MARSHALL ISLANDS

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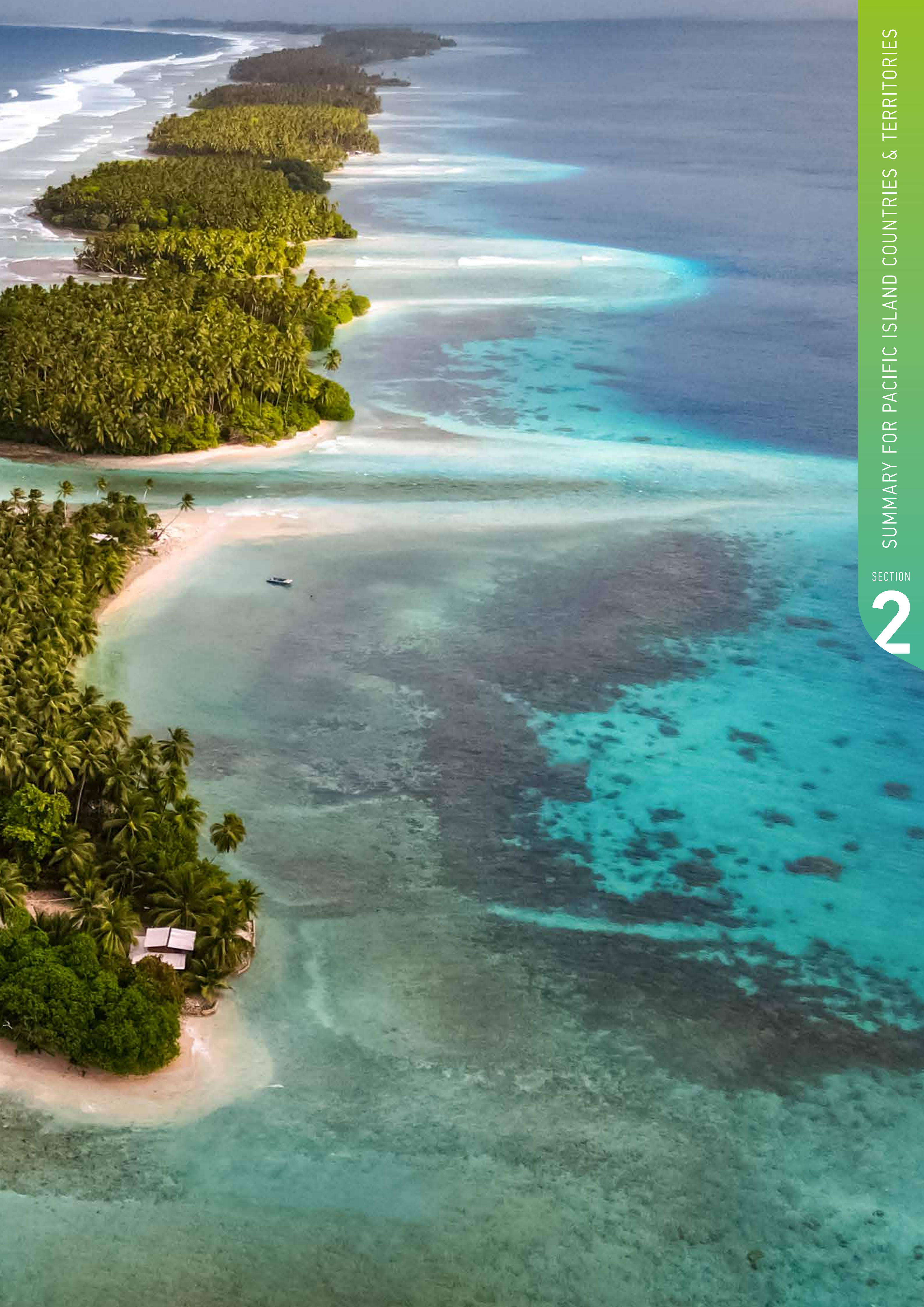
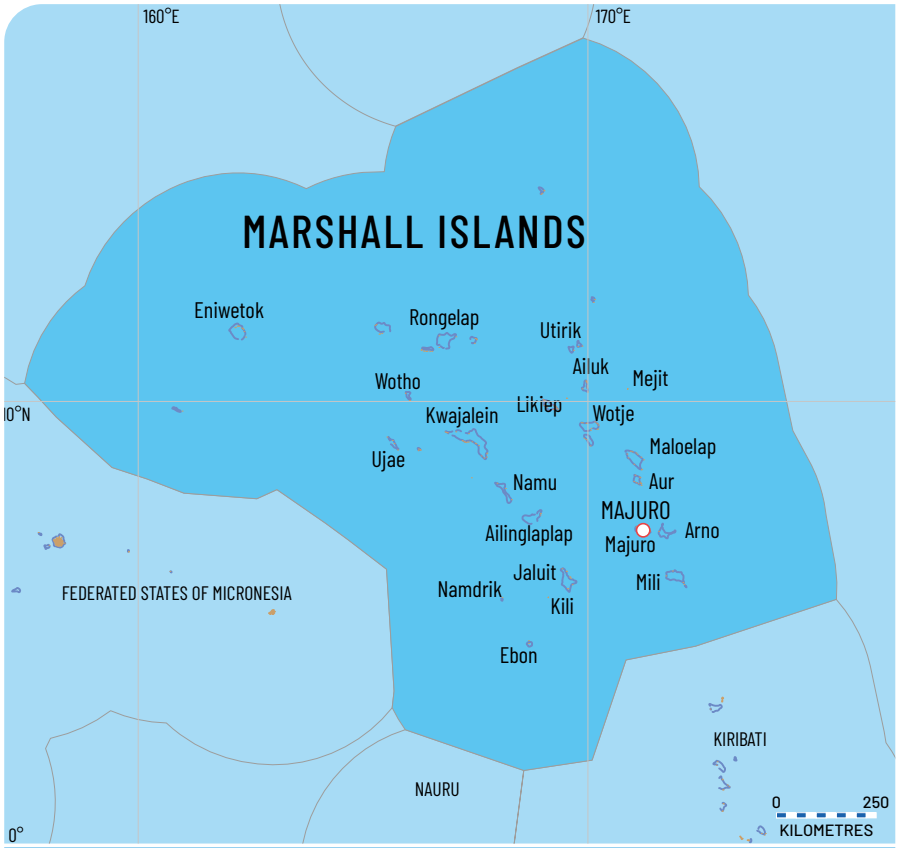
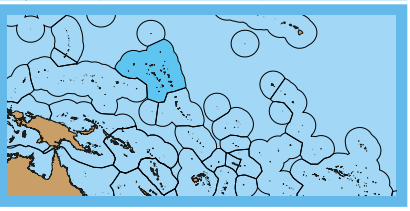
SUMMARY FOR PACIFIC ISLAND COUNTRIES & TERRITORIES

