

33 Employment Related to Fisheries

33.1 Country Information

Information on fisheries-related employment¹ is provided in the country and territory chapters. The objective of this chapter is to understand the importance of involvement in fisheries at the national level relative to other occupations. The chapter also examines the distribution of this involvement with respect to gender and age. Employment is an important benefit from fisheries and it needs to be better quantified so that the sector's contribution can be fully appreciated. Further, accurate and reliable employment information by fishery could improve fisheries management decisions. Some ideas are therefore presented for improving fisheries-related employment data and information.

The employment information presented in the country and territory chapters is a heterogeneous collection of various types of data. Meaningful summaries of the fisheries-related employment situation at the national level and inter-country comparisons are difficult for a number of reasons:

- The various sources of information on fisheries-related employment range from informal estimates to structured surveys.
- The data originate from studies ranging from initiatives confined to the fisheries sector to much broader exercises that cover all economic sectors or the entire population, e.g. a census or household income and expenditure survey (HIES).
- The studies deal in different ways with the various mixes of paid work, unpaid work, and work by the family.
- Definitions for important concepts, such as what constitutes a job or “participation”, often vary between the surveys – or are not stated.

¹ In this chapter employment and participation are used almost synonymously, but there is a tendency to use employment when dealing with wage work and participation for subsistence activities.

- There is inconsistency across countries/territories in the categorisation of fish processing. In some it is placed in the same sector as fishing, while in others it is under manufacturing.
- Some of the studies have produced obviously erroneous results for fisheries-related employment; while for others it is difficult to establish credibility.
- Some of the information has been collected by specific interest groups and could be selective and/or self-serving.

Although the fisheries-related employment information in the country and territory chapters is very much a mixed jumble of facts, an attempt is made here to extract the information that best characterises the national fisheries-related employment situation. Table 33-1 presents for each country and territory the survey data that is believed to give the best indication of the relative importance of (a) employment in commercial fisheries, and (b) involvement in subsistence fishing. This exercise was also carried out in the previous Benefish study (Gillett 2009) and, as that information may be useful for comparative purposes, it is repeated in the table below in bold italics. More complete information (including the citations) is given in the country and territory chapters.

Table 33-1: The Importance of Fisheries-Related Employment (Commercial and Subsistence) in Pacific Island Countries and Territories

Country/ Territory	Recent Information on Fisheries-Related Employment, and Corresponding Information from the Previous Benefish Study (in bold italics)
Cook Islands	<p>The 2011 census indicated that 42.4% of households in Cook Islands participate in fishing, but this is declining. In 2011 57.6% of households had not engaged in any level of fishing activity whereas the previous census in 2006 showed 50.6% with no such activity.</p> <p><i>Of the employed population recorded in the 2001 census (5,928 people), 427 (7.2%) indicated they were employed in "agriculture and fishing". Of those people, 183 were on Rarotonga. With respect to subsistence fishing, the employment situation is very different between Rarotonga and the outer islands. A recent SPC survey on Mangaia Island indicated that almost all households (92%) are engaged in fisheries with an average of 1 to 2 fishers. A similar SPC survey on Rarotonga shows that less than half of all households (44%) are engaged in fisheries with an average of one fisher per every second household only.</i></p>
FSM	<p>The 2013/2014 HIES has some fisheries-related employment information:</p> <ul style="list-style-type: none"> • 1.8% of total wage and salary income comes from fishing • 12.9% of households are involved with subsistence fishing • The net monthly value from subsistence fishing is \$18 per household <p><i>In 2007 the "number of employed persons in fishing" was 1.3% of all employed people in FSM, but it should be noted that the survey was oriented to formal employment with the larger fishing companies. Little national level information available on participation in small-scale fisheries.</i></p>

