

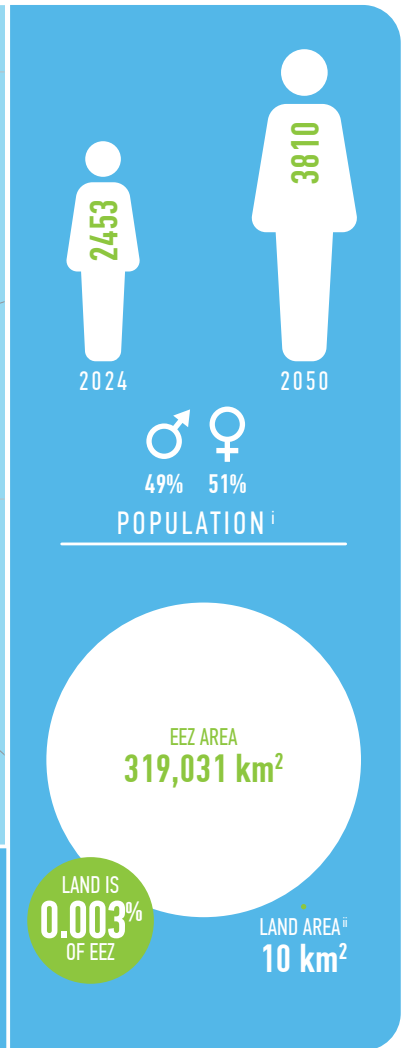
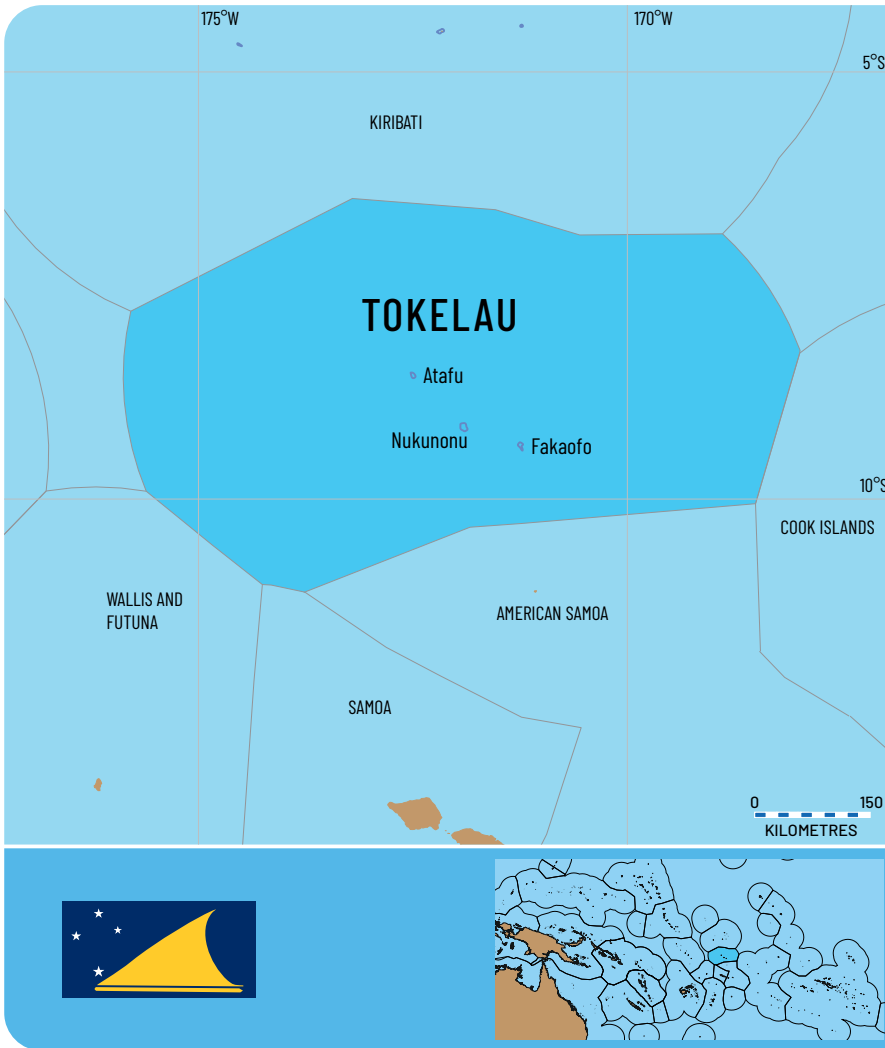


