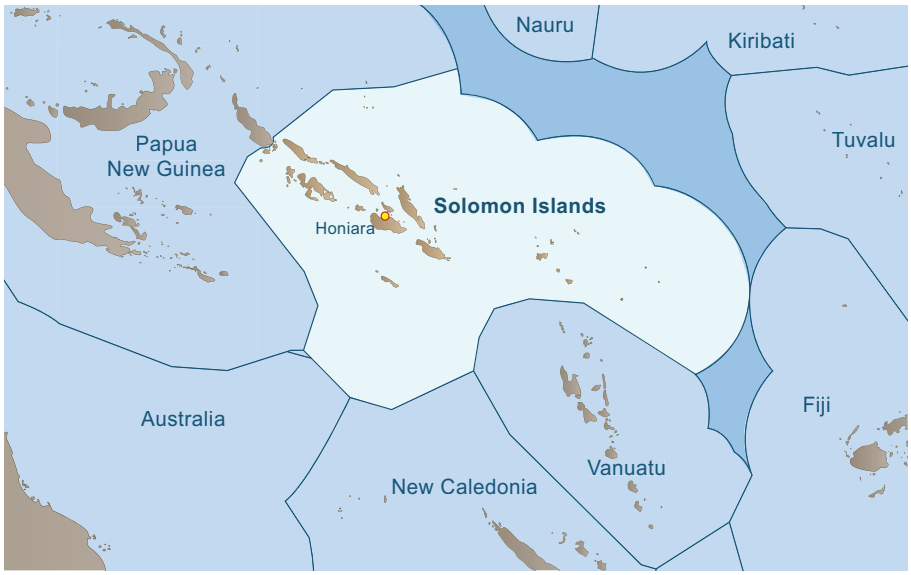
2.17 Solomon Islands



Key features

Population

Year	2010	2035	2050	2100
Population (x 1000)[a]	550	970	1181	1969
Population growth rate[a]	2.7	1.8	1.4	0.6

a = Data from SPC Statistics for Development Programme (www.spc.int/sdp).

EEZ area (km²) 1,553,444

Land area (km²) 27,556

Land as % of EEZ 1.74

Fisheries and aquaculture activities: Oceanic fisheries, coastal fisheries, freshwater and estuarine fisheries, and coastal aquaculture.

Membership of regional fisheries management arrangements: Forum Fisheries Agency; Western and Central Pacific Fisheries Commission; Parties to the Nauru Agreement; South Pacific Tuna and Billfish Subcommittee; Melanesian Spearhead Group.

Surface climate and the ocean

Existing features

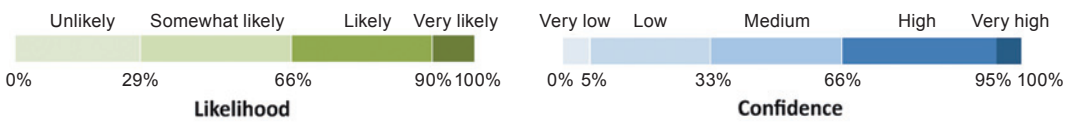
Solomon Islands has a tropical climate {Chapter 2}. Recent air temperatures in Honiara have averaged 27.4°C and average rainfall is ~ 1880 mm per year. Solomon Islands lies mainly within the Western Pacific Warm Pool Province (Warm Pool) {Chapter 4, Section 4.3}. The primary influence on surface climate is the El Niño-Southern Oscillation (ENSO), which also affects the surrounding ocean. Under normal conditions the net primary production (NPP) in the ocean is low due to the deep thermocline. However, NPP increases during El-Niño episodes because the thermocline becomes shallower.

Projected changes to surface climate

Air temperatures and rainfall in Solomon Islands are projected to increase due to climate change under the low (B1) and high (A2) emissions scenarios in 2035 and 2100 {see Chapter 1, Section 1.3 for definition of scenarios} relative to long-term averages {Chapter 2, Section 2.5, Table 2.6}.

