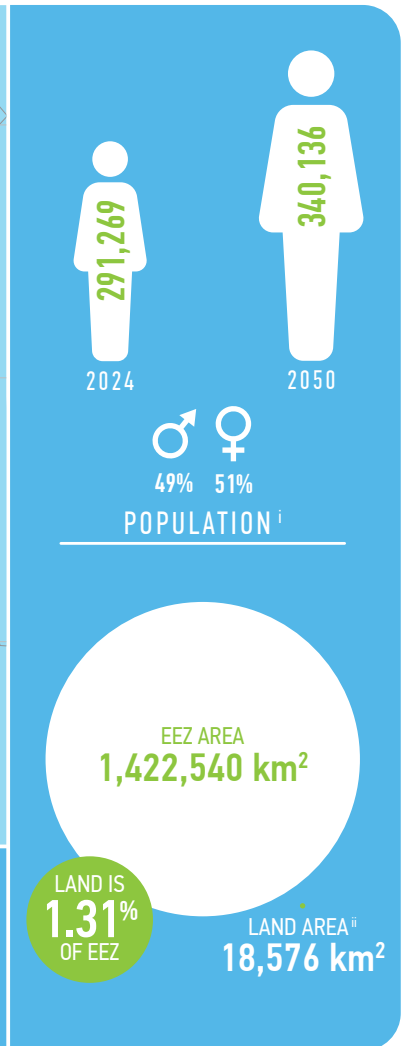


NEW CALEDONIA



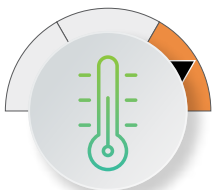
NEW CALEDONIA



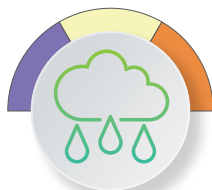
* Annual average using 2014–2024 data

SUMMARY OF CLIMATE CHANGE PROJECTIONS

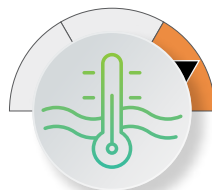
2050



AIR TEMPERATURE



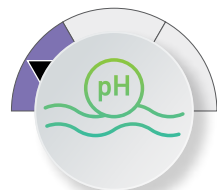
ANNUAL RAINFALL



SEA SURFACE TEMPERATURE



SEA LEVEL



OCEAN pH

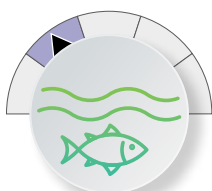
CHANGE SCALE



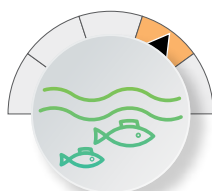
SUMMARY OF CLIMATE CHANGE IMPLICATIONSⁱⁱⁱ



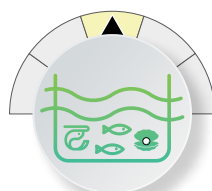
COASTAL FISHERIES



OCEANIC FISHERIES



FRESHWATER FISHERIES



AQUACULTURE

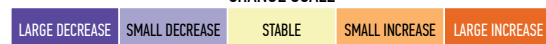


LIVELIHOODS AND ECONOMIES



FOOD SECURITY

CHANGE SCALE



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, and should be initiated or strengthened. A range of adaptations and supporting policies are provided in Chapter 10 for decision-makers to select those that are most appropriate to their context and priorities (see Table 10.1). 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 2: Sustain the production of coastal fish and invertebrates through context-specific management

Food and Nutrition 3: Manage freshwater and estuarine fisheries to harness opportunities

Food and Nutrition 4: Diversify blue food production systems

Food and Nutrition 5: Promote the use of oceanic catches to fill the gap in aquatic resources needed for food and nutrition security

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 1: Diversify aquaculture commodities and develop new farmed climate-resilient species, strains and varieties

Livelihoods 2: Apply innovative technologies and climate-smart tools for pond aquaculture and mariculture

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 3: Implement energy efficiency programs for fisheries and aquaculture

Economic Revenue 4: Promote improved safety at sea

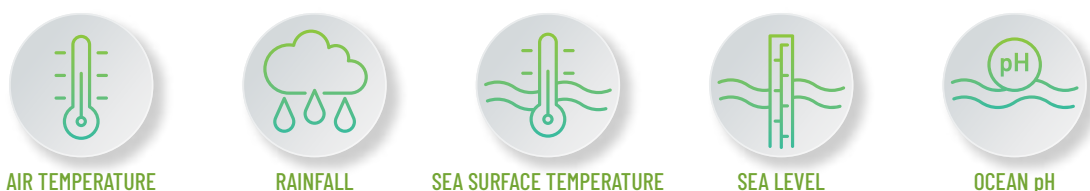
Economic Revenue 5: Maintain the contribution of fisheries and aquaculture to government revenue and economies

Economic Revenue 6: Climate-proof infrastructure

Projected changes in atmospheric and oceanic climate



New Caledonia is in the Southwest 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

New Caledonia 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.