TOKELAU





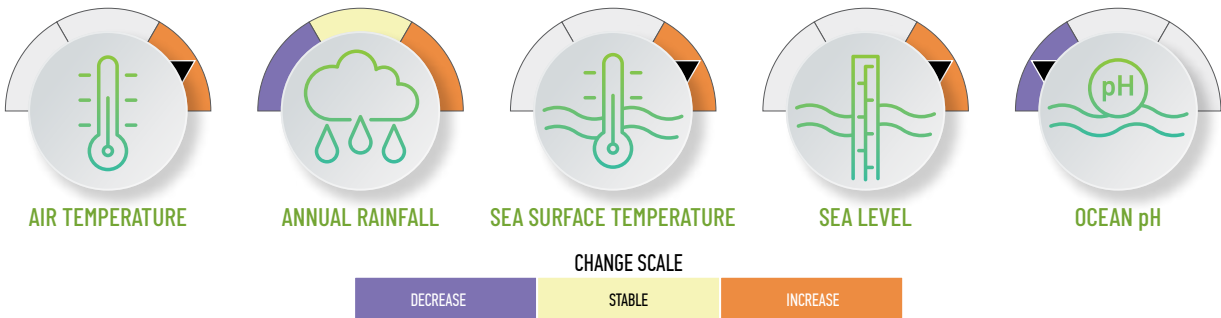
TOKELAU



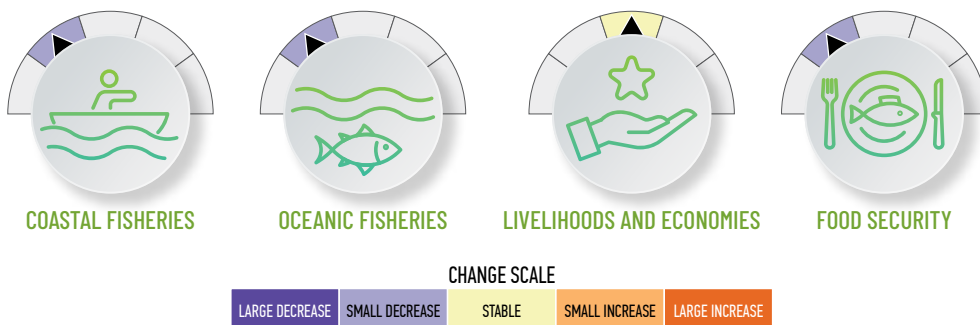
* Annual average using 2014–2024 data

SUMMARY OF CLIMATE CHANGE PROJECTIONS

2050



SUMMARY OF CLIMATE CHANGE IMPLICATIONSⁱⁱⁱ



ⁱ Data source: SPC Pacific Data Hub <https://pacificdata.org/population-dashboard>

ⁱⁱ Data source: SPC Statistics for Development Division <https://sdd.spc.int>

ⁱⁱⁱ Relative to the Reference Periods 2010–2020 for coastal fisheries and 1980–2010 for oceanic fisheries.

RECOMMENDED ADAPTATION ACTIONS

These recommended adaptations are based on the key vulnerabilities and implications of climate change for fisheries and aquaculture (further details in Chapter 10) and should be initiated or strengthened. A range of supporting policies are provided in Table 10.1 for decision-makers to select those that are most appropriate to their context and priorities. Central to all future adaptation are the following principles:

1. Strengthen data collection by improving (or establishing) national fisheries and aquaculture monitoring systems linked to management decision-making.
2. Integrate local knowledge to inform adaptation actions for coastal and freshwater ecosystems, food security, and cultural heritage. Equity - especially gender equity – and social inclusion need to be a key focus.
3. Implement effective governance, including through community-based management and scaling-up of successful initiatives, to ensure adaptation actions reflect local needs and priorities.
4. Diversify and secure funding to support national- and community-level actions, alongside capacity building to sustain adaptation initiatives.



Food and nutrition security

Recommended adaptations

Food and Nutrition 1: Implement sustainable ecosystem-based approach to fisheries management

Food and Nutrition 7: Promote education and awareness on the importance of protecting aquatic habitats, species and the foods they supply



Sustainable livelihoods

Recommended adaptations

Livelihoods 3: Diversify production of fisheries and aquaculture commodities

Livelihoods 4: Improve technical and business viability of fisheries



Economies and government revenue

Recommended adaptations

Economic Revenue 1: Implement climate-informed fisheries management

Economic Revenue 2: Develop policies and strategies that integrate climate change implications into fisheries and aquaculture management

Economic Revenue 3: Implement energy efficiency programs for fisheries and aquaculture

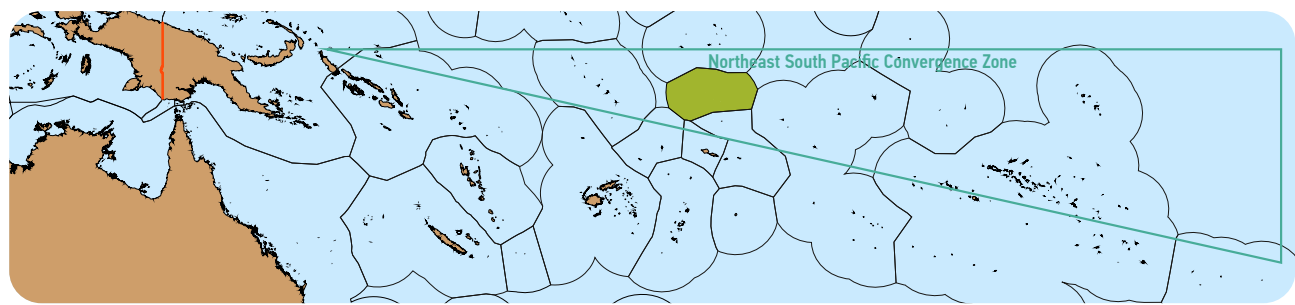
Economic Revenue 4: Promote improved safety at sea

