned boats that are also providing shipping services to the outer islands including 'Bwaan te Tangira' owned by the Onotoans, 'Te Ataana' owned by a Phillipino resident, and others. 'Bwaan Te Tangira', provides shipping services to all islands in the Gilbert group as well as Banaba. All ships carry both passengers and freight, but there are no published schedules for boat travel.

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
Reduction in Marine resources	<ul style="list-style-type: none"> -illegal fishing boats fishing in Onotoa sea waters -increasing number of gang fishing, family, church and village fishing groups for fund raising and income -motorizes skiffs being used -increase of fishing gears by the people -over fished of all sea cucumber for export purposes 	<ul style="list-style-type: none"> -shortage of marine food for the islanders in marine species such as most lagoon fish declining, mangrove crabs, mud worm disappearing, lobster and octopus population decline -tuna species being fished by illegal ships -decrease in income 	<ul style="list-style-type: none"> - a need of effective bylaw regulating marine resources, catch, and commercial species in particular -penalty for foreign ships 	<ul style="list-style-type: none"> -takes time but sustainable -penalising foreign ships is quite difficult because of vast ocean in surveillance
Coastal erosion	<ul style="list-style-type: none"> -aggregate mining - 	<ul style="list-style-type: none"> -reduction of land masses is very minimal -flooding destroying vegetation 	<ul style="list-style-type: none"> -control and limit aggregate mining 	<ul style="list-style-type: none"> -sustainable if people agree and obey

ISSUES	PROBABLE CAUSE/S	IMPACT on SOCIETY	REMEDIAL ACTION	SUSTAINABILITY (EFFECTIVENESS)
Water	-drought	-kills off vegetation -fruits are affected in size -decrease in production thus decrease in income for islanders	--future plans for concrete cisterns -increase water catchment for residents -provision of water tanks KIRIBATI WATER AND SANITATION PLAN will look into the following:- <ul style="list-style-type: none"> ➤ Development of policy and legislation ➤ Water sector plans for Kiribati ➤ Undertaking of pilot projects and feasibility studies ➤ Improvement of infrastructure e.g proper maintenance of toilets ➤ Climate change adaptation including leakage control , water conservation and development of alternative sources of water 	-can all be sustained but costly and takes time to materialise