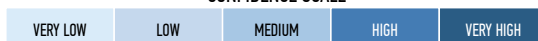


	TROPICAL CYCLONES	EL NIÑO SOUTHERN OSCILLATION (ENSO)	MARINE HEATWAVES
2090	MEDIUM EMISSIONS (SSP2-4.5)	Decrease in frequency; Increase in intensity	2–9 times more frequent (global projection)
	HIGH EMISSIONS (SSP5-8.5)		3–15 times more frequent (global projection)
	CONFIDENCE ^v	LOW TO MEDIUM	LOW



	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

CONFIDENCE SCALE

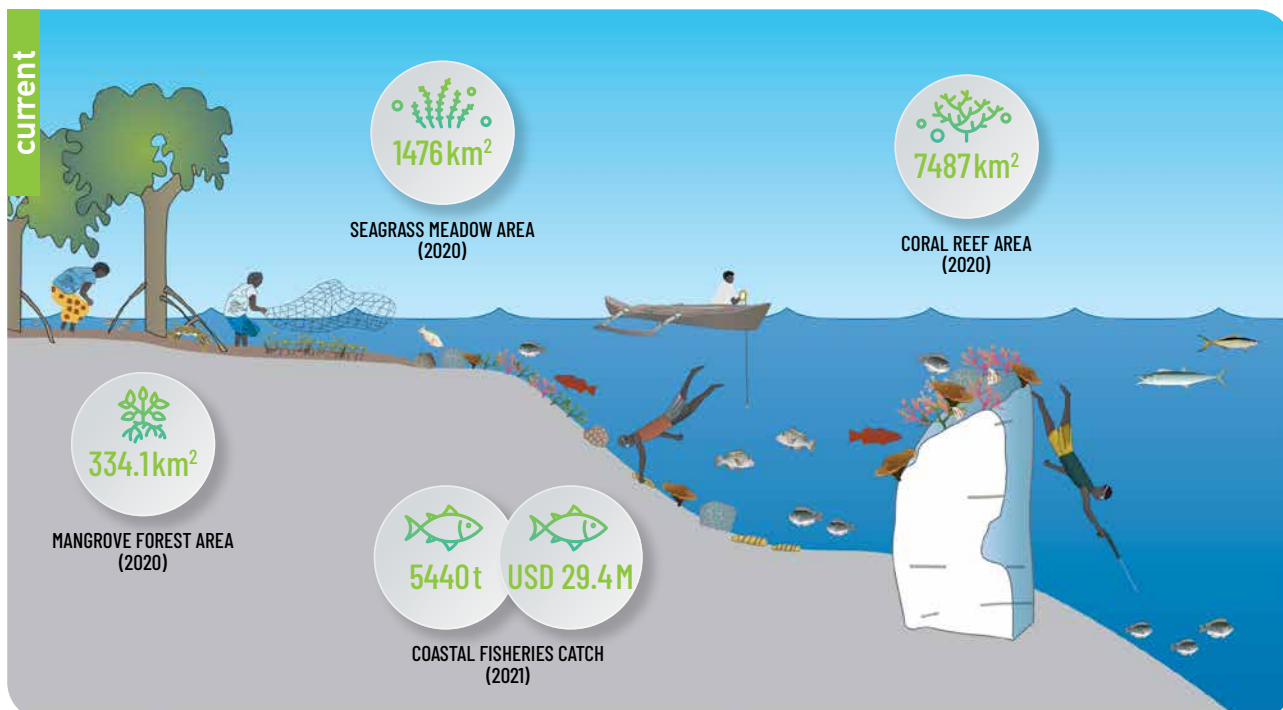


^{iv} The shared socioeconomic pathways (SSP) represent plausible futures of how society's choices might affect greenhouse gas emissions, and how those choices might influence climate change.

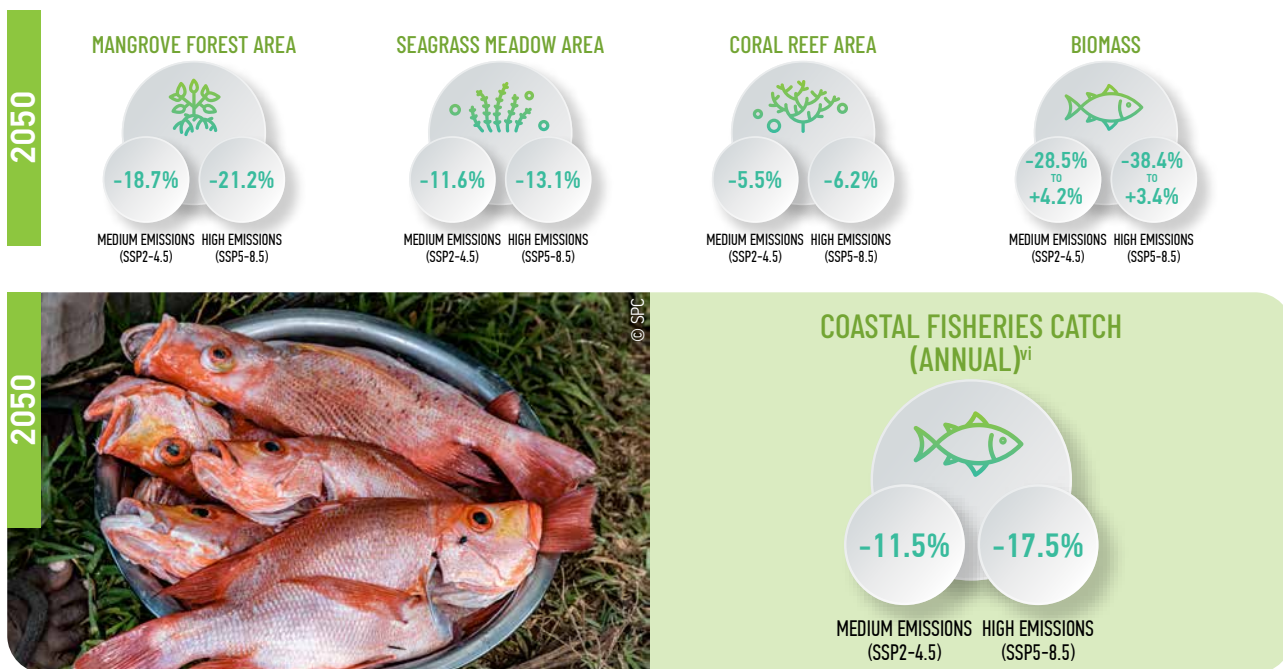
^v Confidence levels reflect uncertainty in attribution of the observed impact to climate change.