Economic Revenue 5: Maintain the contribution of fisheries and aquaculture to government revenue and economies

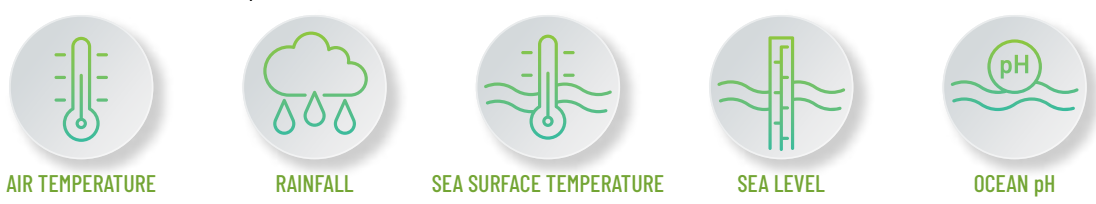
Economic Revenue 6: Climate-proof infrastructure

Due to the existential crisis that Tokelau faces in relation to sea-level rise and loss of land, economic policies for climate justice and securing fisheries rights in high seas areas – equivalent to in-zone rights (e.g. transferability of allocation schemes to the high seas areas) and equivalent enforcement – are critical.

Projected changes in atmospheric and oceanic climate



Tokelau is in the Northeast Pacific Convergence climate zone and is expected to experience the following climate changes by 2050 under a medium greenhouse gas emissions scenario (SSP2-4.5) and a high emissions scenario (SSP5-8.5)^{iv}, relative to 1995–2014 baseline (further details in Chapter 2).



	AIR TEMPERATURE	RAINFALL	SEA SURFACE TEMPERATURE	SEA LEVEL	OCEAN pH	
2050	MEDIUM EMISSIONS (SSP2-4.5)	+0.7 to +1.1 °C	-2.3 to +5.5 %	+0.6 to +1.1 °C	+0.1 to +0.3 m	-0.1
	HIGH EMISSIONS (SSP5-8.5)	+0.9 to +1.6 °C	-2.8 to +6.4 %	+0.8 to +1.5 °C	+0.2 to +0.4 m	-0.1
	CONFIDENCE ^v	HIGH	MEDIUM	HIGH	HIGH	HIGH

Tokelau is also expected to experience the following changes to regional climate processes by 2090 under a medium and high greenhouse gas emissions scenario, relative to 1995–2014 baseline.



	TROPICAL CYCLONES	EL NIÑO SOUTHERN OSCILLATION (ENSO)	MARINE HEATWAVES
2090	MEDIUM EMISSIONS (SSP2-4.5)	Decrease in frequency; Increase in intensity	2–9 times more frequent (global projection)
	HIGH EMISSIONS (SSP5-8.5)		3–15 times more frequent (global projection)
	CONFIDENCE ^v	LOW TO MEDIUM	LOW



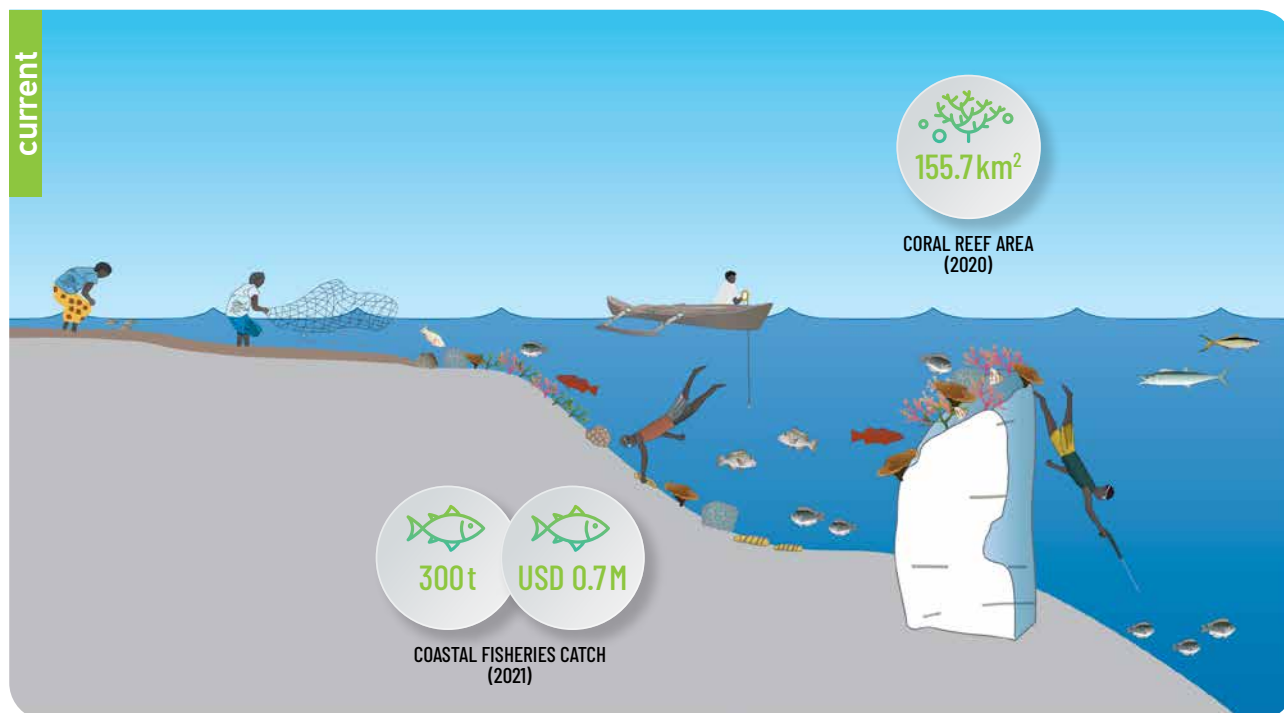
	OCEAN CIRCULATION	OCEAN STRATIFICATION	OCEAN OXYGEN CONTENT	NITRATE CONCENTRATION
2090	MEDIUM EMISSIONS (SSP2-4.5)	Intensification and poleward extension of northern and southern hemisphere subtropical gyres	-6.6 %	-0.60 mmol/m ³
	HIGH EMISSIONS (SSP5-8.5)		+0.58 kg/m ³ (between 0 and 200 m); Mixed layer depth shoals by 19.5 m (global)	-11.2 %
	CONFIDENCE ^v	MEDIUM	VERY HIGH	HIGH