Country/ Territory	Recent Information on Fisheries-Related Employment, and Corresponding Information from the Previous Benefish Study (in bold italics)
Fiji	<p>A 2008 study estimated the number of (a) subsistence fishers in the country to be about 23,000, (b) full-time artisanal fishers to be about 5,000, and (c) part-time artisanal fishers to be 12,000.</p> <p><i>Combining information in ADB study in late 2004 and the 2004/05 Fiji employment study, the estimated 9,144 fisheries jobs in the 12 fisheries sub-sectors (e.g. offshore, processing) represent about 3.8 percent of the total number of jobs in Fiji (wage, salaried, self-employed). There is little national level information available on participation in subsistence fisheries.</i></p>
Kiribati	<p>The 2010 census gives the major categories of fisheries jobs broken down by age and sex of the workers. It gives a total of 3,178 employed in seven fisheries categories; on examination, the data seem to underestimate the numbers of workers in some types of jobs.</p> <p><i>The 2005 Kiribati census indicates that 7.1% of “cash workers” were in “agriculture/fishing”. The results of earlier census in 2000 had greater detail for fisheries-related employment: “Fisheries” was the main activity for 1.5% of people. With respect to subsistence fisheries, the results of the fishery-focused surveys by the Fisheries Division are mostly narrow in scope (i.e. one company, one island, one sub-sector of fisheries) and it is difficult to draw national-level conclusions.</i></p>
Marshall Islands	<p>In the 2008 employment survey, fishing provided 2.8% of the jobs in the country and 4.7% of the income from jobs. The income level of fishing job-holders was only about 65% of the average level. The report of the 2011 census states that a total of 3,787 households reported fishing – that is, 48.9% of all households. Of these, 64.1% claimed it was for subsistence purposes, 34.8% claimed that fishing was for both subsistence and income, and 1.1% reported it as a means of income only.</p> <p><i>In early 2008 the Economic Policy, Planning and Statistics Office carried out an employment survey that showed that “fishing” accounted for 2.8% of the total number of jobs in the country and 4.7% of the income from jobs. A 2004 survey estimated that 62.2% households on Majuro did at least some fishing once a year. Little national level information is available on participation in subsistence fisheries.</i></p>
Nauru	<p>The 2011 census indicated that the main source of household income was: for 85% of all households, wages and/or salary; for 7% of households, own business activities; 4% relied mainly on rent of land; and 2% on the sale of fish, crops or handicrafts. Just over half (51%) of all households in Nauru were engaged in fishing activities. Participation in fishing activities varied greatly between Nauru’s 14 districts. The results of the 2012/2013 HIES indicated that 26% of households were engaged in fishing. About 8.94% of the Nauruan labour force of 3,952 were involved in some form of fishing; this equates to about 353 fishers. With regards to full-time fishers, if “full-time” means those who have fishing as their main activity, the figure is 1.26% of the Nauruan labour force or about 50 fishers.</p> <p><i>An SPC survey in 2005 indicated that fisheries do not play a significant role in income for households. For 5% it is their first income and for 17% their second income. A total of 245 households were surveyed for income and expenditure, with 97% of these found to be engaged in fishing activities.</i></p>
Niue	<p>The 2009 agriculture census of Niue indicated that most households were engaged in inshore fishing (62%), 31% were involved in both inshore and offshore fishing, with the remaining 7% being involved in offshore fishing only. The main purpose of household fishing was for home consumption, accounting for 82% of fishing households, with 16% selling some of their catch and the remaining 2% selling most or all.</p> <p><i>The 2002 HIES indicates that “fish income” represents 0.9% of all income in Niue for the year and that 12% of all households have some “fish income”. There were 293 boats on the island in 2006 when the population was 1626, or one boat for each 5.5 people.</i></p>

Country/ Territory	Recent Information on Fisheries-Related Employment, and Corresponding Information from the Previous Benefish Study (in bold italics)
Palau	<p>The Fiscal Year 2014 Statistical Appendices have information on employment in Palau obtained through social security and tax records. This shows the number of fishing workers to be 83 out of a total number of workers in Palau of 10,386, meaning fishing workers are 0.8% of all workers.</p> <p><i>The 2005 census states that (a) of the 13,800 people reporting income in 2004, 305 people (2.2%) reported income from selling fish, and (b) of 14,154 people over 18 years old in 2004, 933 people (6.6%) reported some subsistence fishing activity.</i></p>
PNG	<p>Not much new information is available on participation in small-scale fisheries in the country. The readily available documentation from the latest national census (2011) does not contain the word "fish". The most recent PNG HIES has not been analysed for fishery participation information.</p> <p><i>A 2008 FFA study estimated 8,990 jobs associated with large-scale tuna fishing and canning. Considering the "monetary employment" of 774,000 in PNG in 2008, these 8,990 tuna jobs represent about 1.2% of the monetary jobs in the country. A 2005 study estimated that there are in PNG about 2,000 and 4,000 part-time artisanal fishermen. A 2001 study indicated that a large number of people, estimated at somewhere between 250,000 and 500,000, participate in the coastal subsistence fishery. Participation in freshwater fishing is very large. 23% of all rural households in the country are engaged in catching fish (both marine and fresh water fishing).</i></p>
Samoa	<p>A 2012 socio-economic fisheries survey found that fishing was third to agriculture and paid salary in terms of income source. Overall, 14% of all households ranked fishing as their first source of household income; the figure for coastal communities was higher at 18%. The 2012 labour force survey found that of the working age population, 6.7% were involved with subsistence fishing.</p> <p><i>Formal registered employment in 2007 consisted of 22,150 people, of which 196 people (0.9%) were involved in commercial fishing. With respect to small-scale fisheries, a Fisheries Division report in 2007 indicated that, although only 7.26% of the population are fishers, 41.7% of households have at least one fisher.</i></p>
Solomon Islands	<p>There were two recent national censuses: 1999 and 2009. The report of the 2009 census gives "changes in paid employment" in the ten-year period between the two surveys: (a) 1999: total jobs in fishing 3,367 (2,935 males and 432 females); (b) 2009: total jobs in fishing 5,736 (5,076 males and 660 females). The changes during the period were 70.4% increase in paid employment in fishing (72.9% increase for males and 52.8% increase for females). An ADB study in 2010 stated that the number of subsistence fishers in Solomon Islands could be crudely estimated by looking at the total population – about 570,000 in 2012 – and assuming 82% as the rural population. By dividing this by the average number of household members in rural households (5.2 persons) the minimum number of subsistence fishers can be derived. A minimum of 88,000 people are estimated to be engaged in fishing, assuming one household member is a fisher. This, however, is a conservative estimate. If the inputs of women and other adult men are considered in the estimate, the number of subsistence fishers would double to 175,000.</p> <p><i>An IMF study in 2005 indicated a total of 42,297 formal jobs in the country in 2004, of which 5,114 (12.1%) were in fisheries. For small-scale fisheries, an SPC study in 2006 found that 50% of females and 90% of males participate in fishing activities. 83% of households engage in some form of fishing activity.</i></p>