Coastal fisheries

Coastal fisheries in New Caledonia target demersal fish (including emperors, snappers and bonefish), invertebrates for export (e.g. trochus and sea cucumbers) and gleaned from intertidal habitats, and nearshore pelagic fish (including trevally, tuna and mahi mahi) using a range of fishing methods. These species are important for food, local livelihoods and jobs, and recreation (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.

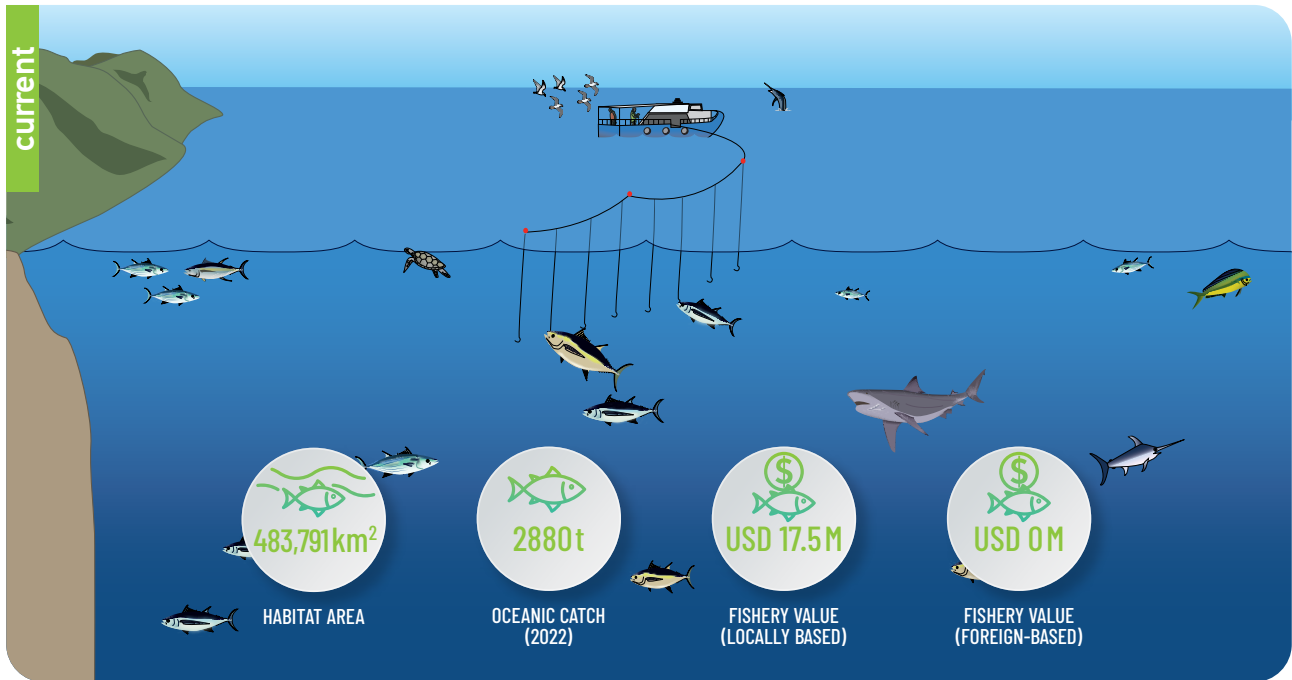


There is evidence that some stocks may be overfished and/or fishing rates are too high. Better stock assessments are needed.

vi Relative to the Reference Period 2010–2020.

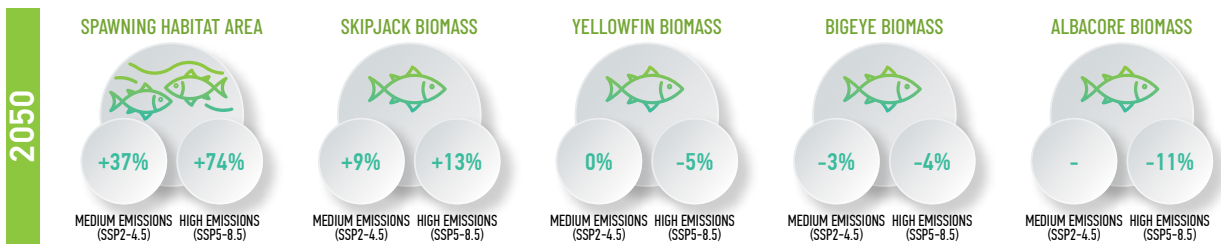
Oceanic fisheries

Offshore fisheries in New Caledonia target four species of tuna – skipjack, yellowfin, bigeye and albacore. In 2021, there were 18 local longline vessels registered in New Caledonia, primarily catching albacore and yellowfin tuna. There were no offshore foreign-based vessels licensed or chartered to operate in New Caledonia’s exclusive economic zone (EEZ)^{vii}. The tuna fishery provides government revenue and economic development (further details in Chapter 4).