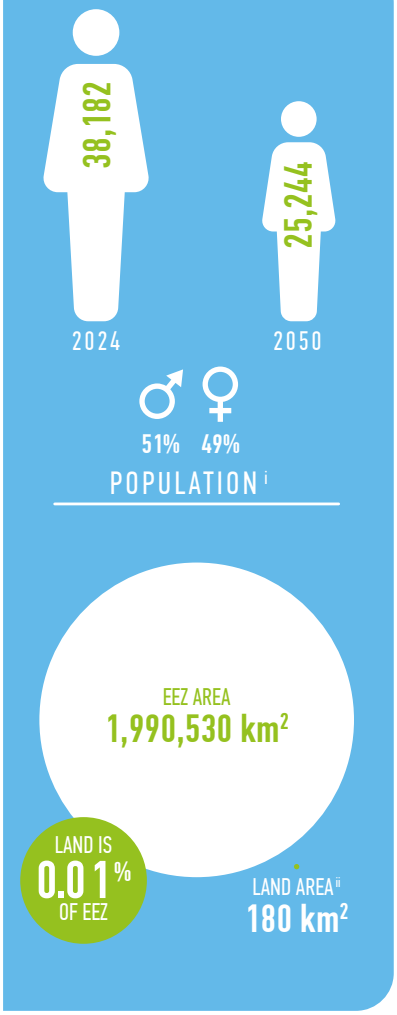
SECTION 2



MARSHALL ISLANDS



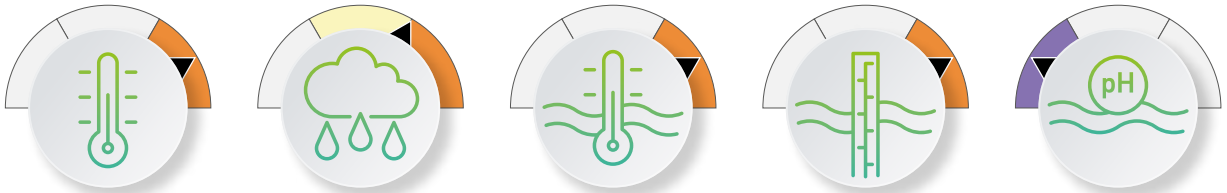




* Annual average using 2014–2024 data

SUMMARY OF CLIMATE CHANGE PROJECTIONS

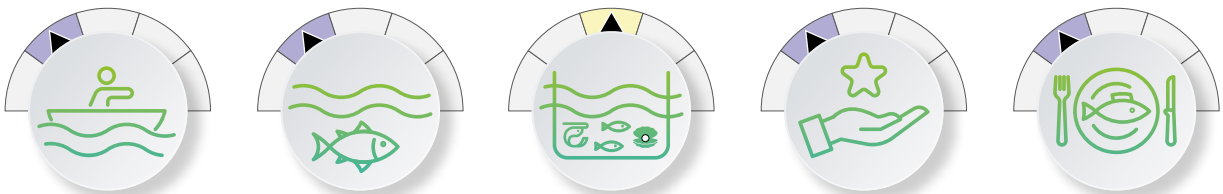
2050



CHANGE SCALE

DECREASE	STABLE	INCREASE

SUMMARY OF CLIMATE CHANGE IMPLICATIONS iii



CHANGE SCALE

LARGE DECREASE	SMALL DECREASE	STABLE	SMALL INCREASE	LARGE INCREASE

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 2: Sustain the production of coastal fish and invertebrates through context-specific management

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 6: Improve post-harvest preservation methods for fish and invertebrates to prepare for sudden shocks