Climate feature[a]	1980–1999 average	Projected change			
		B1 2035	A2 2035	B1 2100*	A2 2100
Air temperature (°C)	27.4 (Honiara)	+0.5 to +1.0	+0.5 to +1.0	+1.0 to +1.5	+2.5 to +3.0
Rainfall (mm)	1878 (Honiara)	+5 to +15%	+5 to +20%	+10 to +20%	+10 to +20%
		More extreme wet and dry periods			
Cyclones (no. per year)	1.1	➢ Total number of tropical cyclones may decrease ➢ Cyclones are likely to be more intense			

* Approximates A2 in 2050; a = for more detailed projections of rainfall, air temperature and cyclones in the vicinity of Solomon Islands, see www.cawcr.gov.au/projects/PCCSP.



Projected changes to the ocean

The projected changes to the key features of the tropical Pacific Ocean surrounding Solomon Islands relative to the long-term averages are expected to result in increases in sea surface temperature (SST), sea level and ocean acidification. Changes to ocean

currents, such as the South Equatorial Current and the South Equatorial Counter Current, and the area of the Warm Pool, are also expected to occur {Chapter 3, Sections 3.3 and 3.4, Tables 3.1 and 3.2}.

Ocean feature	1980–1999 average	Projected change			
		B1 2035	A2 2035	B1 2100*	A2 2100
Sea surface temperature (°C)	28.8[b]	+0.6 to +0.8	+0.7 to +0.8	+1.2 to +1.6	+2.2 to +2.7
Sea level (cm)	+6 since 1960				
IPCC **		+8	+8	+18 to +38	+23 to +51
Empirical models ***		+20 to +30	+20 to +30	+70 to +110	+90 to +140
Ocean pH (units)	8.08	-0.1	-0.1	-0.2	-0.3
Currents	Increase in South Pacific gyre	SEC decreases at equator; EUC becomes shallower; SECC decreases and retracts westward			
Warm Pool area (x 10^6 km^2)[a]	7	+230% (20–26)	+250% (22–27)	+480% (36–46)	+770% (48–65)
Nutrient supply	Decreased slightly	Decrease due to increased stratification and shallower mixed layer			< -20%

* Approximates A2 in 2050; ** projections from the IPCC-AR4; *** projections from recent empirical models {Chapter 3, Section 3.3.8}; a = Warm Pool defined as area with temperature above 29°C; b = average for EEZ derived from the HadISST dataset; SEC = South Equatorial Current; EUC = Equatorial Undercurrent; SECC = South Equatorial Counter Current.

Oceanic fisheries

Recent catch and value

Solomon Islands has a significant national tuna fishery within its exclusive economic zone (EEZ) based on purse-seining and pole-and-line fishing. Recent average catches by this fishery (2004–2008) have exceeded 22,600 tonnes per year, worth ~ USD 30 million. Solomon Islands also licenses foreign fleets to fish for tuna in its EEZ. The average annual catch by foreign purse-seine and pole-and-line fleets between 1999 and 2008 was ~ 49,500 tonnes, worth > USD 46.5 million {Chapter 12}. Foreign longline fleets also landed an average of > 4000 tonnes of fish per year between 1999 and 2008, worth > USD 12 million. Significant catches from foreign purse-seine vessels (which average > 65,000 tonnes per year) are landed in Solomon Islands for transhipping. See 'Coastal Fisheries' below for contributions of tuna to nearshore artisanal and small-scale commercial fisheries.

Local oceanic fisheries	Average annual catch (tonnes) 2004–2008	Average annual catch value (USD million)* 2004–2008
Tuna		
Purse-seine	17,870	21.2
Pole-and-line	4540	7.3
Longline	190	1
Other oceanic fish[a]	16	0.02
Total	**22,616**	**29.52**

* Calculated using market value per tonne for 2004–2008; a = billfish catch only, valued at USD 1000 per tonne.