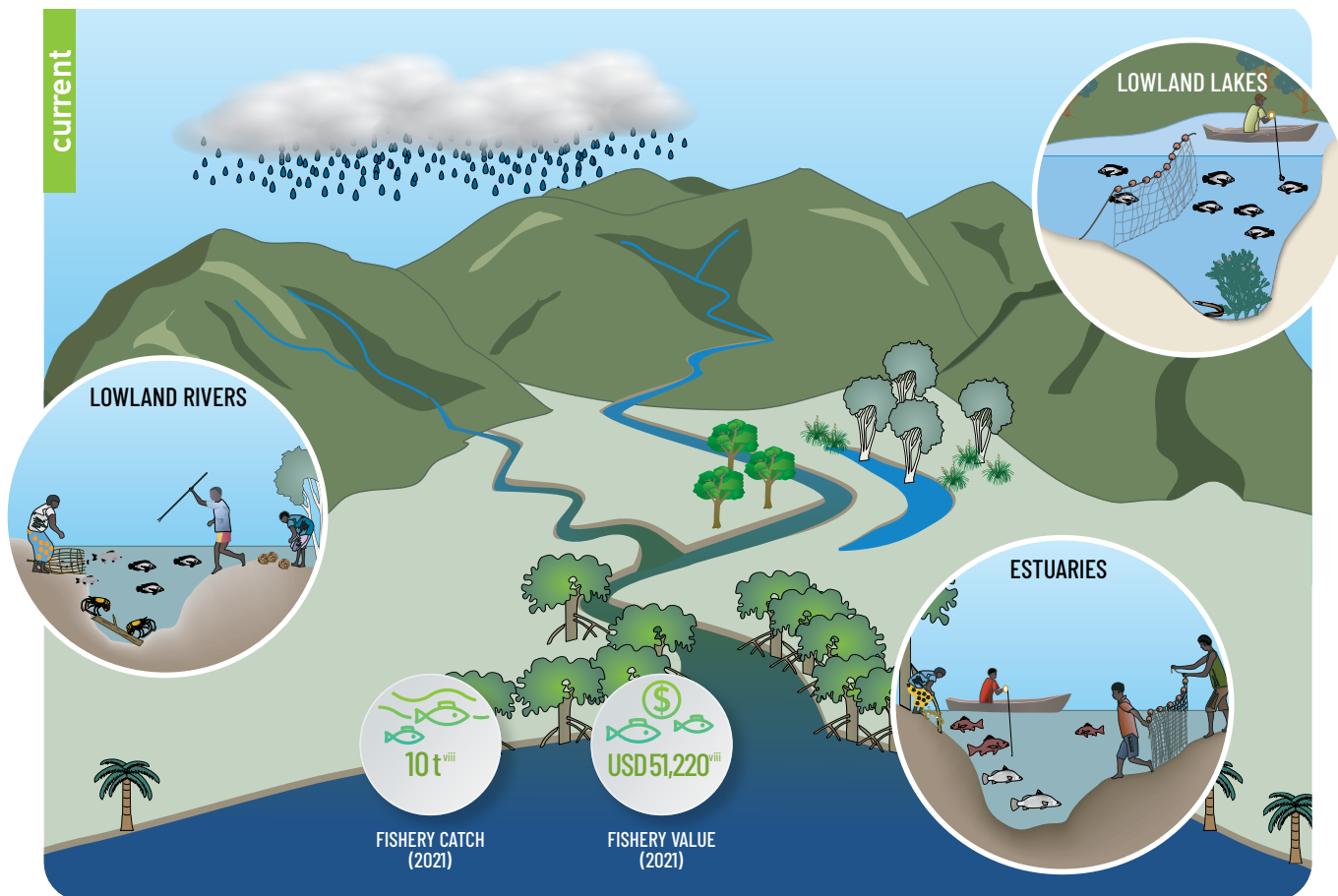
Offshore tuna are expected to be directly impacted by changes in ocean temperature, stratification and oxygen content, and indirectly impacted by changes in available spawning habitat area by 2050. This is expected to shift the distribution of tuna, with yellowfin, bigeye and albacore moving into high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