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

Livelihoods 5: Develop sustainable marine and coastal tourism

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

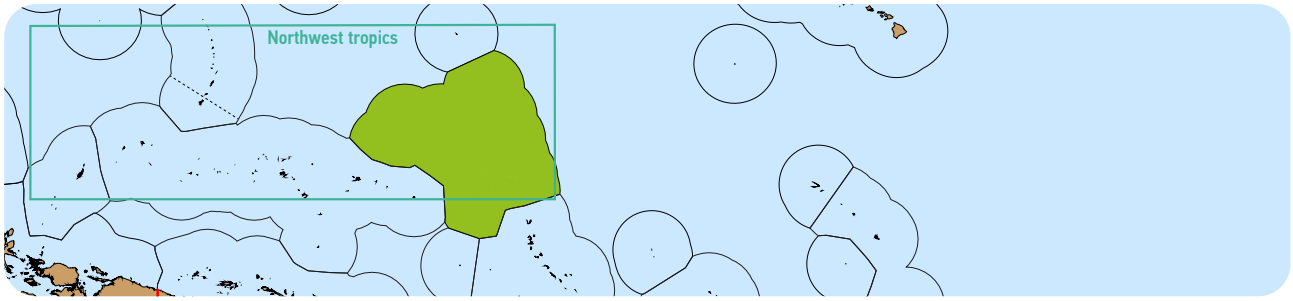
Economic Revenue 3: Implement energy efficiency programs for fisheries and aquaculture

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

Projected changes in atmospheric and oceanic climate



The Marshall Islands is in the Northwest Tropical Pacific 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

The Marshall Islands 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	ENSO will continue as a source of interannual variability; La Niña and El Niño extremes are projected to increase	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	N/A

		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 %	−1.00 mmol/m^3
	CONFIDENCE [v]	MEDIUM	VERY HIGH	HIGH	N/A

CONFIDENCE SCALE

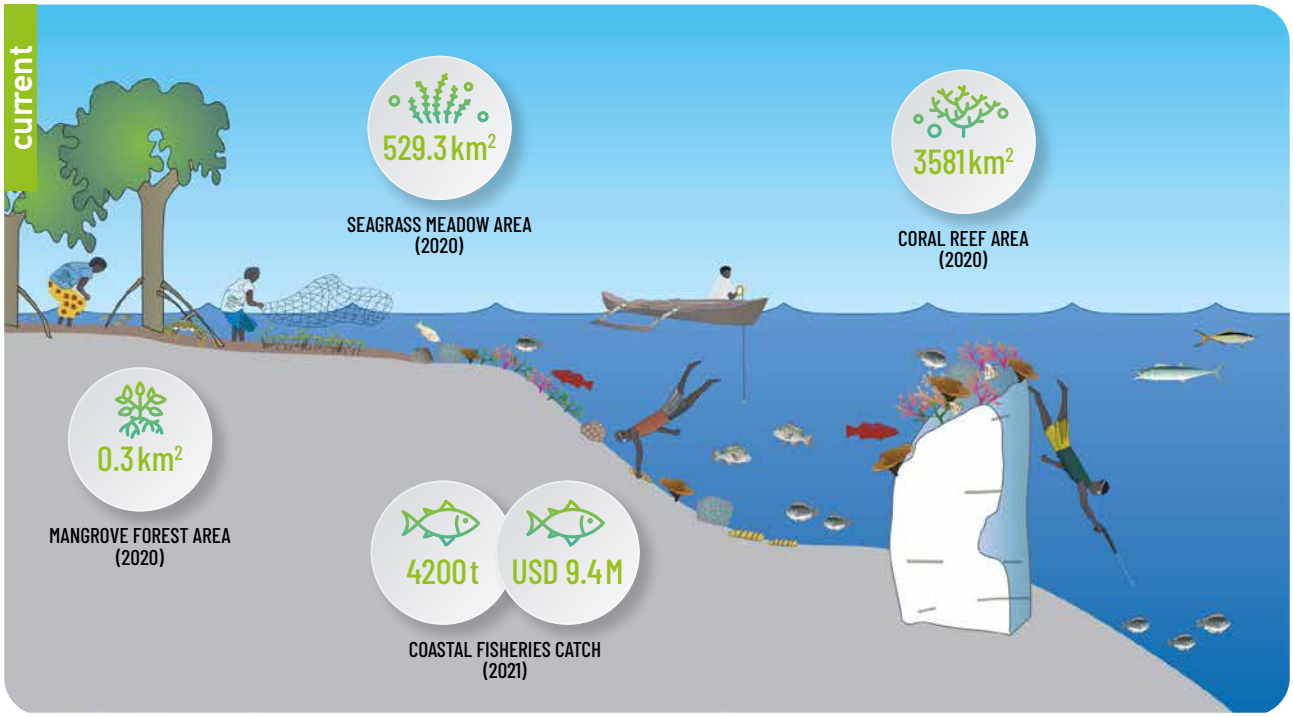
VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH

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.

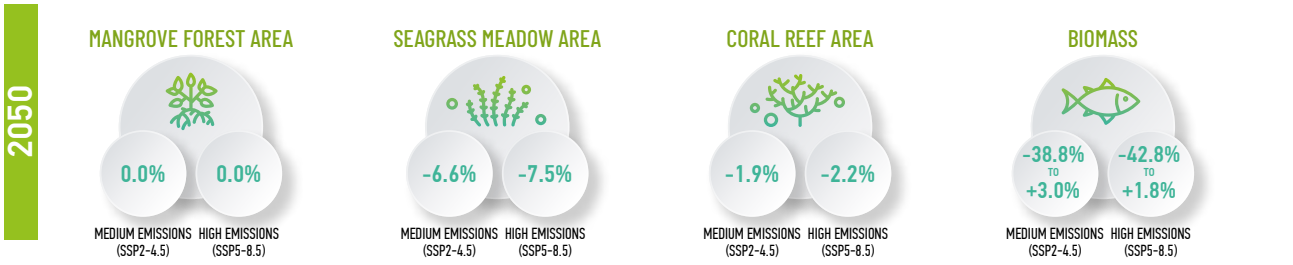
v Confidence levels reflect uncertainty in attribution of the observed impact to climate change.