Existing oceanic fish habitat

The Warm Pool is generally poor in nutrients, although net primary production increases during El Niño events, when the depth of the thermocline decreases, bringing more nutrient-rich waters within the photic zone {Chapter 4, Section 4.3.2}. The convergence of the Warm Pool and the Pacific Equatorial Divergence (PEQD) Province {Chapters 4 and 8} creates prime feeding areas for tuna. Changes in the position of this convergence zone due to the El Niño-Southern Oscillation influence the abundance of tuna in the EEZ of Solomon Islands {Chapter 8}.

Projected changes to oceanic fish habitat

Under climate change, the surface area of the Warm Pool is projected to expand {Chapter 4, Table 4.3}. The greater stratification of the water column in the Warm Pool due to higher sea surface temperature {Chapter 3}, and the increased depth of the nutricline {Chapter 4}, are projected to reduce net primary production within the EEZ of Solomon Islands. Relocation of the convergence zone between the Warm Pool and PEQD to the east is also expected to increase the distance between Solomon Islands' EEZ and the prime feeding grounds for tuna {Chapter 8}.

Warm Pool feature	Projected change (%)			
	B1 2035	A2 2035	B1 2100*	A2 2100
Surface area[a]	+18	+21	+26	+48
Location	Eastwards			
Net primary production	-7	-5	-9	-9
Zooplankton biomass	-6	-3	-9	-10

* Approximates A2 in 2050; a = area derived from modelling of nutrients and salinity {Chapter 4, Table 4.3}.

Projected changes in oceanic fisheries production

Preliminary modelling suggests that under the B1 and A2 emissions scenarios, catches of skipjack tuna in the EEZ and archipelagic waters of Solomon Islands are expected to increase slightly in 2035, relative to the 20-year average (1980–2000). However, catches of skipjack and bigeye tuna are projected to decrease under A2 in 2050, and under both scenarios in 2100 {Chapter 8, Section 8.7}. Modelling for yellowfin tuna and albacore is now in progress. The trends for yellowfin tuna are expected to be similar to those for skipjack tuna, whereas albacore are expected to move poleward.

Projected change in skipjack tuna catch (%)			Projected change in bigeye tuna catch (%)		
B1/A2 2035	B1 2100*	A2 2100	B1/A2 2035	B1 2100*	A2 2100
+3	-5	-15	0	-3	-7

* Approximates A2 in 2050.

Coastal fisheries

Recent catch and value

The coastal fisheries of Solomon Islands are made up of four components: demersal fish (bottom-dwelling fish associated with coral reef, mangrove and seagrass habitats), nearshore pelagic fish (including tuna, Spanish mackerel, rainbow runner, wahoo and mahi-mahi), invertebrates targeted for export, and invertebrates gleaned from intertidal and subtidal areas {Chapter 9, Section 9.2.1}. The total annual catch was estimated to be > 18,000 tonnes in 2007, worth > USD 14 million. The commercial catch was 3250 tonnes. Demersal fish are estimated to make up ~ 50% of the total catch.

Feature	Coastal fisheries category				Total	Total value (USD m)*
	Demersal fish	Nearshore pelagic fish[b]	Targeted invertebrates	Inter/subtidal invertebrates		
Catch (tonnes)*	8925	5750	950	2625	18,250	14.3
Contribution (%)[a]	49	31	5	15	100	

* Estimated total catch and value in 2007 (Gillett 2009)[1]; a = method for calculating disaggregated catch data for each category is outlined in Chapter 9 {Appendix 9.2, Supplementary Table 9.1}; b = catch dominated by non-tuna species.

Existing coastal fish habitat

Solomon Islands has > 8500 km^2 areas of coral reef, and significant areas of mangroves, deepwater and intertidal seagrasses, and intertidal sand and mud flats, that support many important coastal fisheries species.

Habitat	Coral reef[a]	Mangrove[b]	Seagrass[b]	Intertidal flat
Area (km²)	8535	525	66	n/a

a = Includes barrier, patch and fringing reefs and reef lagoons {Chapter 5, Table 5.1}; b = values from Chapter 6, Table 6.1; n/a = data not available.

