Tuvalu

National Adaptation Plan

15 August 2025

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- The Green Climate Fund for the financial support through the Development of Tuvalu's National Adaptation Planning to advance medium and long-term adaptation planning project;
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In preparing this plan, consultations were undertaken with stakeholders from the six priority sectors and communities in Funafuti and the outer islands of Tuvalu. The Climate Change Department is appreciative of the time, and grateful for the invaluable contributions made by the National Advisory Council on Climate Change, the Adaptation Technical Working Group, Government departments, Kaupule, non-governmental organisations, women's and youth groups, people with disabilities and individuals who participated in Tuvalu's national adaptation planning process over the past two years.

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Foreword

Tuvalu, as one of the most vulnerable Small Island Developing States (SIDS) with only 26 kilometres of land mass, and two meters above sea level, has taken bold steps in applying a whole-of-government and whole-of-society approach to develop its National Adaptation Plan (NAP).

The Government of Tuvalu, through the Cabinet has proudly adopted the NAP in August 2025 as Tuvalu's strategy for effective resilience and development. This is a key step in Tuvalu's survival strategy. The NAP has been developed taking into consideration the lived experience of climate change impacts and plausible future climate impacts on Tuvalu.

Climate data analysis revealed sea levels around Tuvalu have risen by approximately 0.15 meter in the last 30 years. The nation has experienced impacts of frequent and severe marine heat waves, intense cyclones and storm surges, ocean acidification, prolonged droughts and increasing temperature.

The NAP was developed through Tuvalu's adaptation planning process involving wide stakeholder engagement. Consultations were undertaken in the last two years at national, sector and community levels. It involved working with government departments, sectors, civil societies, private sector, Kaupule, youth and women's groups and Tuvalu-based partners.

It sets out strategic and practical adaptation measures to navigate the extreme threat of rising seas and extreme temperatures. Tuvalu's NAP is a country platform to raise the required climate finance at speed and scale and to ensure other means of implementation such as technical capacity building and technology transfer. These efforts reflect the urgency of the climate crisis and the determination of Tuvalu's people to adapt with dignity and to ensure that Tuvalu survives and thrives as a sovereign island nation.

Fakafetai Lasi,

Honorable Dr. Maina Talia
Minister for Home Affairs,
Climate Change and Environment

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List of Acronyms and Abbreviations

Acronym	Full Form
CCD	Climate Change Department
CIVRA	Climate Impact, Vulnerability and Risk Assessment
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DCC	Development Coordination Committee
EEZ	Exclusive Economic Zone
EKT	Ekalesia Kelisiano Tuvalu
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Country
NACCC	National Advisory Council on Climate Change
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NDC	Nationally Determined Contributions
NDMO	National Disaster Management Office
NGO	Non-governmental Organisation
PACCSAP	Pacific Australia Climate Change Science and Adaptation Planning
TCAP	Tuvalu Coastal Adaptation Project
TIVA	Tuvalu Integrated Vulnerability Assessment
TNCW	Tuvalu National Council of Women
UNFCCC	United Nations Framework Convention on Climate Change
WASH	Water, Sanitation and Hygiene
WMO	World Meteorological Organization

Executive Summary

Tuvalu's National Adaptation Plan (NAP) sets out a strategic, evidence-based framework to guide the country's response to the escalating impacts of climate change. As one of the world's most climate-vulnerable nations, Tuvalu faces existential threats from rising sea levels, intensifying tropical cyclones, prolonged droughts, and ocean acidification. This NAP represents a whole-of-government and whole-of-society effort to safeguard Tuvalu's people, ecosystems, infrastructure, and cultural heritage through coordinated, inclusive, and forward-looking adaptation planning.

The NAP builds on a strong foundation of national and regional assessments, including the Climate Impact, Risk and Vulnerability Assessment (CIVRA 2024), the Tuvalu Coastal Adaptation Project (TCAP 2025), and the Tuvalu Integrated Vulnerability Assessment (TIVA 2020). It aligns with the Te Vaka o Fenua National Climate Change Policy (2021–2030), the Te Kete National Development Strategy, and Tuvalu's commitments under the UNFCCC, including the Paris Agreement. The NAP process was initiated in 2020 and formally launched in 2023, following a transparent and participatory approach that engaged stakeholders across all islands and sectors.

Tuvalu's overarching adaptation goal is to protect the nation from the impacts of climate change through bold and decisive actions that strengthen the resilience of its people and natural ecosystems. This goal is supported by sectoral and cross-sectoral outcomes across six priority areas: coastal protection and human settlements, critical infrastructure, food security (agriculture and fisheries), human health and wellbeing, water security, and disaster risk reduction and management. Each sector has been assessed for climate risks and vulnerabilities, and corresponding adaptation actions have been identified, validated, and prioritised.