Country/ Territory	Recent Information on Fisheries-Related Employment, and Corresponding Information from the Previous Benefish Study (in bold italics)
Tonga	<p>The 2011 census showed that the main type of work during the last week for 64,597 people was 859 people involved with fishing mainly for sale and 437 people involved with fishing for their own consumption. Overall, 2.0% of the population was involved with fishing. Participation in fishing was highest in the 40–44 and 45–49 year classes.</p> <p><i>The 2003 survey of employment indicated that there were a total of 34,561 people employed in Tonga, of which 1,050 (3%) were employed in the category of “fishing”. With respect to participation in small-scale fishing, a 2003 Australian-sponsored study estimated the “number of fishers”: Tongatapu, 6,470; Ha’apai, 2,053; Vava’u, 4,375, or 12,898 total or 12.8% of the country’s population in 2003.</i></p>
Tuvalu	<p>The 2012 census showed that 75.3% of the sampled households participated in some kind of fishing. Overall 9.2% of households in Tuvalu received income from fish sales: 7.2% on Funafuti and 11.0% on the outer islands. Commercial fishing activities were not common – less than 4% of households were involved in these activities. Only 17% of total households had a boat, 16% owned an outboard motor while 27% reported owning a canoe. A total of 436 households in Tuvalu (24.7%) were not involved in any kind of fishing activities. Of these households, 301 were on Funafuti and 135 were on the outer islands.</p> <p><i>The 2002 Population and Housing Census of Tuvalu indicated that 58% of all people participated in fishing during the week before the census, of which 80% was only for “own/family use”, 2% for only sale, and 18% for mixed subsistence/commercial.</i></p>
Vanuatu	<p>The Vanuatu Socio-Economic Atlas uses information from both the 2009 census and the 2010 HIES. It shows the percentage of households that are involved in any fishing activity by province: Torba (76.8%), Sanma (48.7%), Penama (36.1%), Malampa (46.1%), Shefa (43.3%), Tafea (43.1%), Port Vila (9.6%) and Luganville (17.6%); the percentage of households that reported sale of fish/crops/handicrafts as a main source of income: Torba (61.2%), Sanma (67.3%), Penama (67.9%), Malampa (60.0%), Shefa (46.1%), Tafea (60.2%), Port Vila (2.2%) and Luganville (4.4%); and areas with especially high involvement in fishing: Northwest Santo, South Maewo, South Malekula, North Erromongo, South Erromongo, and Aneityum. The Vanuatu 2010 HIES found that more than 75% of the adult population practises at least one form of fishing, whether subsistence or commercial. The survey showed that 2% of urban households and 12% of rural households had income from the sale of fishery products.</p> <p><i>There is not much readily available information on the national level about employment in the urban-based commercial fishing/aquaculture/post-harvest activities. A 2007 Agriculture Census indicated (a) 72% of the rural households in Vanuatu possess fishing gear and engaged in fishing activities during the previous 12 months, (b) these fishing households number 15,758, and (c) of those fishing households, 11,577 (73%) fish mainly for home consumption, 4,127 (26%) for home consumption with occasional selling, and 74 (less than 1%) mainly for sale.</i></p>