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

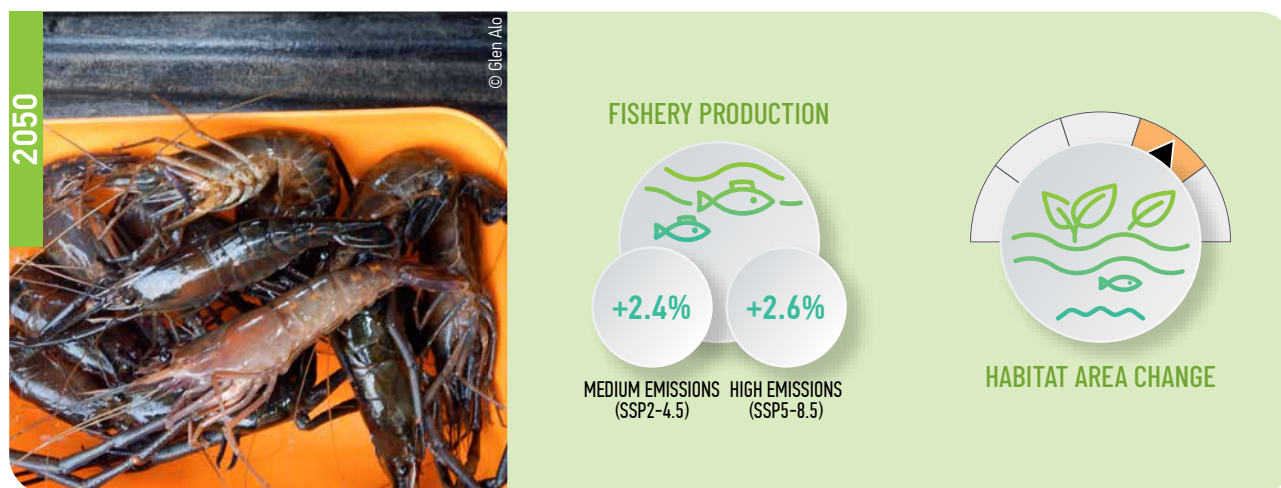


Freshwater and estuarine fisheries

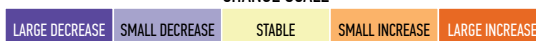
Freshwater and estuarine fisheries in New Caledonia target freshwater prawns (*Macrobrachium* spp.), freshwater clams and finfish (including tilapia, carp and eels). The main habitats are lowland rivers and upper estuaries, lowland rivers and wetlands, rivers and lakes, and lowland rivers and lakes. Freshwater and estuarine fisheries are important for food and local livelihoods, particularly for inland communities (further details in Chapter 5).



Freshwater and estuarine fish are expected to be directly affected by changes in rainfall patterns that drive river flow, and indirectly affected by increased duration of river flows and habitat accessibility by 2050. This is expected to provide opportunities for the expansion of fisheries and increased production.



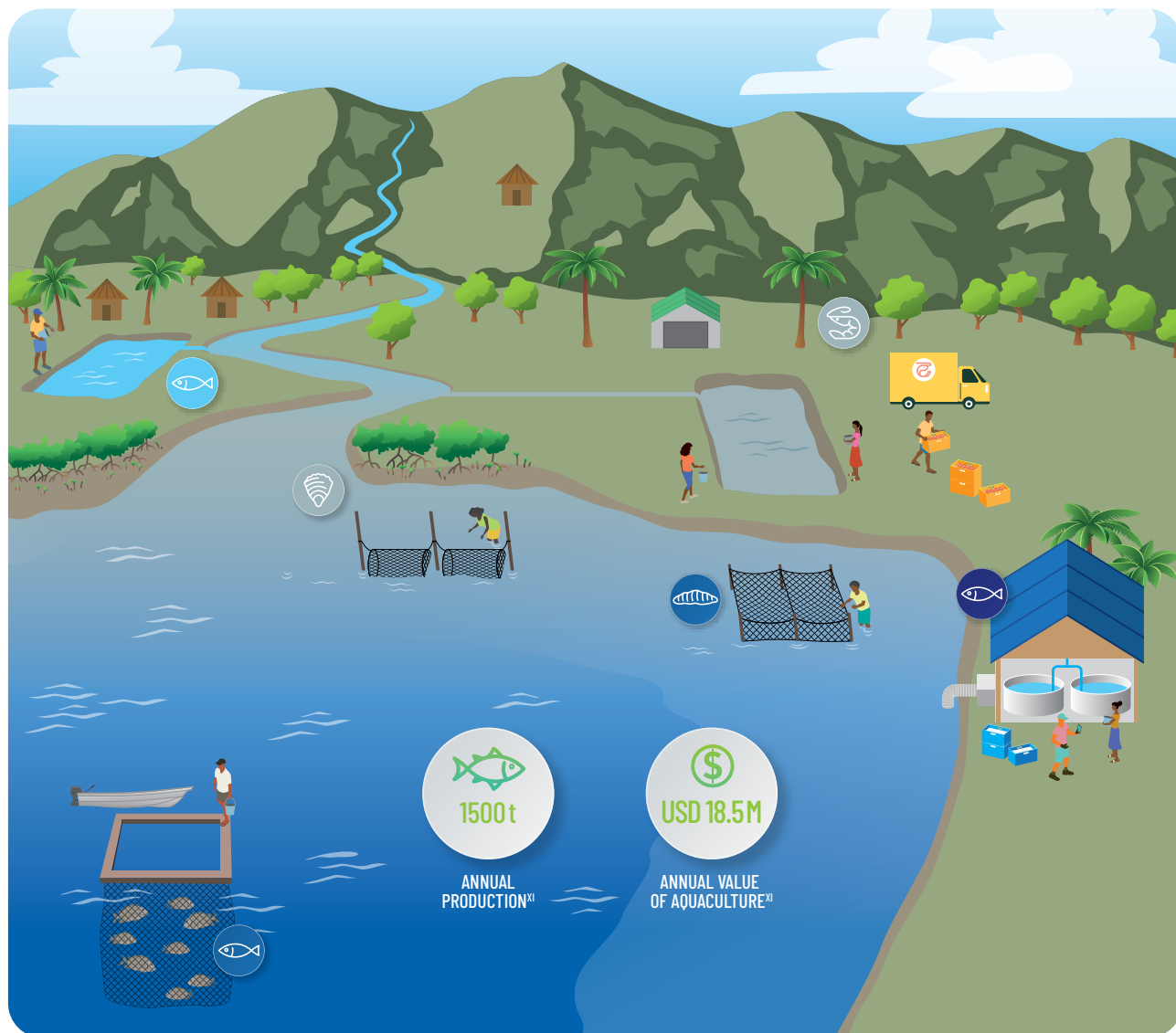
CHANGE SCALE



^{viii} The estimated total annual freshwater and estuarine catch for New Caledonia of 10 t is likely a significant underestimate, as the subsistence catch for the Northern Province alone is estimated at 480 t.

