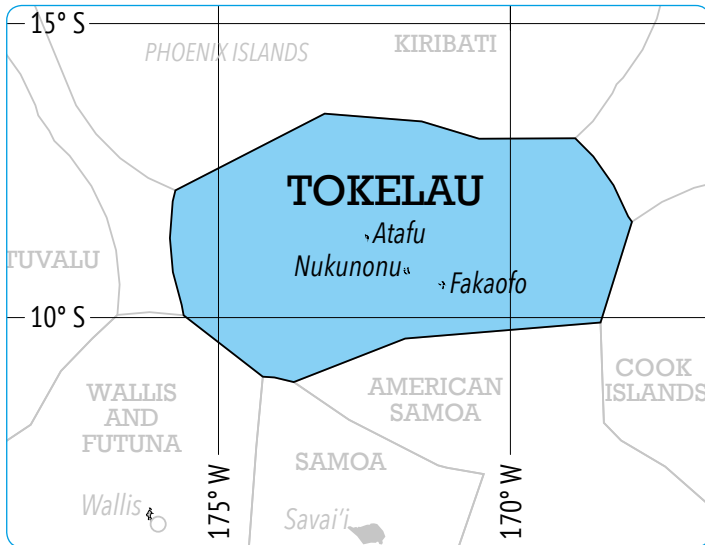


26 Tokelau



26.1 Volumes and Values of Fish Harvests in Tokelau

Coastal Commercial Catches in Tokelau

Gillett (2009) considered the available documentation on coastal fisheries in Tokelau, and stated the following:

Dalzell et al. (1996) indicates that Tokelau's annual commercial fisheries production was zero in the early 1990s. The 2001 census (Anon. 2003) contains information on household income sources. It indicates that no households receive income from the sale of fish "every month or more". Passfield (1998) indicates there is no commercial fishing in Tokelau, with the possible exception of

that for giant clams: “Although clams are not actually harvested for sale as such, some people, particularly public servants with disposable income, pay unemployed men to harvest clams on their behalf.” In view of this information, all coastal fishing in Tokelau is considered to be subsistence fishing and for the purpose of the present study, the commercial production is deemed to be zero.

The 2011 Tokelau census report (Statistics New Zealand 2012) contains additional information relevant to coastal commercial fisheries. It indicates the percentage of households on each island that receive income from various sources, including from the sale of fish. Income is received from the sale of fish by 1% of the households on Atafu, 3% of those on Nukunonu, and 6% of those on Fakaofu. It can therefore be concluded that there is at least some coastal commercial fishing in Tokelau.

Past estimates of coastal fisheries production in Tokelau (mainly subsistence, but including any commercial) have mainly been focussed on Fakaofu. Those Fakaofu studies were cited in the Gillett (2009) study, and an attempt was made to extrapolate the results to all of Tokelau:

- Gulbrandsen (1977) estimated that an annual total of 28 mt of fish was required to satisfy the nutritional requirements of the 665 residents of Fakaofu. (84 mt for all of Tokelau)
- Hooper (1984) monitored all fish catches on Fakaofu for a five-week period in 1981, and reported a weekly catch of about 1.5 mt. (234 mt annually for all of Tokelau)
- Gillett and Toloa (1987) monitored all fishery catches on Fakaofu for a 12-week period, from June to September 1986, and estimated that 23 mt of fish was landed. (299 mt for all of Tokelau)
- Passfield (1998) spent 21 days on Fakaofu in July and August 1998, and estimated a total annual Fakaofu fishery production of 150 mt, and 450 mt for all of Tokelau.

The Gillett (2009) study considered the above studies, but discounted the results of the Passfield study.¹ Gillett (2009) estimated that the 2007 coastal fishery production in Tokelau (assumed to be all subsistence) was 375 mt, worth NZ\$967,500.