Country/ Territory	Recent Information on Fisheries-Related Employment, and Corresponding Information from the Previous Benefish Study (in bold italics)
American Samoa	<p>In 2013 (the latest year for which employment data are available) the tuna canneries employed 2,108 people. This represents 13.1% of the 16,089 people employed in American Samoa. This employment has declined sharply in recent years. In 2003 5,036 people were employed at the canneries, about 28.9% of people employed. A 2006 survey showed that 55% of respondents fished for subsistence to some degree, although most people fished only infrequently. Of those who did fish, 72% fished once a week or less (44% of these fished only 1–2 times per month), while 16% reported fishing ten or more times per month. Approximately 9% of the population surveyed could be considered “frequent subsistence fishermen”.</p> <p><i>A government survey in 2006 showed 5,894 government workers, 4,757 cannery workers and 6,744 employees with the rest of the private sector. The canneries therefore provided 27% of all employment. There were 153 commercial fishers involved in domestic fishing. Data on involvement in subsistence fishing is not readily available.</i></p>
French Polynesia	<p>A 2015 review of labour in French Polynesia stated that the pearl workforce consisted of 1,060 employees in 2014. A 2014 study of the pearl industry stated that at the end of December 2013 there were 815 declared wage earners in pearl farming, but as many of the pearl farms are run as family businesses there are likely to be a large number of non-declared workers.</p> <p><i>In 2007 13 people were involved in non-pearl aquaculture, 7,000 people in pearl culture, 1,800 people in coastal fishing, 1,025 in offshore fishing, and 200 people involved with freshwater fishing. For the relative importance of this involvement: (a) the total population of French Polynesia in 2007 was 259,800, and (b) there were 68,849 “declared” jobs in the economy.</i></p>
Guam	<p>A 2008 Bureau of Statistics and Plans report indicated 1,565 full-time fishermen, 60 part-time fishermen, and 170 occasional fishermen. All of these jobs were filled by men; none were reported to be held by women.</p> <p><i>A study in 2008 stated that the Guam Fishermen’s Cooperative membership includes 164 full-time and part-time fishermen (0.1 percent of Guam’s population) and it processes and markets an estimated 80 percent of the local commercial catch. With respect to subsistence fishing, a 2007 household survey of 400 local residents showed approximately 40 percent of local residents fish on a regular basis, which was identified to be more important as a social activity, rather than an income-generating activity.</i></p>
New Caledonia	<p>A 2015 report gave information on registered commercial fishers in 2010: 613 in coastal fishing and 120 in offshore fishing. A 2014 report from the government fisheries agency updated the information on employment in offshore fishing. It estimated that in 2013 there were 120 onboard crew, 30 people in onshore vessel management, 60 people in processing, and 20 people in fish wholesaling – a total of 230 people.</p> <p><i>About 1,000 people are employed in commercial fishing/aquaculture in New Caledonia which represents about 1.2% of the 80,685 economically active people in the territory. With respect to non-commercial fishing, a study in 2000 indicates that of 1,000 people interviewed in the three provinces of New Caledonia, 50% of the respondents fish one to three times per week.</i></p>
Northern Marianas	<p>An NGO-sponsored study in 2011 stated that more than 50 professional fishers are estimated to work for formal businesses, while the number of independent and semi-subsistence fishers remained unknown. The CNMI Prevailing Wage & Workforce Assessment Study indicated that of the 25,658 people employed in 2014, 425 were employed in “farming fishing and forestry”. No further disaggregation is given.</p> <p><i>The 2000 census and the 2005 HIES give data only disaggregated to the level of “people employed in farming fishing and forestry”: 614 people and 894 people, respectively. A survey in 2006 found that twenty percent of all the people interviewed are active fishermen and go fishing once every week or two.</i></p>