Projected changes to coastal fish habitat

Climate change is expected to add to the existing local threats to coral reefs, mangroves, seagrasses and intertidal flats in Solomon Islands, resulting in declines in the quality and area of all habitats {Chapters 5 and 6}.

Habitat feature[a]	Projected change (%)		
	B1/A2 2035	B1 2100*	A2 2100
Coral cover[b]	-25 to -65	-50 to -75	> -90
Mangrove area	-10	-50	-60
Seagrass area	-5 to -20	-5 to -30	-10 to -35

* Approximates A2 in 2050; a = no estimates in reduction of intertidal flats available; b = assumes there is strong management of coral reefs.

Projected changes in coastal fisheries production

All categories of coastal fisheries in Solomon Islands are projected to show progressive declines in productivity due to both the direct effects (e.g. increased SST) and indirect effects (changes to fish habitats) of climate change {Chapter 9, Section 9.5}.

Coastal fisheries category	Projected change (%)			Main effects
	B1/A2 2035	B1 2100*	A2 2100	
Demersal fish	-2 to -5	-20	-20 to -50	Habitat loss and reduced recruitment (due to increasing SST and reduced currents)
Nearshore pelagic fish[a]	0	-10	-15 to -20	Reduced production of zooplankton in food webs for non-tuna species and changes in distribution of tuna
Targeted invertebrates	-2 to -5	-10	-20	Habitat degradation, and declines in aragonite saturation due to ocean acidification
Inter/subtidal invertebrates	0	-5	-10	Declines in aragonite saturation due to ocean acidification

* Approximates A2 in 2050; a = tuna comprise part of the nearshore pelagic fishery {Chapter 9, Tables 9.8 and 9.10}.

The overall projected change to coastal fisheries catch reflects the relatively high reliance on demersal fish and the projected decrease in productivity of all components of the fishery. As a result, total catches from coastal fisheries in Solomon Islands are projected to decrease slightly under both scenarios in 2035, and continue to decline under A2 in 2050, and under both scenarios in 2100, particularly under A2.

Coastal fisheries category	Contrib. (%)**	Projected change in productivity (P) and catch (%)					
		B1/A2 2035		B1 2100*		A2 2100	
		P***	Catch	P***	Catch	P***	Catch
Demersal fish	49	-3.5	-2	-20	-10	-35	-17
Nearshore pelagic fish	31	0	0	-10	-3	-17.5	-6
Targeted invertebrates	5	-3.5	-0.2	-10	-0.5	-20	-1
Inter/subtidal invertebrates	15	0	0	-5	-0.7	-10	-1
Total catch[a]			**-2**		**-14**		**-25**

* Approximates A2 in 2050; ** contribution of each component to total coastal fisheries catch in Solomon Islands; *** median projected change in productivity based on range in Chapter 9; a = assumes that proportion of each category remains constant.

Freshwater and estuarine fisheries

Recent catch and value

The main freshwater and estuarine species caught in Solomon Islands include flagtails (jungle perch), freshwater snappers, mullet, eels, gobies, whitebait and *Macrobrachium*. These species are taken mostly by subsistence fishers but some species have potential value for recreational fisheries. The estimated annual freshwater fish catch in 2007 was 2000 tonnes, worth USD 1.5 million {Chapter 10}.

Existing freshwater and estuarine fish habitat

The larger rivers of Solomon Islands provide a diversity of freshwater and estuarine fish habitats. Lake Tegano on the island of Rennell is the largest lake in the non-continental islands of the Pacific. The low lakes of Tetepare Island (Lakes Bangatu and Saromana) also have diverse fish communities {Chapter 7, Section 7.2.5.6}.

Island	Largest river	Catchment area (km^2)	River length (km)
Malaita	Wairaha	486	33
Guadalcanal	Lungga	394	50
Rennell	Lake Tegano	155[a]	-

a = Actual surface area of lake.