¹ Passfield's annual production estimate for 1998 of 450 mt, together with the probable level of recent exports and the recent decrease in Tokelau's population, resulted in a per capita consumption for 2007 that appeared improbably large.

The Director of Tokelau's Department of Economic Development, Natural Resources and Environment provided information on events in recent years that may have affected the production of coastal fisheries (M. Perez, per. com. September 2015). He stated the following:

- In the last decade there have been no major shocks or disasters (e.g. cyclones, wave action) that have affected fishing activity.
- In the last 10 years the amount of fish exported from Tokelau has increased, perhaps a doubling of the quantity during the decade.
- In 2014 there was a large increase in overseas visitors to Tokelau, due to the anniversary celebrations of the Catholic Church and FFA meetings.
- The ship servicing Tokelau has greater capacity than in the past.
- Recently the average price paid to a fisher for a 1.5 kg skipjack was NZ\$5.

There have been some sales of beche-de-mer. Pasilio et al. (2013) stated that, in 2012, village fishers began harvesting in early 2012, selling their catch fresh in 18- or 20-litre buckets, for NZ\$15 to NZ\$20 per bucket of fresh, un-gutted sea cucumber.

Other information that is relevant to making an estimate of coastal commercial fishing in Tokelau is detailed below:

- The Tokelau paper for the 2015 meeting of the Scientific Committee of the Western and Central Pacific Fisheries Commission (Anon. 2015) states that Tokelau has “quite a large artisanal fleet of about 30-40 small 12' to 16' open aluminium dinghies powered by 15-30HP outboards”.
- The preliminary results from the SPC-assisted monitoring of pelagic fishing by those small boats indicate an annual catch of about 98 mt. (D. Brogan, per. com. August 2015)
- The population of Tokelau decreased by 0.3% between 2007 (the focal year of the Gillett [2009] study) and 2014 (the focal year of the present study [SPC PRISM website information]). In absolute terms, this was a decrease of three people, from 1,169 to 1,166.
- In 2014 there were 47 ship departures from Apia to Tokelau. (Jasperse 2015)
- An analysis of goods shipped in 2014 from Tokelau to Samoa shows 62,867 kg of frozen seafood. (Tokelau administration, unpublished data)

The above information is inadequate for updating the coastal fisheries production of Tokelau. Nevertheless, if the 2007 estimate of 375 mt is expanded to account for increasing exports in recent years and a large visitor presence in Tokelau in 2014, the coastal fisheries production in that year could be around 400 mt. There is inadequate information for partitioning that catch into commercial and subsistence components, but for the purpose of the present study it will be assumed that 10% of the catch is commercial (i.e. 40 mt). At a semi-arbitrary price to fishers of NZ\$3.50 per kg (based on general market knowledge), the value of the annual commercial catch equates to NZ\$140,000.

Coastal Subsistence Catches

Following the above logic, the coastal subsistence catch in 2014 is taken to be 360 mt. Valuing that subsistence catch by the farm gate method (discounting by 30% to allow for marketing) the subsistence catch would be worth NZ\$882,000 to fishers.

Locally Based Offshore Catches

There is no locally based offshore fishing in Tokelau.

Foreign-Based Offshore Catches

The Tokelau paper for the 2015 meeting of the Scientific Committee of the Western and Central Pacific Fisheries Commission (Anon. 2015) states that, in 2014, “excluding the US treaty vessels, a total of 26 purse seine vessels were licensed by Tokelau: 11 flagged by Korea, 2 flagged by Kiribati, 4 flagged by Spain, 3 flagged by Ecuador, 2 flagged by El Salvador and 4 flagged by NZ. The majority of effort that occurred in Tokelau’s EEZ for 2014 were carried out by purse seine and a majority of this effort occurred in the north and north eastern parts of the Tokelau zone. Only 3 LL vessels, flagged to Kiribati, were licensed by Tokelau in 2014.”