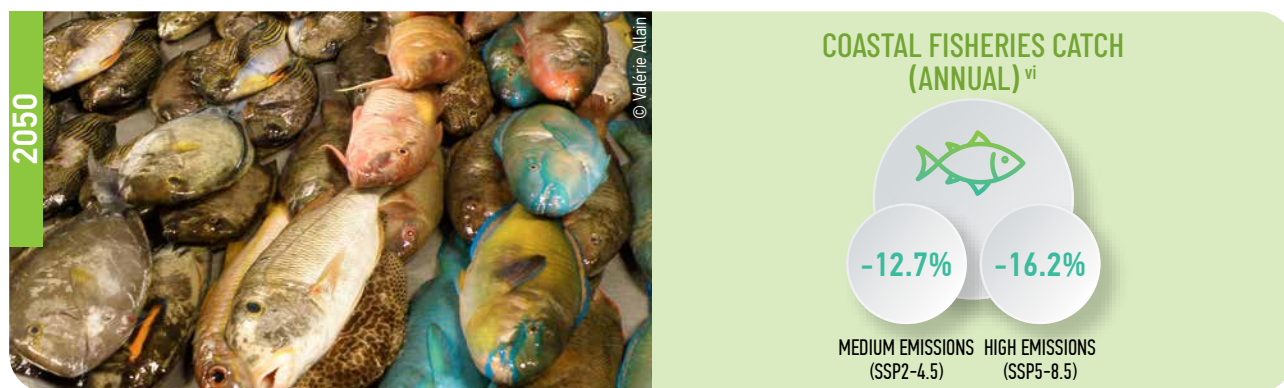
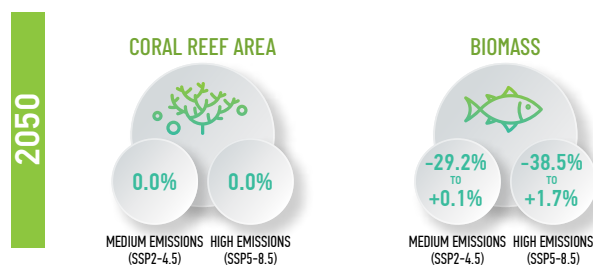
^{iv} The shared socioeconomic pathways (SSP) represent plausible futures of how society's choices might affect greenhouse gas emissions, and how those choices might influence climate change.
^v Confidence levels reflect uncertainty in attribution of the observed impact to climate change.

Coastal fisheries

Coastal fisheries in Tokelau target demersal fish (including parrotfish and soldierfish), invertebrates for sale (e.g. sea cucumbers) and gleaned from intertidal habitats (e.g. clams), and nearshore pelagic fish (including tuna and flying fish) using a range of fishing methods. These species are critically important for food, with limited commercial fisheries providing local livelihoods or jobs (further details in Chapter 3).



Coastal fish and invertebrates are expected to be directly impacted by increasing sea surface temperature, ocean acidification (declining pH), and changing rainfall patterns, and indirectly impacted by declines in coastal habitats (coral reefs, seagrass meadows and mangroves) by 2050. This will drive changes in habitat area, fish biomass and coastal fisheries catches.