Aquaculture

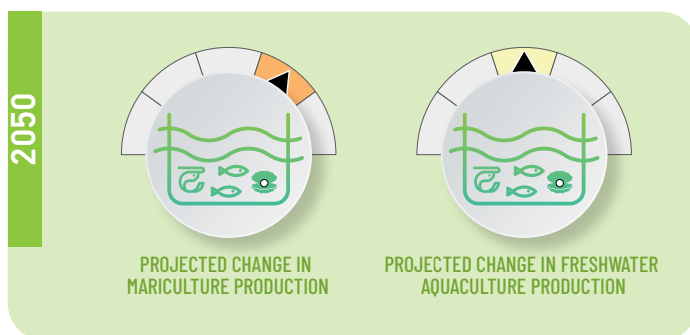
The main commodities farmed in New Caledonia are marine shrimp, rock oysters, sea cucumbers, rabbitfish, red emperors and tilapia. These species provide food, local livelihoods and jobs, and government revenue (further details in Chapter 6).



-  Rock oysters
-  Tilapia
-  Sea cucumbers
-  Hatchery for marine shrimp, rabbitfish and snappers
-  Marine shrimp (paeneid)
-  Reef fish

Mariculture is expected to be directly impacted by increasing sea surface temperature, ocean acidification (declining pH), and more intense storms.

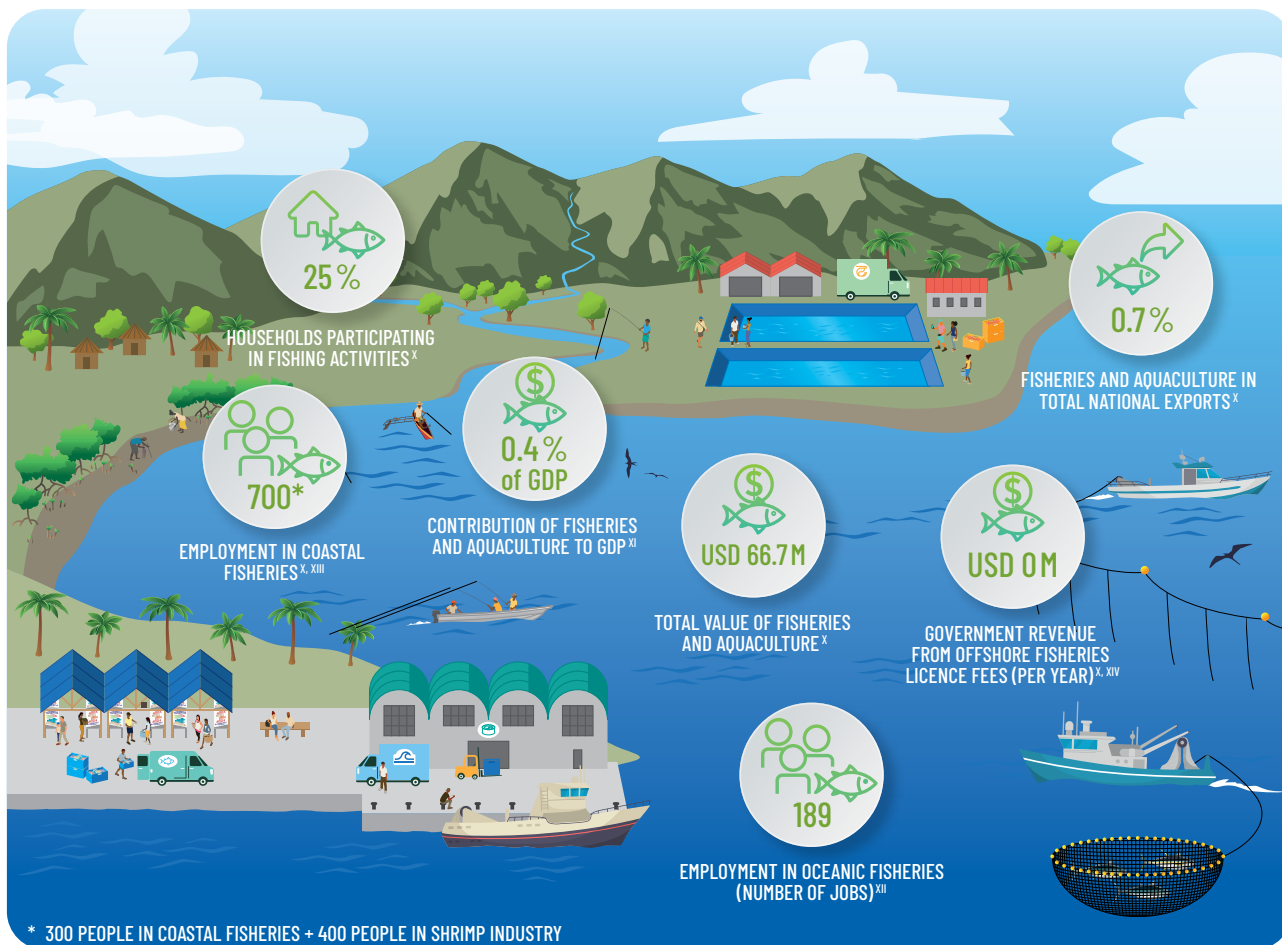
Freshwater pond aquaculture is expected to benefit from increases in freshwater habitat but be impacted by increasing temperatures and disease, changing rainfall, storms and sea level rise. This will have implications for aquaculture production by 2050.



ix 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.

Livelihoods and economies

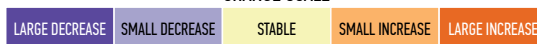
Fisheries and aquaculture are important for providing household income, jobs and government revenue in New Caledonia (further details in Chapter 7).