Estimates of the volumes and values of catches of the four main commercial species of tuna in the area of the Western and Central Pacific Fisheries Commission have been made by the Forum Fisheries Agency using data sourced from the Oceanic Fisheries Programme of the Pacific Community. The volumes and values can be determined using FFA (2015). Table 26-1, below, takes those volumes and (for longlining) adjusts them for bycatch. The values in the table are adjusted to account for: (a) the value of the longline bycatch,

and (b) the cost of the transport of the purse seine and longline catches (i.e. the FFA overseas market prices, less transport charges to those markets).

Table 26-1: The Volume and Value of the Foreign-Based Offshore Catches

	2010	2011	2012	2013	2014
Volume purse seine tuna catch (mt)	3,758	19,559	20,539	15,856	23,748
Volume longlinetuna catch (mt)	0	436	337	0	413
Nominal value purse seine tuna catch (US\$)	4,791,496	33,328,535	44,064,937	33,121,129	35,123,723
Nominal value longline tuna catch (US\$)	0	3,810,188	2,692,232	0	2,838,431
Total volume purse seine and longline catch (longline adjusted for bycatch) (mt)	3,758	20,125	20,977	15,856	24,286
Total value purse seine catch (adjusted for cost of transport) and longline catch (adjusted for cost of transport and value of bycatch) (US\$)	4,120,686	32,603,396	40,689,252	28,484,171	33,168,859

Source: FFA (2015)

The 2014 foreign-based offshore catch was 24,286 mt, with an in-zone value of US\$33.2 million (NZ\$42.5 million).

2014 does not appear to have been a typical year for foreign-based offshore fishing in the Tokelau zone – it was an annual record high. The annual average over the 10-year period 2005–2014 was 10,319 mt. 2014 was a strong El Niño year, and purse seine catches characteristically move eastwards from PNG and FSM towards Kiribati, Tuvalu and Tokelau during El Niño periods.

Freshwater Catches

There are no freshwater fisheries in Tokelau.

Aquaculture Harvests

There are no aquaculture activities in Tokelau.

Summary of Harvests

A crude approximation of the annual volumes and values of the fishery and aquaculture harvests in 2014 can be made from the above sections (Table 26-2).

Table 26-2: Annual Fisheries and Aquaculture Harvest in Tokelau, 2014

Harvest Sector	Volume (mt)	Value (NZ\$)
Coastal Commercial	40	140,000
Coastal Subsistence	360	882,000
Offshore Locally based	0	0
Offshore Foreign-based	24,286	42,500,000
Freshwater	0	0
Aquaculture	0	0
Total	24,686	43,522,000

Figures 26-1 and 26-2 show the volumes and values of the 2014 Tokelau fisheries production.