Projected changes to freshwater and estuarine fish habitat

The higher projected rainfall for Solomon Islands {Chapter 2, Section 2.5.2} is likely to result in increases in the area and quality of all freshwater fish habitats {Chapter 7, Table 7.5}. Sea-level rise is expected to increase the area of estuarine habitat {Chapter 7}.

Projected changes to freshwater and estuarine fish habitat area (%)		
B1/A2 2035	**B1 2100***	**A2 2100**
-5 to +10	-5 to +20	+5 to +10

* Approximates A2 in 2050.

Projected changes in freshwater and estuarine fisheries production

Higher projected rainfall and river flows are expected to result in slightly improved production from freshwater and estuarine fisheries in Solomon Islands. River flow increases the availability and quality of habitats, provides cues for fish migration, and enhances reproduction and recruitment {Chapter 10, Section 10.5}.

Projected changes in freshwater and estuarine fish catch (%)		
B1/A2 2035	**B1 2100***	**A2 2100**
0 to +2.5	+7.5	+7.5

* Approximates A2 in 2050.

Aquaculture

Recent and potential production

Aquaculture commodities in Solomon Islands are mainly those produced for livelihoods in coastal waters such as seaweed (400 tonnes in 2009) and marine ornamentals (e.g. giant clams and coral fragments). Penaeid shrimp and *Macrobrachium* have been produced in the past, and there may be opportunities to grow these species again in the future. There are good prospects for freshwater pond aquaculture for food security, based on Nile tilapia and milkfish. Research has also been done to pave the way for development of pearl farming, and releasing cultured sea cucumbers, giant clams and trochus into the wild.

Existing and projected environmental features

Increasing SST and rainfall is expected to reduce the number of sites where seaweed can be successfully grown {Chapter 11}. Survival and growth of ornamental products, pearl oyster spat, sea cucumbers and trochus are also likely to be affected adversely by higher SST and rainfall, and increasing acidification of the ocean {Chapter 11}. Higher rainfall and air temperatures are expected to favour conditions for pond aquaculture in Solomon Islands.

Environmental feature	1980–1999 average	Projected change			
		B1 2035	A2 2035	B1 2100*	A2 2100
Air temperature (°C)	27.3[a]	+0.5 to +1.0	+0.5 to +1.0	+1.0 to +1.5	+2.5 to +3.0
Annual rainfall (mm)	1878[a]	+5 to +15%	+5 to +20%	+10 to +20%	+10 to +20%
Cyclones (no. per year)	1.1	➢ Total number of tropical cyclones may decrease ➢ Cyclones are likely to be more intense			
Sea surface temperature (°C)	28.8	+0.6 to +0.8	+0.7 to +0.8	+1.2 to +1.6	+2.2 to +2.7
Ocean pH (units)	8.08	-0.1	-0.1	-0.2	-0.3

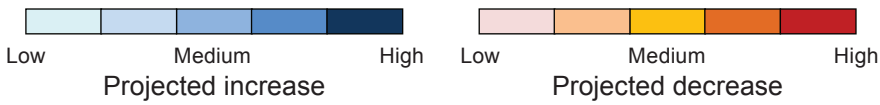
* Approximates A2 in 2050; a = data for Honiara.

Projected changes in aquaculture production

The projected effects of climate change on aquaculture in Solomon Islands are mixed. The production of commodities in coastal waters is likely to be affected adversely by increases in SST, rainfall, ocean acidification and possibly stronger storm surge from more severe cyclones {Chapter 11, Table 11.5}. Any development of pond aquaculture in Solomon Islands is expected to be enhanced by increased rainfall, river flows and warmer temperatures, provided ponds are located where they will not be affected by floods or storm surge.