Country/ Territory	Recent Information on Fisheries-Related Employment, and Corresponding Information from the Previous Benefish Study (in bold italics)
Pitcairn Islands	<ul style="list-style-type: none"> An SPC (2011) report states: "There are no full-time fishers, but there are eight part-time commercial fishers, seven men and one woman". Another SPC (2011) report states: "In addition to the eight commercial fishers, there are about 15 non-commercial fishers". <p><i>In 1994 an SPC officer observed that there are eight or nine "hard-core fishers" on the island with another three or four who also fish fairly regularly. 12 people equate to about 19% of the island's population.</i></p>
Tokelau	<p>The report of the 2011 census disaggregated the employment data only to the level of "Labourers, agriculture, and fisheries workers" so it is not possible to determine how many people derive income from fishing. The report does show that males were much more likely than females to help with village fishing (68.4% compared with 6.7% for females). Tokelau residents in the age category 50–59 years had the highest proportion of people who helped with village fishing (44.8%).</p> <p><i>In 2003 an SPC/FFA mission to Tokelau surveyed 153 households on all three atolls and determined that 152 households (99.3%) were involved in fishing.</i></p>
Wallis and Futuna	<p>A report in 2015 by the government statistics agency estimated that there are about 40 professional fishers (i.e. full-time commercial fishers). It also estimated that one in three households does some kind of fishing. Another 2015 report stated that the rate of participation in fishing is 39.3% in Futuna and 28.6% in Wallis.</p> <p><i>A fisheries inventory of Wallis and Futuna in 2001 showed that, of the 333 fishers identified on Wallis, 26% fish only once per week, 54% two times per week, and 20% three or more times per week. Of the 46 fishers on Futuna, only 10 fish often enough to be considered an "artisanal fisher".</i></p>

Source: Employment sections of the country and territory chapters of this book

There is much conflicting information in the table. For example, in Nauru the difference in results between the 2011 census and the 2012/2013 HIES is quite large. The census indicated that just over half (51%) of all households in Nauru were engaged in fishing activities, while the HIES estimated that 26% of households were engaged in fishing.

Other notable features of the employment/participation information in the table and in the country/territory chapters are as follows:

- In several of the countries/territories, in the more general surveys (e.g. census, HIES) fisheries-related employment is reported in an aggregate category that is not very useful for fisheries purposes. Examples include "Skilled agricultural forestry and fishery workers" (Niue), "farming, forestry, and fishing" (Palau), and "Labourers, agriculture, and fisheries workers" (Tokelau).
- Some of the definitions seem somewhat inappropriate for the fisheries sector and have the potential to disadvantage the sector relative to other sectors. As an example, the Palau census defines participation in subsistence activities as "he/she mainly produced goods for his/her own or family's use and needs". When applied to fisheries, this defines a group

that is a small subset of all people involved in subsistence fishing. (i.e. many people are involved in cash employment and subsistence fisheries – and this would not be defined as participation in subsistence fishing.

- Some of the fisheries-related employment information, especially that produced by surveys that are not fisheries focused, is counter-intuitive or just wrong. As an example, in the Kiribati 2010 census it states that 122 people were employed in the category “deepsea fisherman”, a term that is not defined in the census report. If this refers to fishing in the open ocean from skiffs, the 2008 South Tarawa survey described in the Kiribati chapter of this publication shows that more than three times the 2010 census number of people fish in just the open ocean near Tarawa. If “deepsea fisherman” refers to people who work on offshore fishing vessels, there are at least twice that number working on just the Japanese pole-and-line fleet (Gillett 2015).
- Because the commercial fisheries in most Pacific Island countries and territories include large firms as well as small or very small businesses (the latter often in isolated areas), the use of general business surveys and surveys based on tax or retirement fund records are inappropriate for gaining accurate information on employment within the fisheries sector. Such surveys are carried out in about half of the countries/territories in the region and they typically receive responses from the larger firms, which are then assumed to portray the entire sector. This problem seems to be worse in fisheries than in other economic sectors.

In assessing fish abundance it has been said “counting fish is just like counting trees – except you cannot see them and they move around”. Similarly, counting fisheries jobs seems to be more difficult than counting jobs in most other sectors. Much of what is to be counted cannot be done directly; some fishers work in isolated places, sometimes far offshore, at night, or even underwater. Unlike many other sectors, there is no source of indirect but comprehensive information (e.g. using tax or retirement scheme records). The combination of formal and informal work together with varying degrees of participation in subsistence activities further complicates the situation.

To accurately gauge the relative importance of fisheries in national employment requires a survey which covers all sectors of the economy, rather than a fisheries-specific study (e.g. a national census, HIES, or labour survey). The sampling strategy for such a national level study (i.e. national census, HIES, labour survey), must not be biased against particular sectors, which in the

case of fisheries would require at least some dialogue between the formulators of the survey and those with technical expertise in fisheries.

It is clear that reliance on government statistics offices to know what fisheries-related employment information to collect and how to collect it simply does not work. Considerable knowledge of the sector is required to collect meaningful information. Government fisheries officials and fishing industry participants have an important role to play in working with statistics offices in defining terms/categories, formulating survey strategies, and scrutinising survey results.