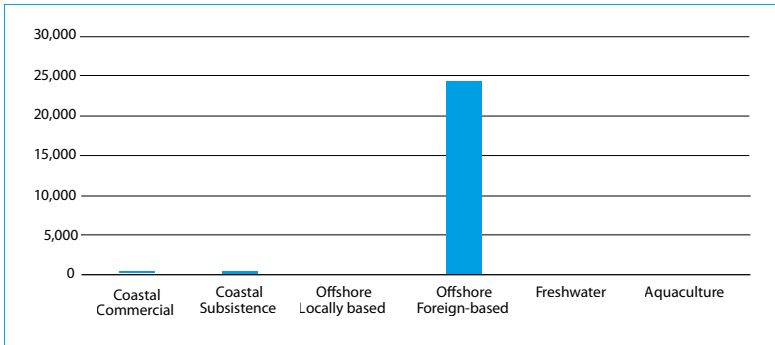


Figure 26-1: Tokelau Fisheries Production by Volume (mt), 2014

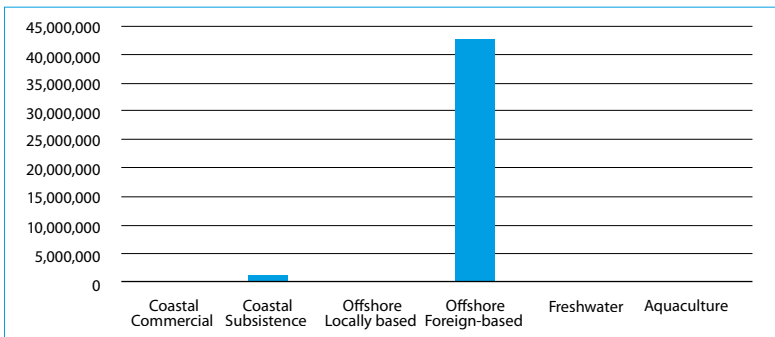


Figure 26-2: Tokelau Fisheries Production by Value (NZ\$), 2014

Past Estimates of Fishery Production Levels by the Benefish Studies

Similar studies of the benefits to Pacific Island countries and territories from fisheries (“Benefish” studies) have been carried out in the past. Gillett and Lightfoot (2001) focused on the year 1999, Gillett (2009) focused on 2007, and the present study focuses on 2014. The fishery production levels for Tokelau from those studies are provided in Table 26-3.²

Table 26-3: Estimates by the Benefish Studies of Annual Fisheries/Aquaculture Harvests

Harvest Sector	Estimate Year	Volume (mt, and pcs where indicated)	Nominal Value (NZ\$)
Coastal Commercial	1999	n/a	n/a
	2007	0	0
	2014	40	140,000
Coastal Subsistence	1999	n/a	n/a
	2007	375	967,500
	2014	360	882,000
Offshore Locally based	1999	n/a	n/a
	2007	0	0
	2014	0	0
Offshore Foreign-based	1999	n/a	n/a
	2007	318	540,484
	2014	24,286	42,500,000
Freshwater	1999	n/a	n/a
	2007	0	0
	2014	0	0
Aquaculture	1999	n/a	n/a
	2007	0	0
	2014	0	0

Source: The present study, Gillett (2009), Gillett and Lightfoot (2001)

The apparent changes in production for the three years sometimes represents a real change in production, but it can also reflect a change in the methodology for how the production is measured (hopefully an improvement), or new data becoming available. In the table above, the production levels for coastal commercial and coastal subsistence change significantly

² The earliest Benefish Study, Gillett and Lightfoot (2001), did not include aquaculture, freshwater fisheries or the non-independent territories.

between the years, but some of that change is due to new information. For example, the 2011 Tokelau census report (Statistics New Zealand 2012) showed that coastal commercial fishing does indeed exist in Tokelau. In contrast, changes in production figures in the table for the offshore fisheries (based on the availability of better quality data) are likely to reflect real changes in the amounts being harvested.

26.2 Contribution of Fishing to GDP

Current Official Contribution

Official GDP estimates are not produced for Tokelau.

Method Used to Calculate the Official Fishing Contribution to GDP

As there is no GDP estimate, there is no method for calculating the fishing contribution.

Estimate of Fishing Contribution to GDP

Table 26-4, below, represents one option for estimating fishing contribution to the GDP of Tokelau. It is a simplistic production approach that takes the values of five types of fishing/aquaculture activities for which production values were determined in Section 26.1, above (summarised in Table 26-2), and determines the value added by using value-added ratios (VARs) that are characteristic of the type of fishing concerned. Those VARs were determined through knowledge of the fisheries sector, and by using specialised studies (Appendix 3).