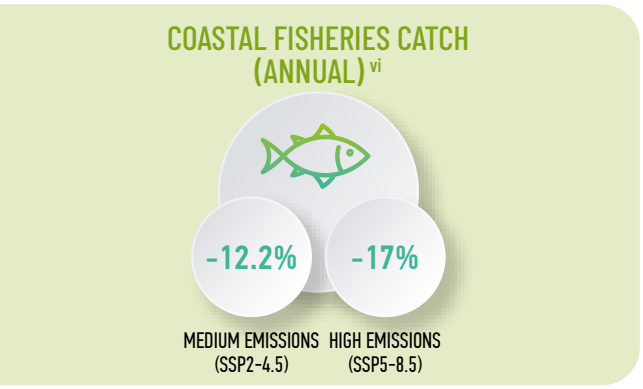
Coastal fisheries

Coastal fisheries in the Marshall Islands target demersal fish (including surgeonfish, convict tangs, rabbitfish, parrotfish, snappers and aquarium fish), invertebrates for export (e.g. trochus and sea cucumbers) and gleaned from intertidal habitats, and nearshore pelagic fish (including trevally) using a range of fishing methods. These species are critically important for food, local livelihoods and 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.





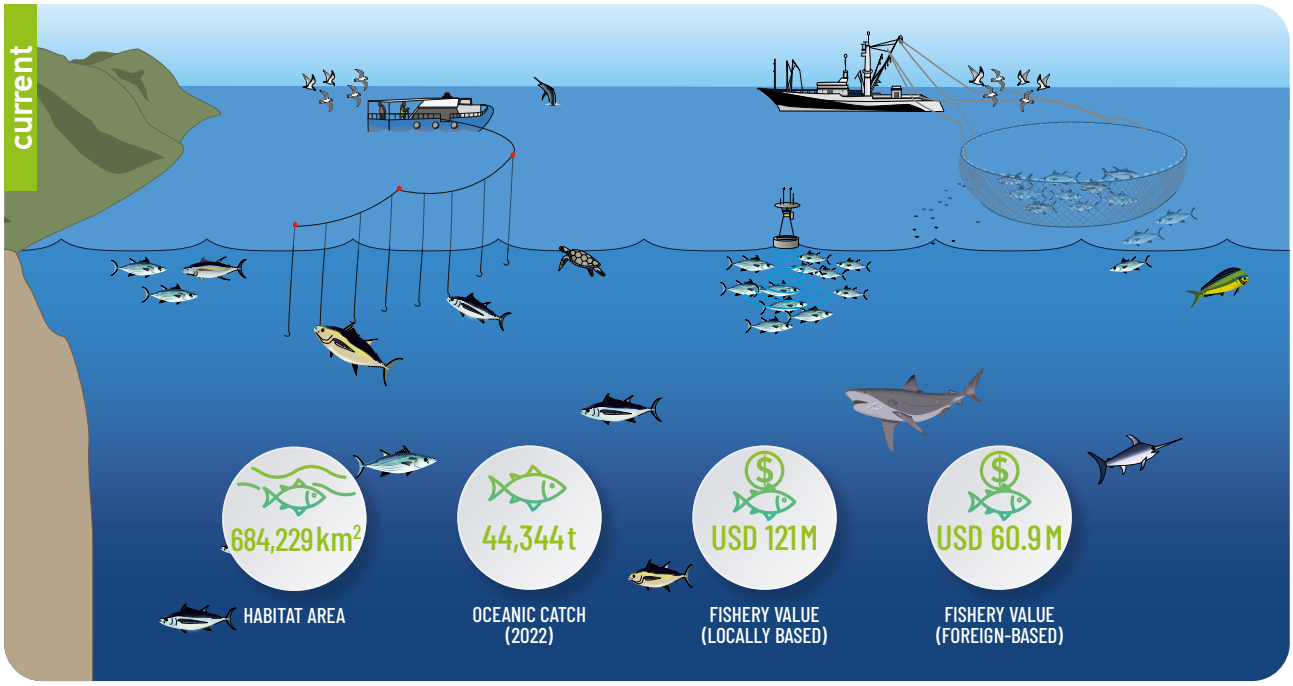
There is evidence that some stocks may be overfished and/or fishing rates are too high. Better stock assessments are needed.*

vi Relative to the Reference Period 2010–2020.