Aquaculture commodity	Use	Projected change		
		B1/A2 2035	B1 2100*	A2 2100
Existing				
Seaweed	Livelihoods	↓ ■ ■	↓ ■ ■	↓ ■ ■
Marine ornamentals	Livelihoods	↓ ■ ■	↓ ■ ■	↓ ■ ■
Potential				
Tilapia	Food security	↑ ■ ■	↑ ■ ■	↑ ■ ■
Milkfish	Food security	↑ ■ ■	↑ ■ ■	↑ ■ ■
Pearls	Livelihoods	↓ ■ ■	↓ ■ ■	↓ ■ ■
Freshwater prawn	Livelihoods	↑ ■ ■	↓ ■ ■	↓ ■ ■
Sea cucumber	Livelihoods	↓ ■ ■	↓ ■ ■	↓ ■ ■
Trochus	Livelihoods	↓ ■ ■	↓ ■ ■	↓ ■ ■

* Approximates A2 in 2050.



Economic and social implications

Economic development and government revenue

Current contributions

The locally-based surface tuna fishery contributed 3.1% and the longline fishery 0.2%, to the gross domestic product (GDP) of Solomon Islands in 2007 {Chapter 12}. When the value of processing tuna is added to fishing operations, the average combined contribution to GDP increased to 4.6%, worth USD 22 million. Licence fees from foreign purse-seine vessels (and national vessels) contributed > 4% to government revenue (GR) in 2007.

Industrial fishery	Contribution to GDP*		Contribution to GR	
	USD m	GDP (%)	USD m	GR (%)
Surface[a]	14	3.1	11.8	4.4
Longline	1.1	0.2	0	0

* Information for 2007, when national GDP was USD 457 million and GR was USD 267 million (Gillett 2009)[1]; a = locally-based purse-seine and pole-and-line fleets.

Projected effects of climate change

The projected range of changes to GDP and government revenue due to the effects of climate change on the distribution and abundance of tuna are expected to be relatively minor under the A2 emissions scenario due to the size of the economy of Solomon Islands {Chapter 12}.

Projected changes to GDP (%)**			Projected changes to GR (%)		
B1/A2 2035	B1 2100*	A2 2100	B1/A2 2035	B1 2100*	A2 2100
+0.1 to +0.2	-0.1 to -0.3	-0.3 to -0.8	0 to +0.2	0 to -0.3	0 to -0.8

* Approximates A2 in 2050; ** information for 2007, when GDP was USD 457 million and GR was USD 267 million (Gillet 2009)[1].

Food security

Solomon Islands is among the group of PICTs (Group 3) where the estimated sustainable production of fish and invertebrates from coral reefs and other coastal habitats will not supply the future population with the 35 kg of fish per person per year recommended for good nutrition[i] {Chapter 12, Section 12.7.1}.

Current contributions of fish to food security

Average national fish consumption in Solomon Islands is estimated to be 33 kg per person per year[2], close to the recommended levels for good nutrition. At present, coastal habitats in Solomon Islands are estimated to be able to supply a surplus of 15 kg of fish per person per year above the recommended 35 kg.

Fish consumption per person (kg)			Animal protein from fish (%)		Fish provided by subsistence catch (%)	
National	Rural	Urban	Rural	Urban	Rural	Urban
33	31	45	94	83	73	13

Effects of population growth

Solomon Islands will have a rapidly increasing total demand for fish for food security due to the large predicted growth in its population. Therefore, the current estimated fish surplus changes to a shortfall of 7 kg per person per year in 2035, 12 kg in 2050 and 21 kg in 2100.