Table 26-4: Fishing Contribution to Tokelau GDP in 2014

Harvest Sector	Gross Value of Production (NZ\$, from Table 26-2)	VAR	Value Added (NZ\$)
Coastal Commercial	140,000	0.75	105,000
Coastal Subsistence	882,000	0.95	837,900
Offshore Locally based	0	0	0
Freshwater	0	0	0
Aquaculture	0	0	0
Total	1,022,000	---	942,900

26.3 Exports of Fishery Production

An analysis of goods shipped in 2014 from Tokelau to Samoa shows 62,867 kg of “frozen seafood”. (Tokelau administration, unpublished data) The value of exports from Tokelau are not declared. Taking the average price of fish in Tokelau from above (NZ\$3.50 per kg), the 62.9 mt of “frozen seafood” exported from Tokelau is estimated to be worth about NZ\$220,000. These volumes and values of exports do not include any dried fishery products.

Further relevant information on fishery exports from Tokelau is summarised below:

- There have been at least some exports of beche-de-mer from Tokelau. Pasilio et al. (2013) stated that, in 2012, village fishers began harvesting in early 2012, and selling their catch of fresh un-gutted sea cucumber. It is not known if the beche-de-mer trade continued beyond 2012.
- Atafu has problems with ciguatera fish poisoning, so residents from that island export mainly tuna and flyingfish. Atafu and Fakaofu export all fish species. (M. Perez, per. com. September 2015)
- The amount of fish exported from Tokelau has increased in the last 10 years, representing perhaps a doubling of the quantity over the decade. (M. Perez, per. com. September 2015).

26.4 Government Revenue from Fisheries

Access Fees for Foreign Fishing

As stated above, the Tokelau paper for the 2015 meeting of the Scientific Committee of the Western and Central Pacific Fisheries Commission (Anon. 2015) states that, in 2014:

excluding the US treaty vessels, a total of 26 purse seine vessels were licensed by Tokelau: 11 flagged by Korea, 2 flagged by Kiribati, 4 flagged by Spain, 3 flagged by Ecuador, 2 flagged by El Salvador and 4 flagged by NZ. The majority of effort that occurred in Tokelau’s EEZ for 2014 were carried out by purse seine and a majority of this effort occurred in the north and north eastern parts of the Tokelau zone. Only 3 LL vessels, flagged to Kiribati, were licensed by Tokelau in 2014.

Tokelau receives access fees for the foreign fishing in its zone. From 2000 to 2010 access fees averaged slightly less than US\$1 million per year. The access fees increased considerably after 2011, when Tokelau adopted a fisheries

policy. The fees were US\$1.25 million in 2011, US\$3.1 million in 2012, US\$6.4 million in 2013, US\$9.05 million in 2014, and US\$10.4 million in 2015. (S. Crothers, per. com. January 2016)

If total revenue of the Tokelau government for the financial year 2014/15 was NZ\$22 million³, the access fees in 2014 of US\$9.05 million (NZ\$11.6 million) represented about 52.6% of the government revenue.

Other Government Revenue from Fisheries

No documentation is available on non-access Government revenue from the fisheries sector. The Director of Tokelau's Department of Economic Development, Natural Resources and Environment stated that the island administrations do not tax or license fishing activity (M. Perez, per. com. September 2015).

26.5 Fisheries-Related Employment

The 2011 census contains employment information. Unfortunately, the report of the census (Statistics New Zealand 2012) only disaggregates the employment data to the level of "Labourers, agriculture, and fisheries workers", so it is not possible to determine how many people derive income from fishing.

There is some information in the census on participation in fishing. The data show that males were much more likely than females to help with village fishing (68.4% of males, compared with 6.7% of females). Tokelau residents in the age category of 50 to 59 years had the highest proportion of people who helped with village fishing (44.8%).

An SPC/FFA mission to Tokelau was carried out in August and September 2003. The main aims of the mission were to gather information for drafting a national tuna fishery development and management plan, and to collect gender-disaggregated data on Tokelau fishing activities. (Chapman et al. 2005). Information from the mission on household participation in fishing is given in Table 26-5.

³ Definitive government revenue figures were not available.