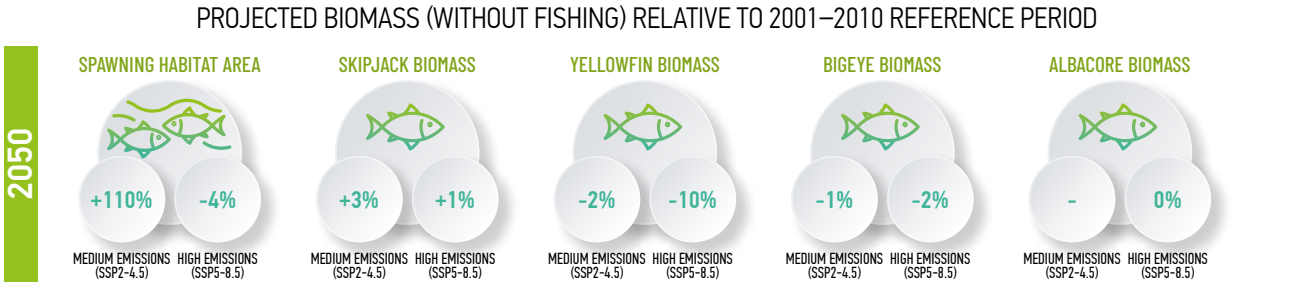
** The Marshall Islands government is in the preliminary stages of a stock assessment that will inform future management.*

Oceanic fisheries

Offshore fisheries in the Marshall Islands target three species of tuna – skipjack, yellowfin and bigeye. In 2021, there were 11 purse-seine vessels registered in the Marshall Islands, and 28 chartered longline vessels associated with a locally based fishing venture. There were 240 foreign vessels licensed to fish in the Marshall Islands' exclusive economic zone (EEZ) (32 longline, 25 pole-and-line, 183 purse-seine), and the foreign-based fleet caught about half as much tuna as the local fleet[vii]. The tuna fishery is very important for 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.



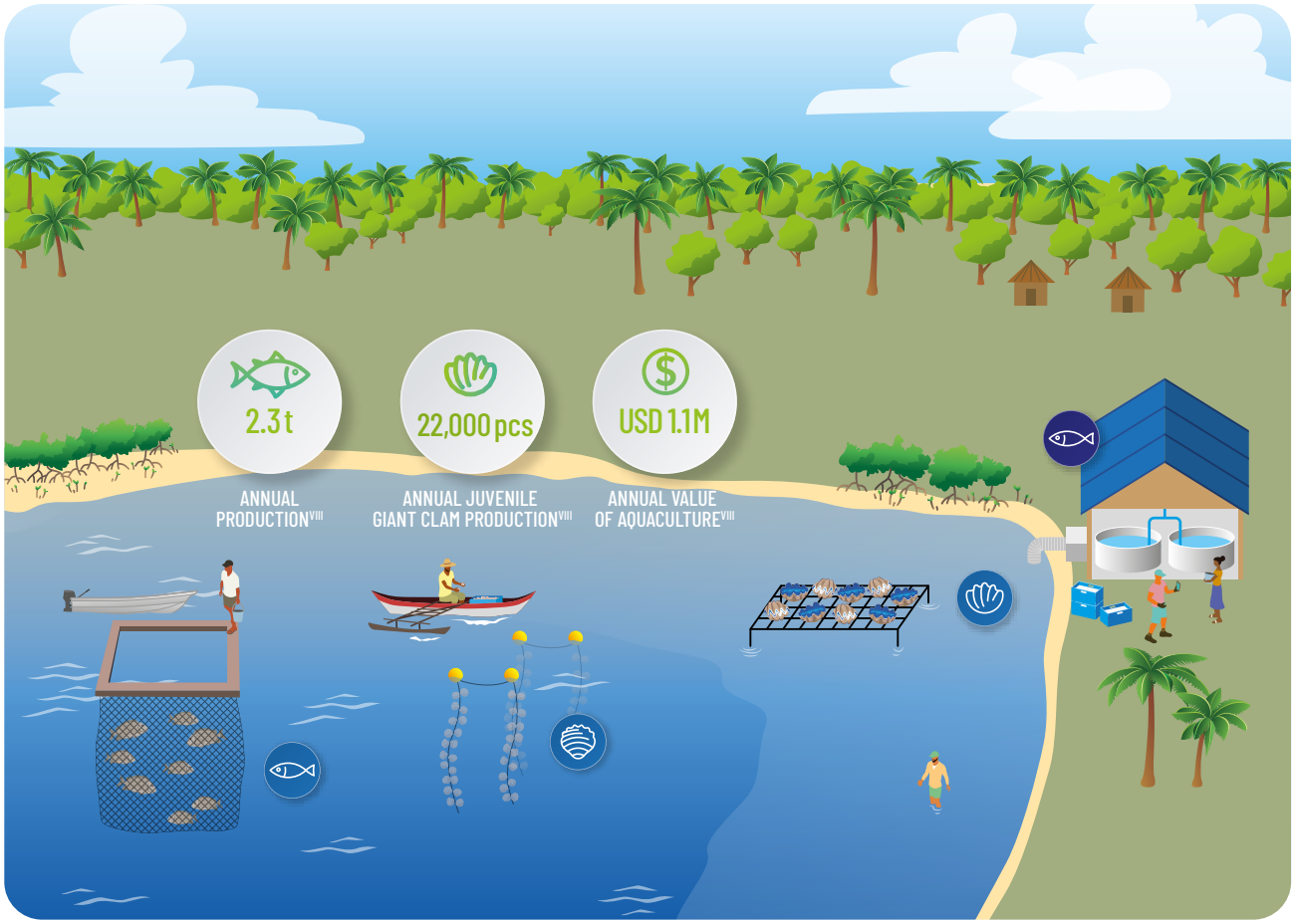
vii Data from 2021: Gillett R., Fong M. (2023) Fisheries in the economies of Pacific Island countries and territories (Benefish Study 4). Pacific Community (SPC), Noumea, New Caledonia.