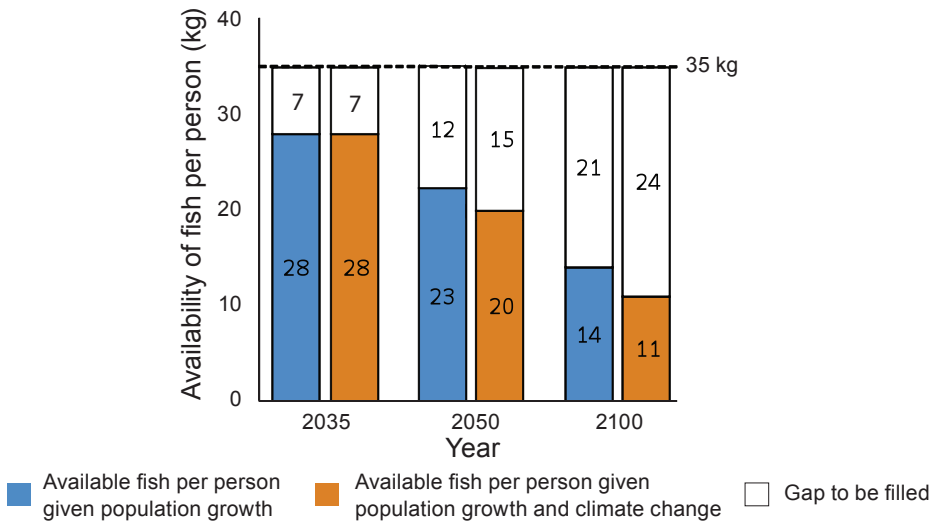
Variable	2010	2035	2050	2100
Population (x 1000)	550	970	1181	1969
Fish available per person (kg/year)[a]	50	28	23	14
Gap (kg/person/year)[b]	(+15)	7	12	21

a = Based on 3 tonnes of fish per km^2 of coral reef habitat {Chapter 9}; b = relative to recommended consumption of 35 kg per person per year.

i Based on fish contributing 50% of dietary protein as recommended by the SPC Public Health Programme (SPC 2008)[25].

Additional effects of climate change

Solomon Islands faces further declines in the fish available per person due to the combined effects of population growth and climate change. By 2050, climate change will cause the gap between the fish needed per person for good nutrition, and the fish available from coral reefs, to increase from 12 to 15 kg per person per year. By 2100, the gap is estimated to increase from 21 to 24 kg per person per year.

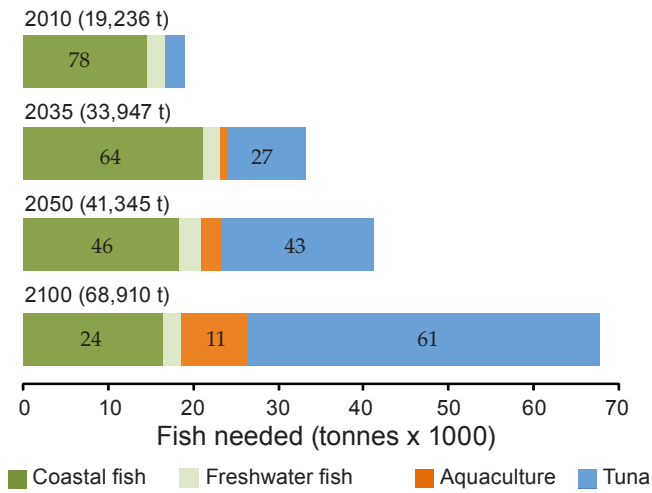


Relative effects of population growth and climate change (A2 emissions scenario) on recommended annual fish consumption in Solomon Islands.

Filling the gap

Tuna is the only resource available to Solomon Islands that can supply the shortfall in fish from coral reefs and other coastal habitats for food. This gap will need to be filled by tuna because freshwater fisheries and any development of pond aquaculture are only expected to be able to provide minor quantities of fish. The role of tuna becomes increasingly important in 2050 and 2100. Pond aquaculture could be important where access to more tuna is difficult to provide.

The implication is that an increasing proportion of the annual average tuna catch will need to be allocated over time to provide the quantities of fish recommended for good nutrition of the nation's population. The proportions of the total amount of fish needed for food security to be contributed by tuna reach 27% in 2035, 43% in 2050, and 61% in 2100.



Fish (in tonnes) needed for future food security in Solomon Islands, and the recommended contributions (%) of fisheries resources and aquaculture production required to meet future needs.

Livelihoods

Current contributions

Large numbers of full-time and part-time jobs have been created through tuna fishing and processing in Solomon Islands, although they represent only a low percentage of total employment in the nation due to the relatively large population. Coastal fisheries also provide important opportunities to earn income for coastal communities, with > 60% of households in representative coastal communities deriving their first or second incomes from catching and selling fish. Aquaculture provides > 600 jobs, mainly through seaweed farming[4].