33.2 Participation of Women in Fisheries

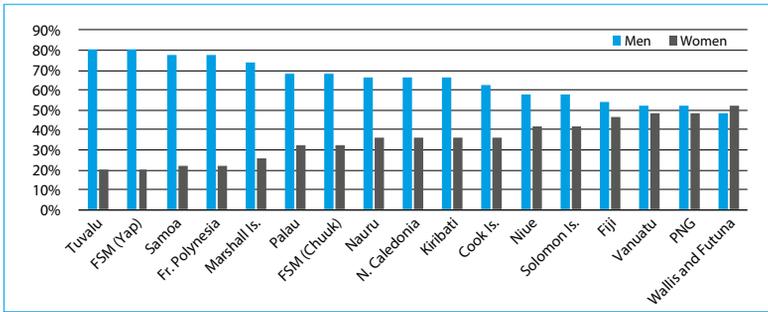
In the previous Benefish study (Gillett 2009) the readily available information on the participation of women in fisheries was presented. A substantial number of studies are listed in that document. One of the notable features of the present study is that there have been few studies on this subject since 2008. An opportunistic search for information on women in fisheries over several months in mid/late 2015 yielded recent findings in only seven countries/territories:

- Niue: The 2009 agriculture census of Niue found that, of the 564 people who engaged in fishing the week before the census night, 201 were females and 363 were males.
- PNG: In 2011 tuna processing employed 4,911 women, i.e. women accounted for 73% of employment related to tuna processing.
- Samoa: A 2012 socio-economic fisheries survey contained much information on gender roles in fisheries. The report stated that both men and women fished around three times per week, with men fishing for an average of 4 hours and catching (on average) 13.7 kg per fishing trip, and women fishing for an average of 5 hours and catching (on average) 10 kg per fishing trip. Men fished about 10 months out of the year, and women fished about 9 months out of the year.
- Solomon Islands: A 2011 report had some information about the role of women in fisheries. It stated that fishing was predominantly a male activity (90% of men participate) with at least one female household member (50% of women) engaged in fishing. Women were engaged in trading of garden and fish products, including cooked food, as well as weaving, production of shell money, and employment in industrial fish processing plants. In the main fish canning factory in Noro, 80% of the 500 workers were women.

- Tuvalu: A “time use” study was carried out in 2013, with the objective of gathering evidence on how men and women in Tuvalu used their time during a day. The study found that men spent an average of 1.37 hours per day fishing, while the amount for women was 0.08 hours.
- Vanuatu: A 2010 report on the Millennium Development Goal stated that a large number of women were engaged in the fisheries sector, however because “fishing” as an activity is usually identified only when selling is involved and women selling fish is not the norm in Vanuatu, women’s activities in the sector remained largely invisible.
- Pitcairn Islands: An SPC (2011) travel report stated that there were eight part-time commercial fishers, seven men and one woman.

Given the many gender-oriented studies in the decade prior to 2008, the few studies on women in fisheries since 2008 is curious. The work of the Forum Fisheries Agency (FFA) in developing national tuna management plans in the early 2000s often included studies of the role of women in tuna industries at the request of the donor – but that work was completed prior to 2008. A review of FFA programmes in mid-2014 (Gillett 2014) urged the agency to include a gender component in its tuna employment surveys – but that work has not yet begun. SPC had a “women in fisheries” section – but that entity took on a larger role several years ago, broadening its ambit to community fisheries. Another possible explanation for the reduced amount of information on women in fisheries in recent years is that gender studies may have continued at the national level, and the documentation is less available than for regional studies.

The SPC ProcFish surveys provide readily available information on the participation of women in fisheries, and they provide the bulk of the information cited in the country and territory chapters of this publication. In that multi-disciplinary region-wide fisheries work, from four to six sites were surveyed across 17 countries/territories or island groups. The results included participation in village-level fishing by gender. This participation is shown for all types of fishing activities combined in Figure 33-1.



Source: SPC (2013)

Figure 33-1: Participation of Men and Women in Fishing (%)

33.3 Age and Fisheries-Related Employment

Detailed age-related fisheries employment data are readily available only for Kiribati (Table 33-1), Tonga (Table 33-2), New Caledonia and Cook Islands.