Freshwater and estuarine fisheries

There are no current freshwater or estuarine fisheries in the Marshall Islands, but there may be opportunities in the future.

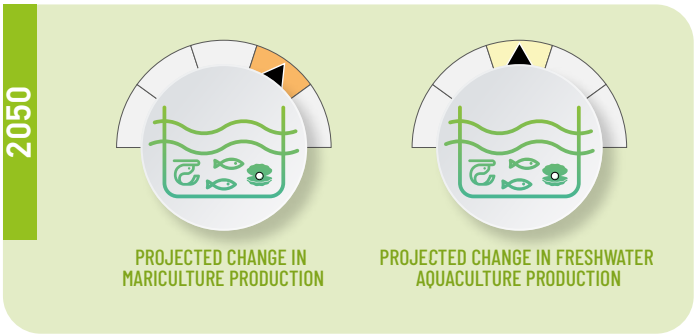
Aquaculture

The main commodities farmed in the Marshall Islands are giant clams, pearl oysters, Pacific threadfin and aquarium species, which provide food, local livelihoods, jobs, and government revenue (further details in Chapter 6).



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

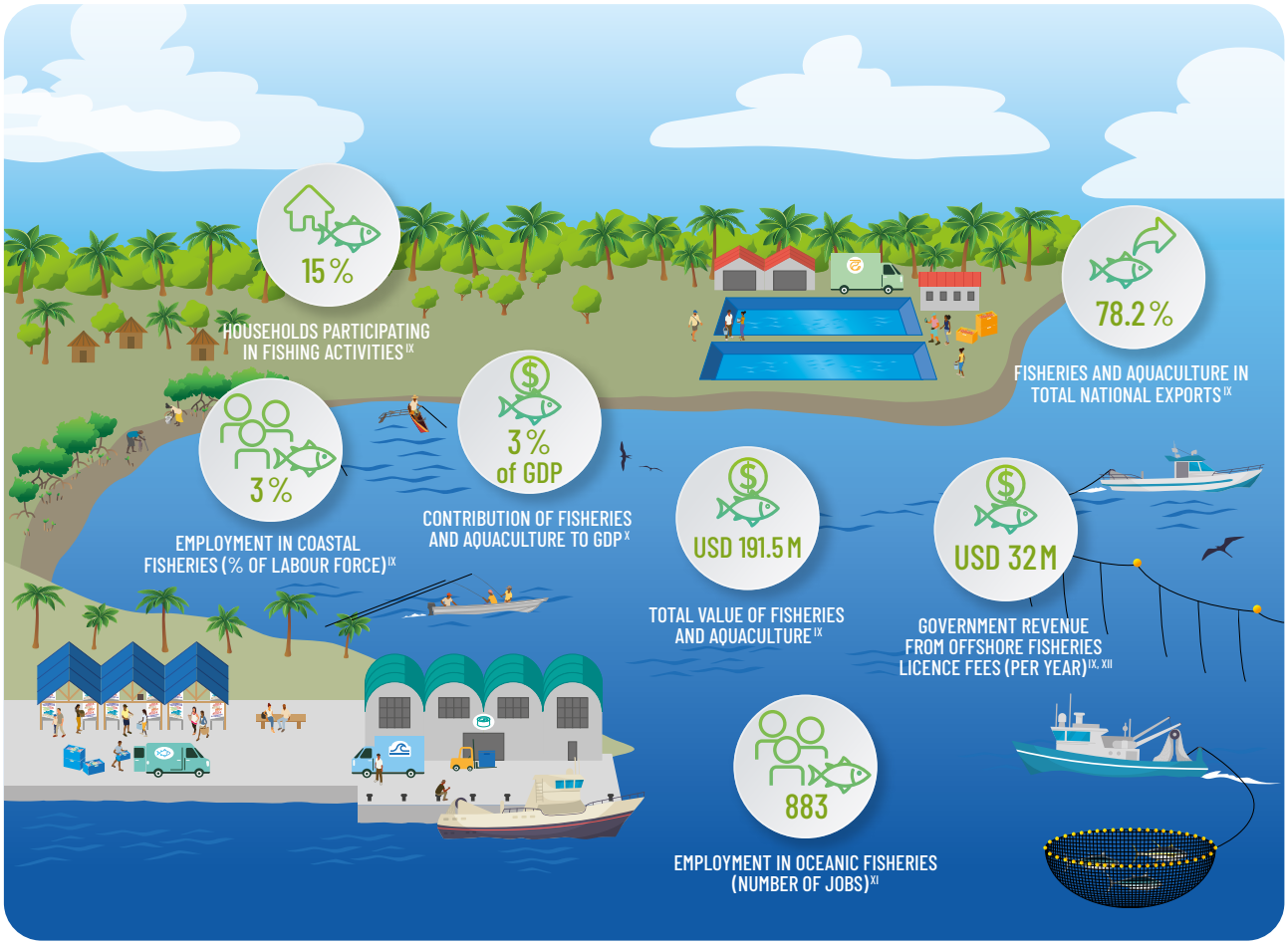
Freshwater pond aquaculture does not occur, but because it may benefit from increases in freshwater habitat, there may be opportunities for new ventures by 2050.