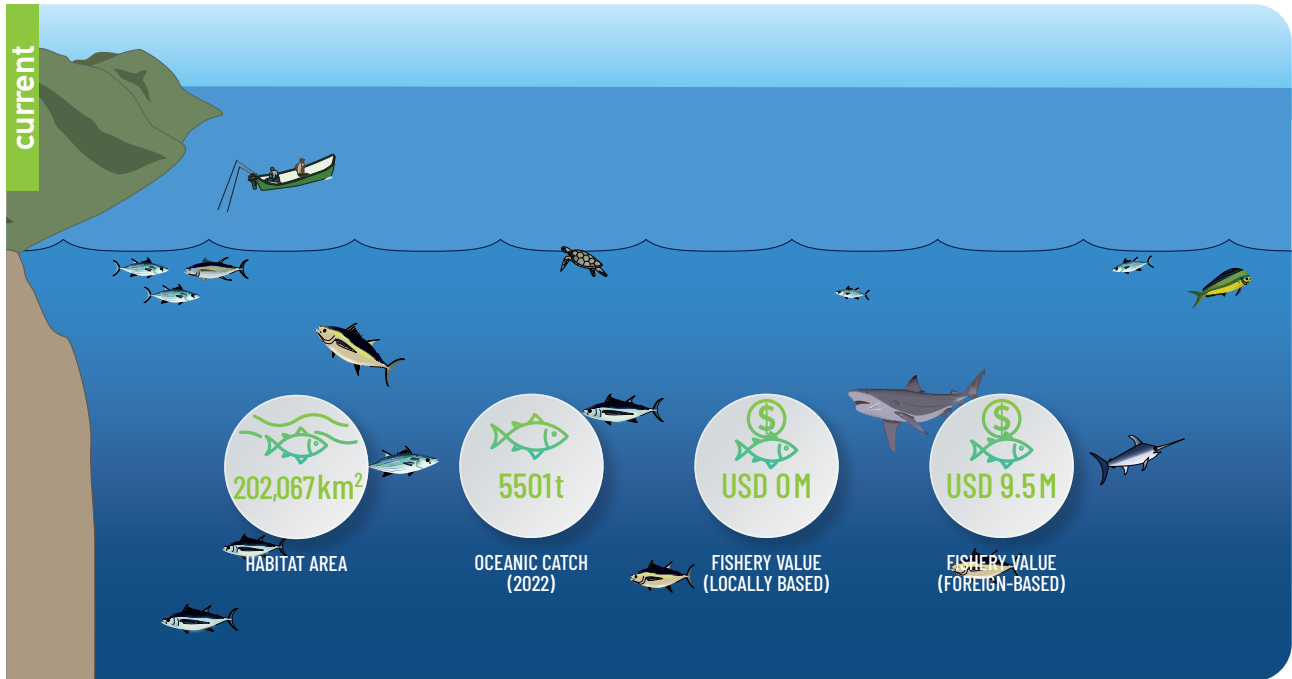


Stock assessments are lacking so the status of coastal fisheries cannot be determined.

^{vi} Relative to the Reference Period 2010–2020.

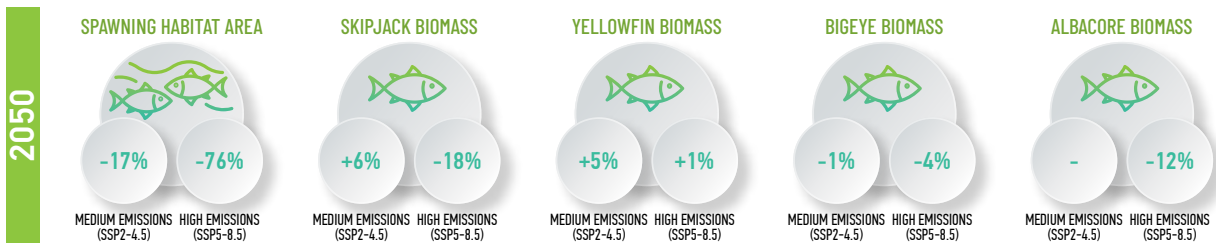
Oceanic fisheries

Offshore fisheries in Tokelau target four species of tuna, mainly skipjack and albacore, with moderate catches of yellowfin and bigeye. In 2021, there were no locally based offshore fishing fleet. Foreign-based fleets consisted of 37 purse-seine and 16 longline vessels that fish within Tokelau’s exclusive economic zone (EEZ)^{vii}.



Offshore tuna are expected to be directly impacted by changes in ocean temperature, stratification, and oxygen content, and indirectly impacted by changes in available spawning habitat area by 2050. This is expected to shift the distribution of tuna, with yellowfin, bigeye and albacore moving into high seas areas.