Table 33-1: Kiribati Fisheries-Related Employment by Age (number of people)

Job Category	Age				
	All	15–24	25–34	35–49	50+
Fishing guides	14	3	4	4	3
Seaweed farmers	126	38	27	44	17
Coastal fisherman	2,730	751	749	845	385
Other fisheries workers (“Kereboki” etc.)	152	37	49	43	23
Deepsea fisherman	122	30	34	45	13
Other fisheries workers (other than above)	7	2	5	0	0
Fishery assistants	27	5	9	11	2
Total	3,178	866	877	992	443

Source: Kiribati 2010 Census of Population and Housing (NSO 2012)

Table 33-2: Involvement in Fishing by Age Class in Tonga (%)

All ages	15-19	20-24	25-29	30-34	35-39	40-44
2.0%	0.8%	1.3%	1.9%	2.6%	2.9%	3.4%
45-49	50-54	55-59	60-64	65-69	70-74	75+
3.4%	2.8%	2.4%	1.6%	1.4%	0.6%	0.3%

Source: Tonga Statistics Department (2012)

In New Caledonia the following information is available on the age of fishers:

- A study in Province Sud of 82 fishing captains showed that in 2013 the average age was 52 years, about 30% were older than 60, and 43% were less than 50 (Province Sud 2014).
- A study in 2013 stated that, despite the population of New Caledonia being young, fishers are getting older, which could be an indication of the non-attractiveness of the sector. The average age of a fisher in the Province Nord was 53.5 years and in the Province Sud was 50 (CNP-MEM 2013).

The Cook Islands 2011 census has some information on the age of fishers. For those residents that are engaged in gardening, tending livestock and fishing as an unpaid activity, participation is highest in the mid-40s age group (about 30% of that age group participates in fishing), whereas there is less participation by teenagers (20%) and by the mid-20s age group (24%).

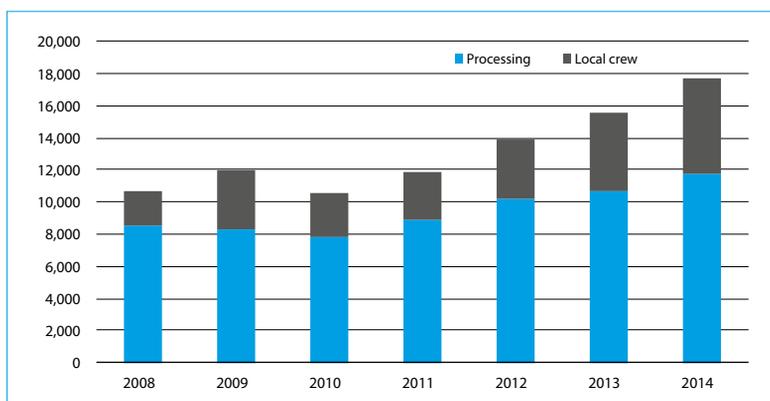
Other than the above, not much information is available on the participation of youth in fisheries. This is ironic considering that youth unemployment is a major problem in the region. A report on the state of Pacific youth (Curtain and Vakaoti, 2011) indicated that the shortage of jobs was at the top of the list of problems that young people faced.

33.4 Employment Related to Tuna

In the early 2000s several FFA studies included information by country of employment related to tuna. From 2008 a system was formalised whereby all FFA member countries reported on tuna industry indicators, including employment. Using this information, a summary of the jobs by year and country is given in Table 33-3 and summarised in Figure 33-2. The information presented circumvents many of the difficulties that hamper the broader fisheries employment studies mentioned above. Information is collected in a uniform manner across the region for defined categories of work.

Table 33-3: Employment Related to Tuna in FFA Member Countries, 2008–2014 (number of people)

	Processing and ancillary								Local crew							
	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014		
Cook Islands		12	16	18	20	15	7		10	9	13	9		9		
FSM	134	198	182	151	97	65	65	313	40	47	44	49		49		
Fiji	1,225	1,054	630	1,018	1,063	1,452	2,000		1,290	228	353	531	1,227	1,667		
Kiribati	10	3	7	15	57	75	75	66	106	126	158	223	355	720		
Marshall	414	443	587	566	560	503	588	537	516	608	581	612	610	678		
Niue	2	1						3	5							
Palau	7	8	7	84	70	36	36		3							
PNG	6,715	5,783	5,600	5,962	6,640	7,000	7,536	819	1,102	1,102	1,153	1,509	1,776	1,776		
Samoa	60	64	52	46	71	33	20	275	177	307	271	266	220	237		
Solomon Islands		697	687	987	1,602	1,361	1,470		120	115	120	239	274	274		
Tonga	21	20	14	17	6	15	12	54	30	17	9	6	7	33		
Tuvalu					2	2	2		213	203	205	246	363	363		
Vanuatu		20	15	27	25	84			132	37	20	9	46	46		



Source: FFA (2015)

Figure 33-2: Employment Related to Tuna in FFA Member Countries, 2008–2014 (number of people)

FFA's 2015 Economic Indicators Report (FFA 2015) gives more detail on the dynamics of employment in the tuna industry in the region (Box 33-1).