No significant impacts are expected on livelihoods or GDP due to the low relative contribution of fisheries and aquaculture. Shrimp mariculture production is expected to become more difficult, thereby increasing operating costs. No significant impact is expected on government revenue because no purse-seine fishing is likely in the EEZ.



CHANGE SCALE



x 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.

xi National GDP in 2020.

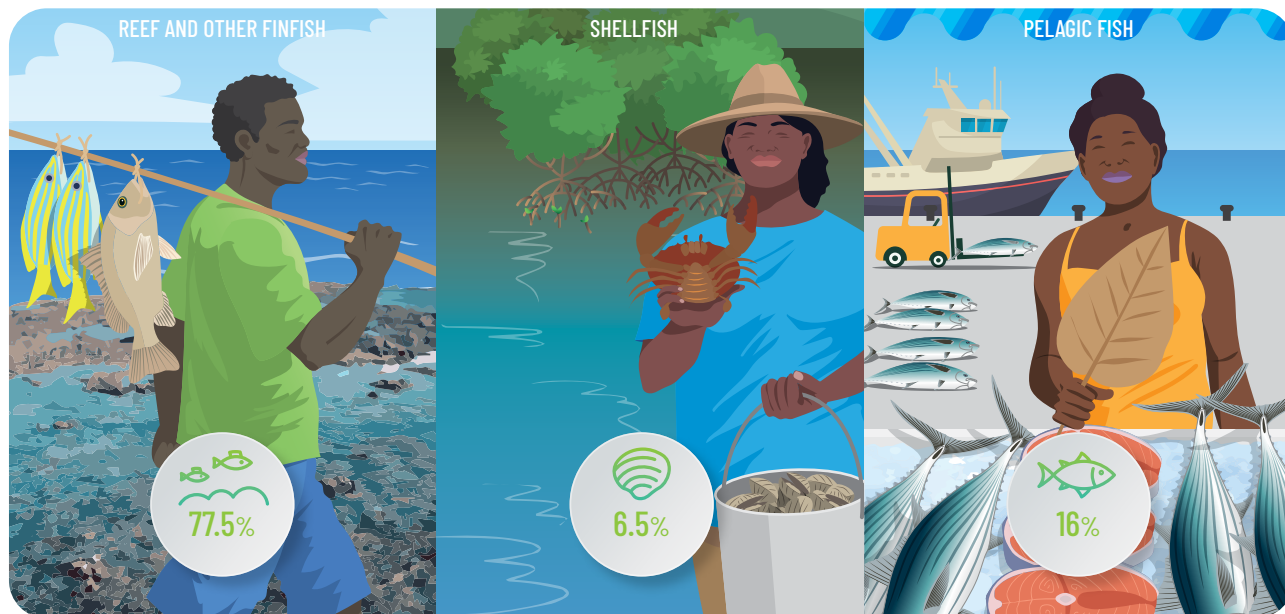
xii Primarily in tuna-related employment, including harvest, processing, observers, government and ancillary services. Data source: FFA (2022) Tuna Fishery Report Card 2022. Pacific Islands Forum Fisheries Agency, Honiara, Solomon Islands.

xiii ADECAL Technopole

xiv Average value 2017-2021

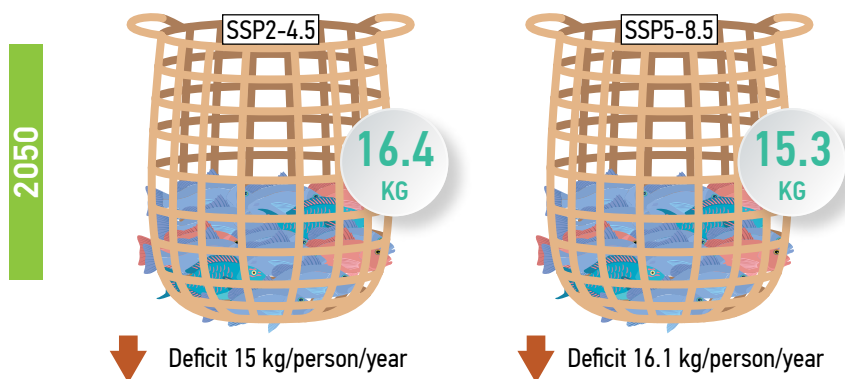
Aquatic food security

Aquatic (blue) foods provide an important source of nutrition in New Caledonia, and current consumption is 31 kg/person/year, including locally and imported reef and other finfish, shellfish, canned fish and pelagic fish (further details in Chapter 8)^{xv}.

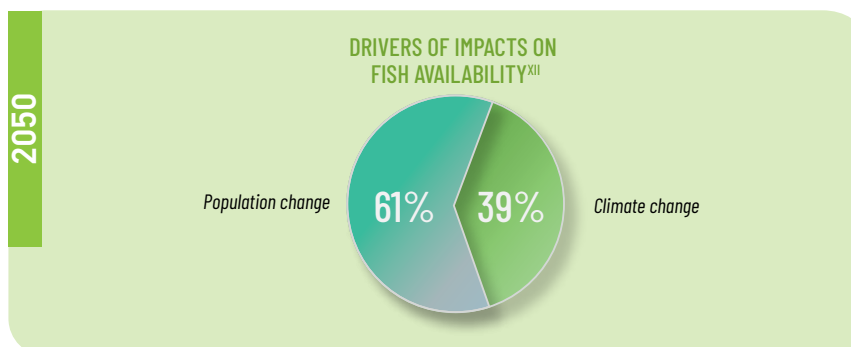


New Caledonia is projected to experience a deficit in fish supply by 2050 based on current fisheries catch rates and average consumption. This will be driven by population growth, and exacerbated by climate change impacts on coastal and estuarine fisheries. There is expected to be a decline in available whole fish by 2050^{xvi} and the likely possibility of insufficient access to aquatic foods, resulting in **high 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. A greater contribution from pelagic fish, canned fish and aquaculture, and other protein sources (e.g. agriculture), will also be required to support food security and good nutrition. Any adaptations should consider environmental and social safeguards and avoid maladaptation.