Table 26-5: Tokelau Household Participation in Fishing

Atoll	No. of h/holds surveyed	No. people covered	People per h/hold	H/holds that fish	% h/holds that fish
Atafu	46	299	6.5	46	100.00
Fakaofu	58	320	5.5	57	98.30
Nukunonu	49	280	5.7	49	100.00
Total	153	899	5.9	152	99.30

Source: Chapman et al. (2003)

Other important points relevant to fisheries-related employment that emerged from the survey are summarised below:

- The almost 100% participation in fishing indicated in the table is even more remarkable, considering the one non-fishing household consisted entirely of a retired widow. This highlights the dependence of Tokelauans on harvesting marine products.
- Fathers, sons and other males were the main household members involved in fishing activities at all three atolls, whether fishing inside or outside the reef.
- For fishing outside the reef (trolling, mid-water fishing, flyingfish fishing and bottomfishing), mothers, daughters and other females made up only a very small percentage of the fishing effort at Atafu, and an even smaller percentage at Fakaofu. Women at Nukunonu were not involved in fishing outside the reef at all.
- Mothers, daughters and other females were involved in some inshore fishing methods, although males still dominated. Females accounted for just over 50% of the reef gleaning effort, and around 40% of diving effort, with most of the diving effort directed at harvesting clams.

26.6 Levels of Fishery Resource Consumption

Gillett and Preston (1997) estimated that the production from coastal fisheries in Tokelau in the early 1990s equated to an annual per capita fish supply of 119.4 kg.

Passfield (1998) indicated that the population of Fakaofu consumes an estimated average of 380 g of seafood per person. This equates to a total subsistence consumption of around 140 tons per year (or 248 kg per capita per year, whole fish equivalent). The report states that seafood is eaten, on average, for 12.6 meals per week, or at 73% of all meals consisting of some animal protein content. Fresh frozen meat or chicken, tinned meat

and tinned fish are consumed in 13%, 9% and 5% of the meals, respectively. Approximately four meals per week contain no animal protein, and these are usually breakfasts, when rice or biscuits are eaten.

Tokelau's 2014 coastal fishery production is estimated by the present study to be 400 mt. "Frozen seafood" exports are shown in a section above to have been about 63 mt in 2014, some of which would be semi-processed (e.g. headed/gutted). During that year the population of Tokelau was 1,166 people. If it is assumed that the whole fish equivalent of the "frozen seafood" exports was 75 mt, this equates to 279 kg/person/year. However, this does not equal the consumption rate, due to three factors: (1) the unknown amount of fish exported in dried form; (2) the fish consumption by the large number of visitors to Tokelau in 2014, including those participating in the Catholic Church anniversary celebrations and the FFA meetings; and (3) any use of fish in Tokelau for uses not related to human consumption (e.g. bait, animal food, fertilizer).

The per capita consumption of fish on Tokelau would not be expected to be as high as that of the neighbouring atoll countries of Tuvalu and Kiribati, due to the relative affluence of Tokelau and its strong bonds to New Zealand, facilitating the purchase of imported protein products. This is shown by an analysis of imports into Tokelau in 2014 (Jasperse 2015):

Chicken leg quarters (54.1 tonnes) are the main form of protein purchased in 2014 in the store by far, supplemented by chicken wings (8.6 tonnes), corned beef (7.1 tonnes), salt beef (6.1 tonnes), lamb chops (5.7 tonnes), lamb necks (4.1 tonnes), mutton flaps (3.7 tonnes), and various types of sausages (13.4 tonnes). The presence of mackerel in oil (8.1 tonnes) and of tuna in oil (5.0 tonnes) is surprising given the large local fish catch.

The imports above equate to 99.4 kg/person/year, and this high rate would tend to lower the consumption of fish to some degree.

26.7 Exchange Rates

Tokelau uses the New Zealand dollar (NZ\$). The average yearly exchange rates (NZ\$ to the US dollar) used in this book are as follows:

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
1.42	1.54	1.36	1.32	1.39	1.30	1.29	1.21	1.22	1.28