Box 33-1: Tuna-Related Employment Information

Total tuna related employment (including government and industry) increased steadily between 2008 and 2014 rising from around 12,000 to 18,000 in 2013 and 22,736 in 2014, underpinned by growth in the onshore processing sector employment whose force comprises mostly women at between 70% and 90%. This sector accounts for more than 50% of total tuna related employment. The onshore processing sector is currently employing almost 12,000 as compared to less than 9,000 in 2008. PNG accounts for 64% of employment in the processing sector with Fiji 17% and Solomon Islands 12%. It is noted that the rise in total employment figures in 2014 reflects not only new investments in PNG but also inclusions of previously excluded enterprises in the data surveys. Greater opportunities are opening up for employment especially in the processing sector. For example, in PNG, several new canneries/loin factories recently commenced or are about to commence operations and a total of 13,500 direct jobs are expected to be created.

Source: FFA (2015)

33.5 Employment in Other Fishery Subsectors

A number of estimates have been made of employment in particular fishery subsectors across the region. Many of these are quite dated. The basis of the estimates ranges from specialised detailed studies to more casual conjecture.

These studies include the following:

- Aquaculture: “More than 7,000 people are employed full-time or part-time in coastal aquaculture, including 5,000 jobs in French Polynesia and 200–600 jobs in each of Cook Islands, Fiji, New Caledonia and Solomon Islands” (Amos et al. 2014).
- Government fisheries agency staff: “Approximately 1,277 staff are employed in PICT fishery agencies, not counting observers and temporary project staff” (Govan 2015).
- Large- and small-scale commercial fishing: Using estimates of vessel numbers, “about 45,000 Pacific Islanders appear to be presently involved in commercial fishing in the region” (Gillett and Lightfoot 2001).
- Foreign fishing vessels: “There are about 1,200 men from the region working on the 10 major fleets. The major employers are Japan (about 30% of the employment), Korea (24%), United States (15%), and Taiwan (13%)” (Gillett and McCoy 1997).
- Trochus processing: “The 14 operational trochus factories in the Pacific Islands employ 213 workers” (World Bank 1997).

Given the amount of effort that regional organisations have focused on discrete fishery subsectors across the region, it is surprising that more work has not been done on estimating the associated employment – especially considering that unemployment is arguably one of the most serious long-term problems of the region. There appear to be no readily available data on total regional employment in activities such as the marine aquarium industry, NGOs involved in fisheries work, domestic fish marketing, beche-de-mer diving/processing, or commercial sportfishing.

With respect to estimating regional employment in fishery subsectors, two points should be noted:

- Any estimate, however crude, may have considerable value, if only to encourage refinement of the estimate. In this regard, SPC’s efforts to estimate aquaculture employment in the region are commendable.
- Some degree of standardisation in terminology and units of measurement is important. It is not very meaningful to compare the number of “full-time equivalents jobs” in one study to the number of people having “full-time or partial employment” in another study.

33.6 Employment Information and Fisheries Management

It is easy to see that the available information on fisheries participation and the associated benefits is scattered and inconsistent. Attempts at improving the situation must address those difficulties identified above. With the possible exception of employment related to tuna, little recent information is available quantifying employment by fishery in any of the countries within the region.

It is important to recognise why information on fisheries participation should be collected. The present study is focused on determining benefits from the fisheries sector; employment is an important benefit from fisheries and it needs to be quantified so that the sector's contribution can be fully appreciated. On a different level, information on fisheries-related employment is critically important in fisheries management. Fisheries management involves trade-offs, and it is important to determine how many people will be affected by decisions, both positively and negatively.

As an example, there has been a debate in Fiji over at least two decades involving the trochus trade. The fisheries management issue is whether to ban the export of unprocessed trochus (and encourage processing and associated employment in Suva), or whether to allow unprocessed exports (which results in a higher price to rural fishers). The precise number of people working at the trochus processing plants is known, but no estimates have ever been made of the numbers of trochus collectors.

Similar debates over the number of people affected by fisheries management decisions have taken place in several other fisheries of the region, including beche-de-mer (Solomon Islands), spearfishing (Fiji), night scuba diving (American Samoa), giant clams (Tonga), and export of reef fish (Palau).

The message is that the availability of employment information by fishery could improve fisheries management decisions. Other disaggregations of employment data that would be useful to fisheries management are by gender, by urban/rural resident, and by local/expatriate. The use of Asian crew versus local crew on locally based tuna vessels is a critical fisheries management issue in several countries of the region, which would be helped by accurate estimates of local crew employment.