PROJECTED BIOMASS (WITHOUT FISHING) RELATIVE TO 2001–2010 REFERENCE PERIOD



Freshwater and estuarine fisheries

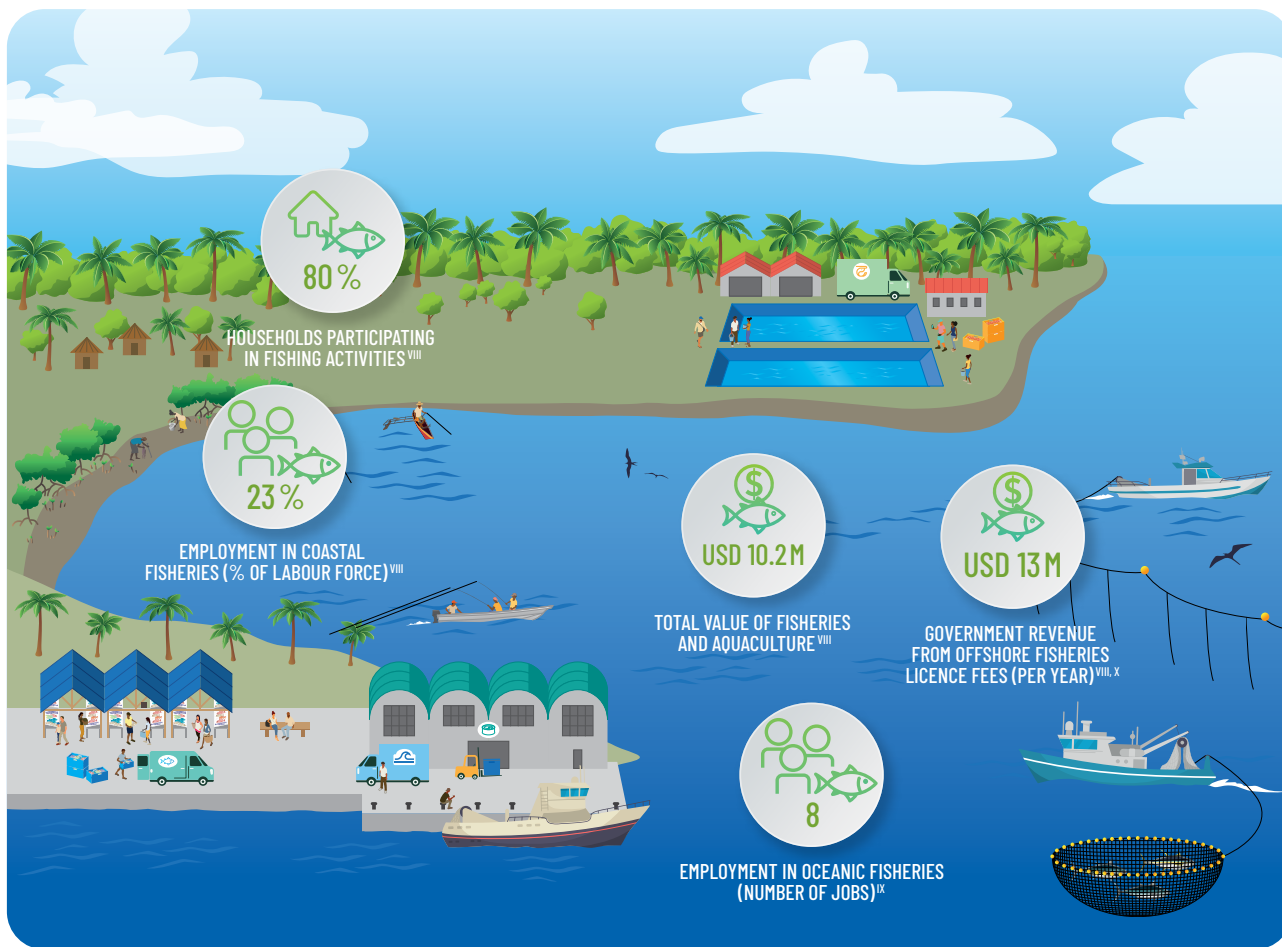
There is currently no freshwater or estuarine fisheries production, but future opportunities may exist.

Aquaculture

There is currently no aquaculture production, but future opportunities may exist.

Livelihoods and economies

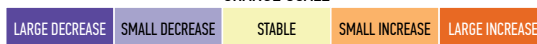
Fisheries are important for local culture and trade, and providing household income, jobs and government revenue in Tokelau (further details in Chapter 7).



The projected change in tuna distribution is expected to decrease government revenue between 10 to 15% by 2050. No significant impacts are expected on livelihoods or GDP because fishing is primarily for subsistence and not commercial purposes.