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.

Livelihoods and economies

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



The moderate projected decrease in coastal catches is expected to affect subsistence and artisanal fisheries jobs. No significant changes are expected to livelihoods or GDP due to the low relative contribution of fisheries and aquaculture. The projected change in tuna distribution is expected to decrease government revenue between 0 and 5% by 2050.

CHANGE SCALE

LARGE DECREASE	SMALL DECREASE	STABLE	SMALL INCREASE	LARGE INCREASE

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.

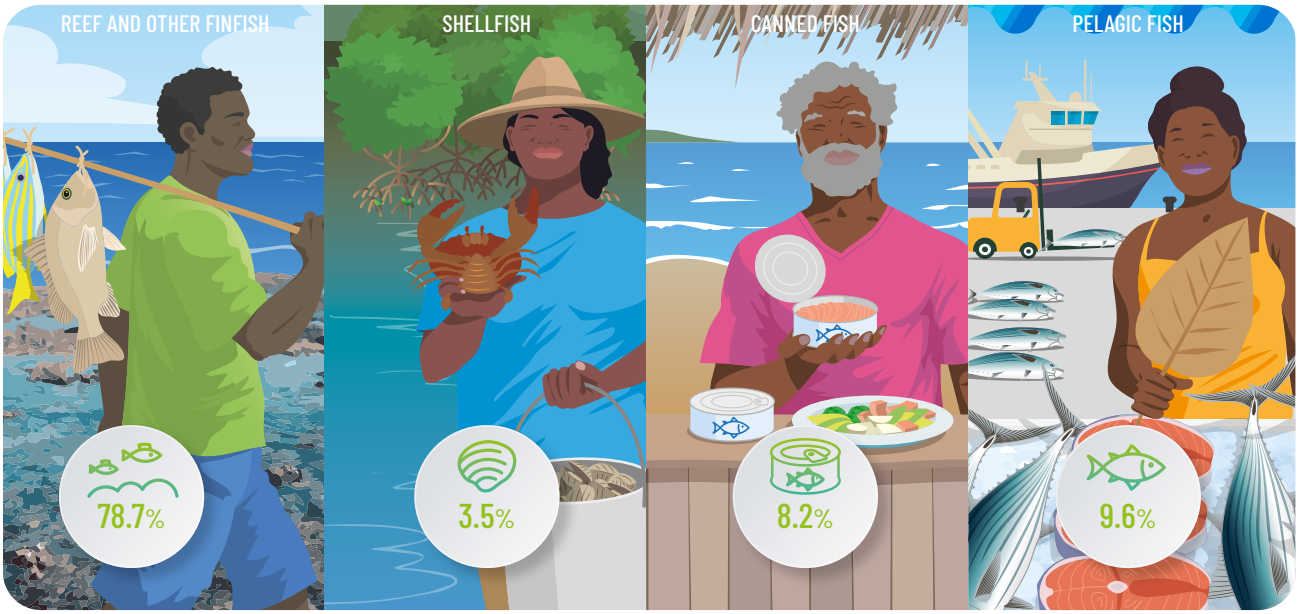
x National GDP in 2020.

xi 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.

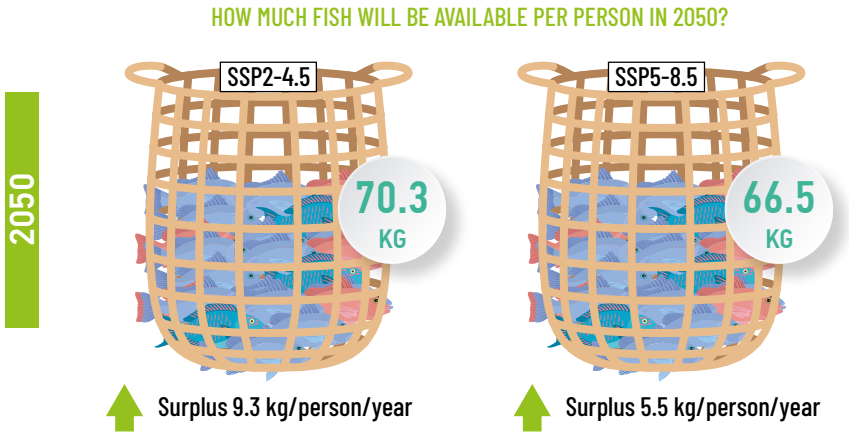
xii Average value 2017-2021

Aquatic food security

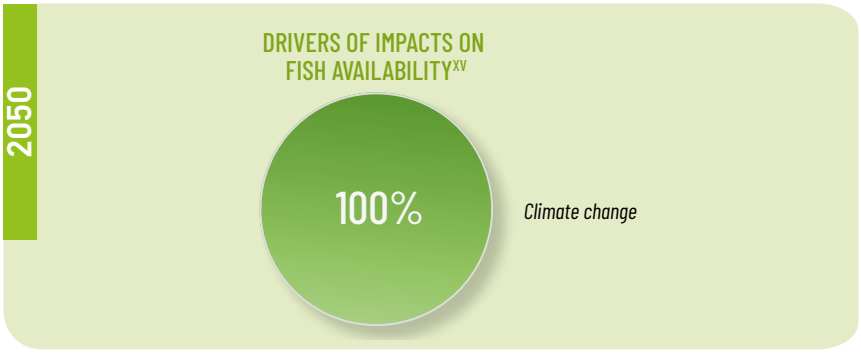
Aquatic (blue) foods provide a critically important source of nutrition in the Marshall Islands, and current consumption is 82 kg/person/year, including locally and imported reef and other finfish, shellfish, canned fish and pelagic fish (further details in Chapter 8)[xiii].