^{xv} Data estimated for whole fish from: Gillett R., Fong M. (2023) Fisheries in the economies of Pacific Island countries and territories (Benefish Study 4). Pacific Community (SPC), Noumea, New Caledonia. Note that reef and other finfish include freshwater and estuarine fish.

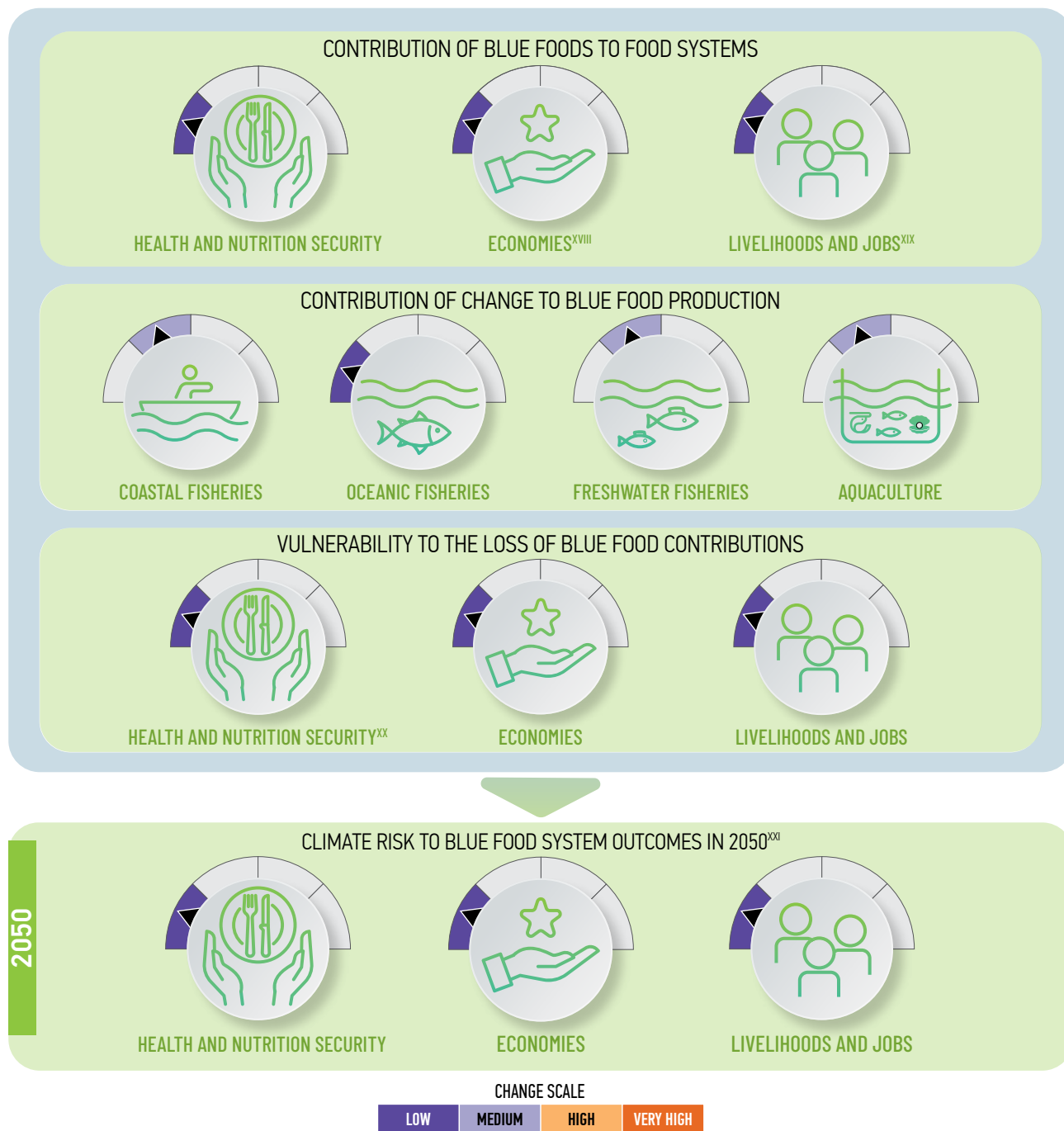
^{xvi} Based on projected coastal, estuarine and freshwater fisheries catches by 2050 from Chapters 3 and 5.

^{xvii} Based on current aquatic food consumption levels. Note that agriculture can also provide additional protein sources to supplement a decline in aquatic foods, however any adaptations should consider environmental and social safeguards and avoid maladaptation.

Blue food 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 New Caledonia, blue foods make relatively few contributions to nutrition security and health, economies, livelihoods and jobs. Compared to other Pacific islands, projected climate impacts to blue food production by 2050 are medium to high. Socioeconomic conditions make New Caledonia's sustainable development more adaptive to climate-induced losses.



Altogether, the contributions of blue foods to sustainable development in New Caledonia face low levels of climate risk, due to lower levels of vulnerability and dependence. New Caledonia is expected to be more adaptive to climate change, and priority climate actions can focus on adapting blue food production systems, for instance through improved fisheries and catchment management.

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

^{xix} 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.

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

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