CHANGE SCALE



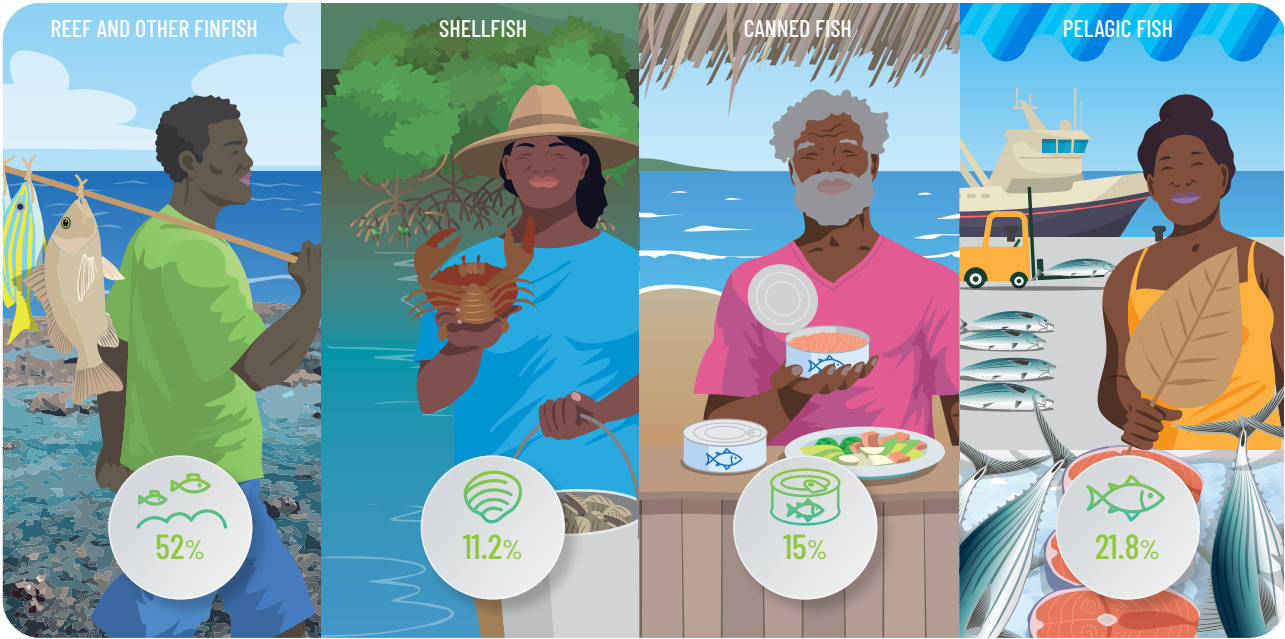
viii Data source: Gillett R., Fong M. (2023) Fisheries in the economies of Pacific Island countries and territories (Benefish Study 4). Pacific Community (SPC), Noumea, New Caledonia.

ix Primarily in tuna-related employment, including harvest, processing, observers, government and ancillary services. Data source: FFA (2022) Tuna Fishery Report Card 2022. Pacific Islands Forum Fisheries Agency, Honiara, Solomon Islands.

x Average value 2017-2021

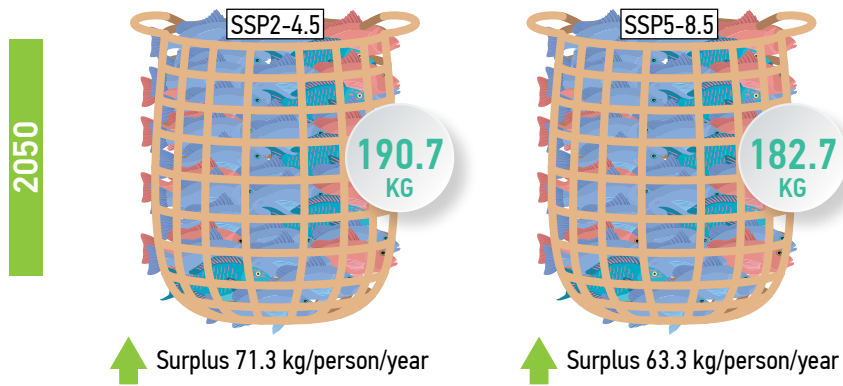
Aquatic food security

Aquatic (blue) foods provide a critically important source of nutrition in Tokelau, and current consumption is 119 kg/person/year, including locally and imported reef and other finfish, shellfish, canned fish and pelagic fish (further details in Chapter 8)^{xi}.

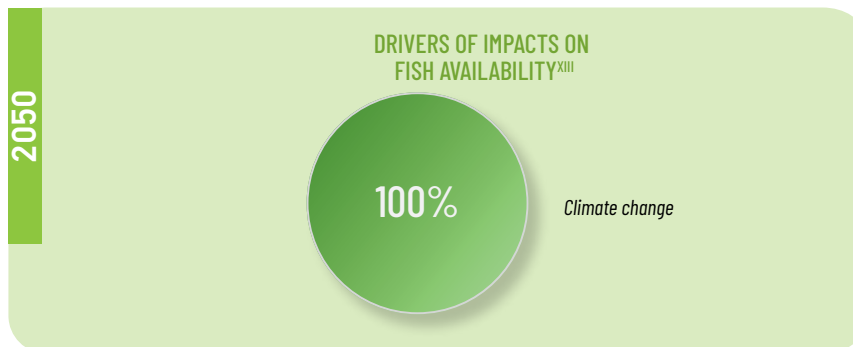


Tokelau is not projected to experience a deficit in fish supply by 2050 based on current fisheries catch rates and average consumption. However, fish supply is expected to decline as a result of climate change impacts on coastal fisheries. There will be a sufficient supply of whole fish available by 2050^{xii} and sufficient access to aquatic foods, resulting in **low vulnerability**.

HOW MUCH FISH WILL BE AVAILABLE PER PERSON IN 2050?



To meet the future needs of a growing population and address declining catches for local consumption under climate change, sustainable coastal and estuarine fisheries management is essential.



^{xi} Data estimated for whole fish from: Sharp M.K., Andrew N.L. (2024) Aquatic food consumption in the Pacific region. Food Systems Brief No. 22. Pacific Community, Noumea, New Caledonia. Note that reef and other finfish include freshwater and estuarine fish.