The Marshall Islands is not projected to experience a deficit in fish supply by 2050 based on current fisheries catch rates and average consumption. However there is expected to be a decline in available whole fish by 2050[xiv] due to climate change impacts on coastal fisheries and the possibility of insufficient access to aquatic foods, resulting in **medium vulnerability**.



To meet the future needs of the 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), may also be required to support food security and good nutrition. Any adaptations should consider environmental and social safeguards and avoid maladaptation.



xiii 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.

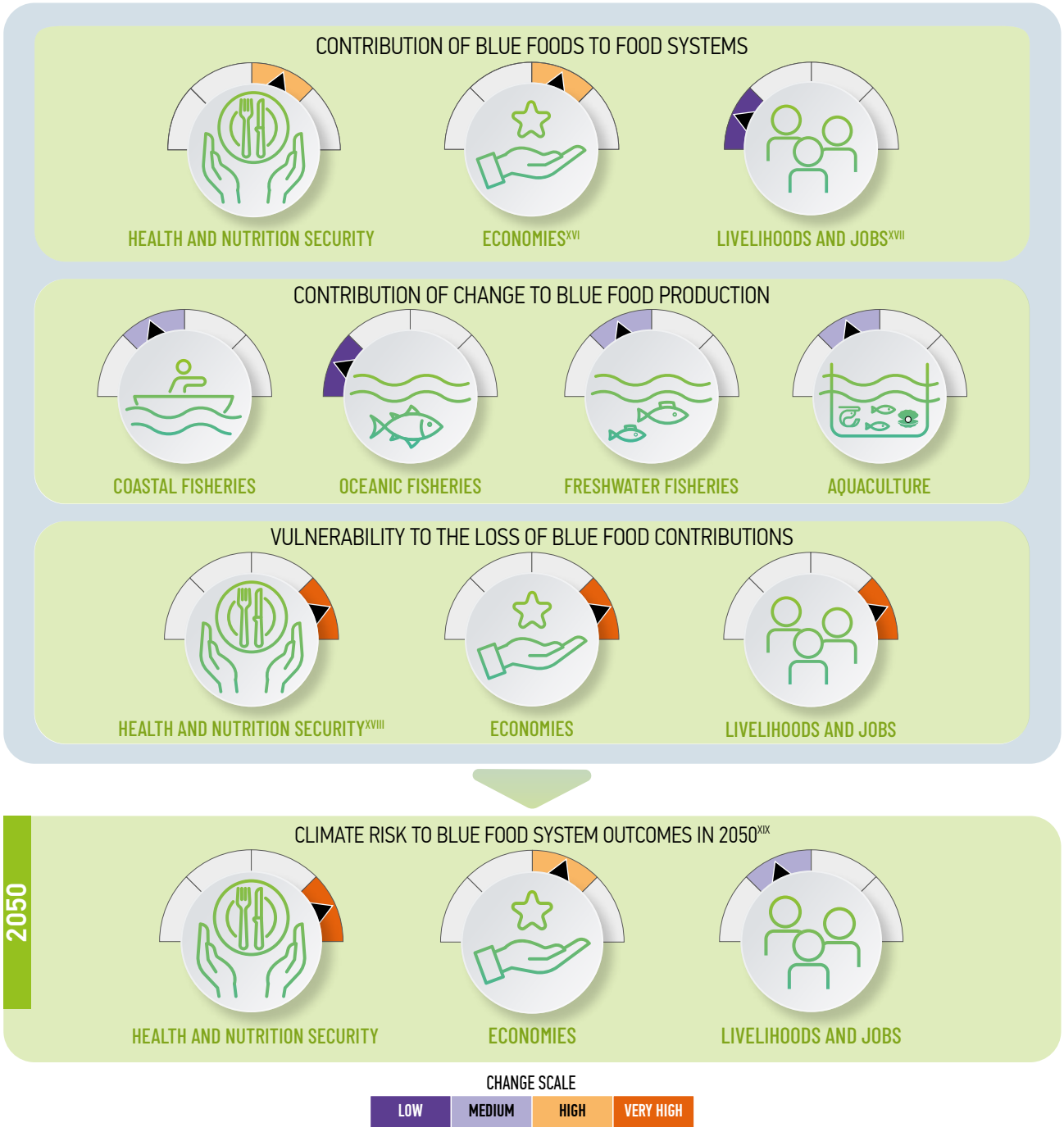
xiv Based on projected coastal, estuarine and freshwater fisheries catches by 2050 from Chapters 3 and 5.

xv 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 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 the Marshall Islands, blue foods make key contributions to nutrition and economies. Compared to other Pacific islands, projected climate impacts to blue food production by 2050 are medium to high. Socioeconomic conditions make the Marshall Islands' sustainable development highly vulnerable to climate-induced losses.



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

xvi Including variables such as total fisheries production value and foreign access fees.
xvii 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.
xviii Including nutrition-related health outcomes such as nutrient deficiencies and noncommunicable diseases.
xix Risk is shown for a high-emissions scenario (SSP5-8.5). Rapid emissions reduction would reduce climate risk.

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