Jobs on tuna vessels			Jobs in shore-based tuna processing			Coastal households earning income from fishing (%)			Jobs in aquaculture*
2002	2006	2008	2002	2006	2008	1st	2nd	Both	2007
464	66	107	422	330	827	29	32	61	610

* Ponia (2010)[4]; information derived from Chapter 12, Table 12.6 and the SPC PROCFish Project.

Projected effects of climate change

The effects of climate change on the potential to create more livelihoods based on fisheries and aquaculture are difficult to estimate because there is still scope to derive new jobs from oceanic fisheries, the nearshore component of coastal fisheries and pond aquaculture. However, the A2 emissions scenario is expected to eventually enhance or retard these opportunities as indicated below.

Year	Projected change under A2 scenario				
	Oceanic fisheries**	Coastal fisheries		Aquaculture	
		Nearshore pelagic fish	Other resources	Ponds	Coastal
Present*	⇧	⇧	⇩	⇧	⇧
2035	↑	No effect	↓	↑	↓
2050	No effect	↓	↓	↑	↓
2100	↓	↓	↓	↑	↓

* Indicates general direction of new opportunities for livelihoods based on the activity; ** based on projected changes in skipjack tuna catches; freshwater and estuarine fisheries not included due to their subsistence role.

Adaptations and suggested policies

The plans Solomon Islands has to derive greater socio-economic benefits from fisheries and aquaculture will depend heavily on interventions to:

1. secure access to the tuna required for canneries, and maximise the efficiency of industrial fishing operations;
2. increase access to tuna to provide the fish needed for food security for both rural and urban communities; and
3. increase the number of livelihoods that can be based on tuna fishing and processing, and on aquaculture.

The adaptations and suggested policies to achieve these plans under a changing climate are summarised below (see Section 3 for details).

Economic development and government revenue

Adaptation no. (Section 3.2)	Summary of adaptation	Supporting policy no. (Section 3.3)
E1	Full implementation of sustainable fishing effort schemes	E1, E2, E4–E6
E2	Diversify sources of fish for canneries	E1–E5, E7
E3	Immediate conservation management measures for bigeye tuna	E7, E8
E4	Energy efficiency programmes for industrial tuna fleets	E9
E5	Environmentally-friendly fishing operations	
E6	Gender-sensitive fish processing operations	
E7	Safety at sea	E10
E8	Climate-proof infrastructure	E11
E9	Pan-Pacific tuna management	E2

Food security

Adaptation no. (Section 3.4)	Summary of adaptation	Supporting policy no. (Section 3.5)
F1	Manage and restore vegetation in catchments	F1, F2, F18
F2	Foster the care of coastal fish habitats	F1–F3, F18
F3	Provide for landward migration of coastal fish habitats	F4, F5, F18
F4	Allow for expansion of freshwater habitats	F4, F18
F5	Sustain production of coastal demersal fish and invertebrates	F6, F7, F13, F18
F6	Diversify catches of coastal demersal fish	F6, F13, F18
F7	Manage freshwater and estuarine fisheries to harness opportunities	
F8	Increase access to tuna for urban and rural populations	F8–F13, F18
F9	Develop pond aquaculture to diversify the supply of fish	F13–16, F18
F10	Develop coastal fisheries for small pelagic fish	F13, F17, F18
F11	Improve post-harvest methods	F17, F18

Sustainable livelihoods

Adaptation no. (Section 3.6)	Summary of adaptation	Supporting policy no. (Section 3.7)
L1	Improve technical and business skills of communities	L1, L2
L2	Rebuild populations of sea cucumbers and trochus	L2
L3	Develop coral reef ecotourism ventures	L3
L4	Diversify production of coastal aquaculture commodities	L4, L5
L5	Modify locations and infrastructure for coastal aquaculture	L6