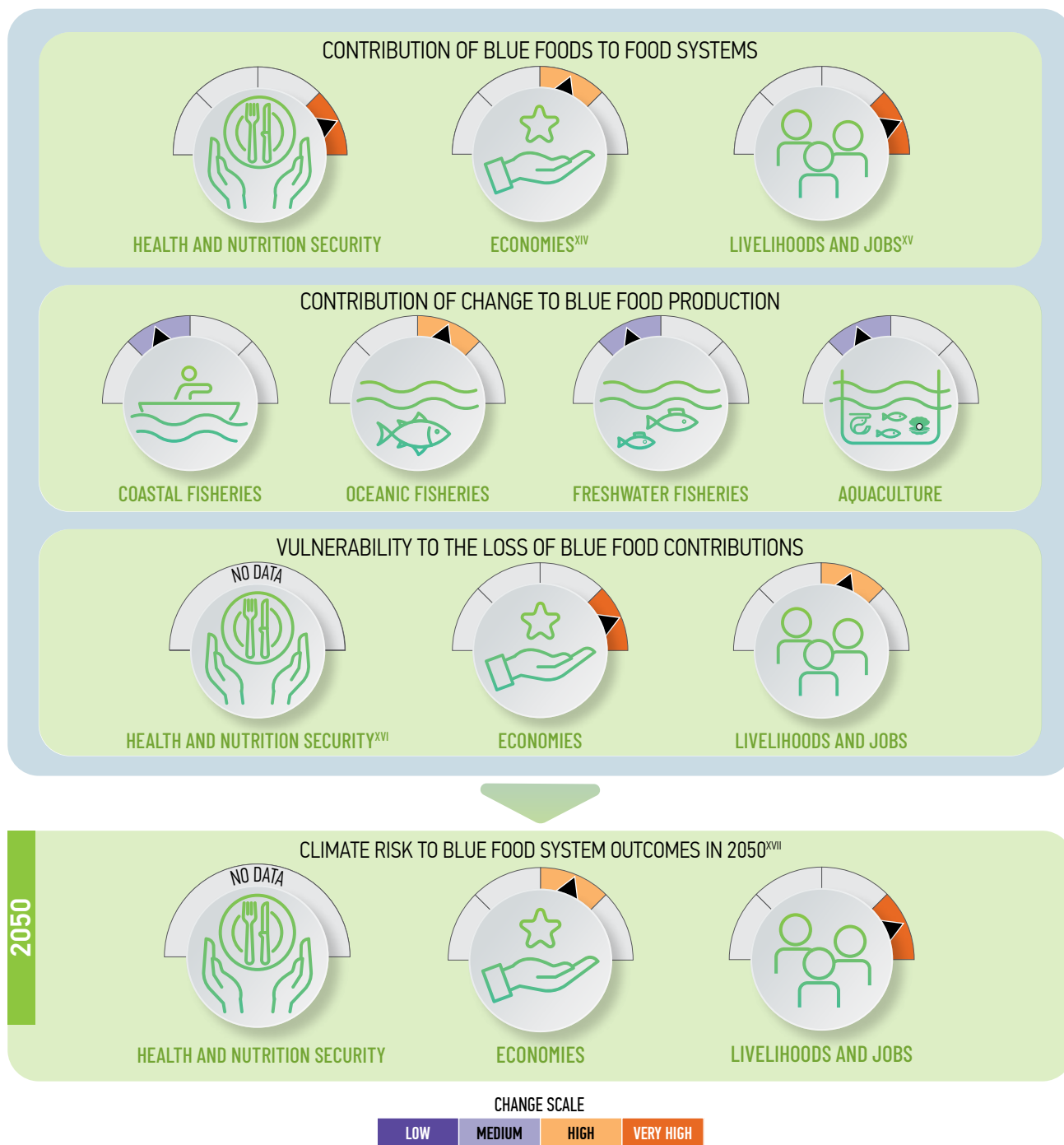
^{xii} Based on projected coastal, estuarine and freshwater fisheries catches by 2050 from Chapters 3 and 5.

^{xiii} Based on current aquatic food consumption levels.

Blue food production systems

In the Pacific Islands region, blue foods contribute significantly to nutrition security and health, economies, livelihoods and jobs. By comparing contributions, climate impacts, and vulnerabilities across these outcomes, priority climate actions can be identified for sustaining their role in sustainable development under climate change (further details in Chapter 9).

In Tokelau, blue foods make very high contributions to nutrition security and health, economies, as well as livelihoods and jobs. Compared to other Pacific islands, projected climate impacts to blue food production by 2050 are medium to high. Socioeconomic conditions make Tokelau's sustainable development highly vulnerable to climate-induced losses.



Altogether, the contributions of blue foods to sustainable development in Tokelau face high levels of climate risk due to high dependence and vulnerability. Climate adaptation of blue food production systems needs to be embedded in broader sustainable development initiatives.

^{xiv} Including variables such as total fisheries production value and foreign access fees.

^{xv} Including variables such as total number of jobs across supply chains, share of households for which fishing is the main source of income and gender equity considerations.

^{xvi} Including nutrition-related health outcomes such as nutrient deficiencies and noncommunicable diseases.

^{xvii} Risk is shown for a high-emissions scenario (SSP5-8.5). Rapid emissions reduction would reduce climate risk.