The climate data underpinning this plan reveal a sobering reality. Sea levels around Tuvalu have risen by approximately 0.15 metres over the past 30 years and are projected to rise by up to 1 metre by 2100 under high emissions scenarios. Marine heatwaves, ocean acidification, and coral bleaching are increasing in frequency and intensity, threatening biodiversity and food security. Air temperatures are rising, with projections indicating up to 350 extremely hot days per year by the end of the century. Rainfall patterns are becoming more erratic, with more intense storms and longer dry spells. These changes are already affecting public health, infrastructure, agriculture, fisheries, and water resources.

The NAP outlines a phased adaptation pathway that spans short-term (2025–2030), medium-term (2030–2050), and long-term (2050–2100) horizons. In the short term, Tuvalu will focus on laying the foundations for resilience through land reclamation, infrastructure upgrades, improved water and sanitation systems, and strengthened governance. Medium-term actions include managed relocation planning, ecosystem-based adaptation, and expanded health and food security programs. In the long term, the NAP envisions sustaining sovereignty through innovative adaptation technologies, cultural preservation, and institutionalised relocation governance.

A key feature of the NAP is its emphasis on integration. The whole-of-government approach ensures that climate adaptation is embedded across ministries, policies, and planning processes. The whole-of-society approach engages communities, traditional leaders, civil society, and youth in shaping and implementing adaptation actions. Gender equality, disability inclusion, and social cohesion are mainstreamed throughout the plan, recognising that climate resilience must be equitable and inclusive.

To support implementation, the NAP is accompanied by four supplementary documents: the NAP Financing Strategy, Monitoring and Evaluation Framework, Gender Equality, Disability and Social Inclusion Action Plan, and Communications and Engagement Strategy. These tools provide the operational backbone for tracking progress, mobilising resources, and ensuring transparency and accountability.

In total, the NAP identifies 101 adaptation activities, including 66 currently underway and 35 new or pending actions. An additional 22 enabling activities focus on institutional strengthening, capacity building, and policy reform. Each action is assigned a unique identifier to support monitoring, reporting, and coordination.

Tuvalu's NAP is not just a technical document, it is a survival strategy. It reflects the urgency of the climate crisis and the determination of Tuvalu's people to adapt with dignity, agency, and foresight. By investing in resilience today, Tuvalu aims to secure a future where its communities can thrive despite the challenges ahead. The NAP is a call to action for national stakeholders, regional partners, and the international community to stand with Tuvalu in its journey toward a climate-resilient future.

Part One:
Context and Governance

1. Introduction

Over the past 20 years, Tuvalu has taken bold and determined steps to confront the climate crisis. As one of the most climate-vulnerable nations in the world, we've not only raised our voice on the global stage but also worked tirelessly at home to build resilience and protect our communities.

Our journey began with the development of the National Adaptation Programme of Action (NAPA) in 2007, which identified urgent needs in areas including coastal protection, water security, and agriculture. Since then, climate change has become deeply embedded in the national policy framework, guided by key instruments:

- Te Vaka Fenua o Tuvalu: National Climate Change Policy 2021-2030 (2023)
- Falepili Union Treaty (2023)
- Updated Nationally Determined Contributions (2022)
- Te Kete National Development Strategy (2021–2030)
- Tuvalu Climate Change and Disaster Survival Fund Act (2015)
- Paris Agreement and our initial NDC (2015)

These policies are grounded in scientific evidence and community engagement. The National Adaptation Plan (NAP) process, launched in 2023, aligns with the UNFCCC's Cancun Adaptation Framework (UNFCCC, 2010) and follows a transparent, inclusive, and iterative approach to address medium- and long-term climate risks and safeguard Tuvalu's future. The NAP builds on foundational assessments including:

- Tuvalu Coastal Adaptation Project (TCAP) (UNDP, GCF, 2025)
- National Climate Impact, Vulnerability and Risk Assessment (Deloitte, 2024)
- NAP Framework (US-AID, 2020)
- Tuvalu Integrated Vulnerability Assessment (Government of Tuvalu, 2020)

Through continued consultation, we refined our adaptation priorities into six key sectors:

- Coastal Protection and Human Settlement
- Critical Infrastructure
- Disaster Risk Reduction and Management
- Food Security (Agriculture and Fisheries)
- Human Health and Wellbeing
- Water Security

Complementing this NAP document is a series of supplementary material that helps facilitate the NAP implementation, including:

- NAP Financing Strategy
- NAP Monitoring and Evaluation Framework
- NAP Communication and Engagement Strategy
- NAP Gender and Social Inclusion Action Plan
- Evidence Based Adaptation Options Report (GHD, 2024)
- Guidelines for integrating climate adaptation in sectoral planning (GHD, 2024)

The technical foundation and methodology for preparing the NAP are described in Appendix A.

1.1. Structure of this document

This document presents a comprehensive view of Tuvalu's climate change adaptation landscape and serves as the foundation for coordinated national action through the NAP. It is structured into six interconnected parts, each contributing to a cohesive adaptation strategy.

Part One sets the strategic direction for the NAP by outlining the guiding principles, policy alignment, mandates, and institutional arrangements that underpin Tuvalu's approach to climate resilience.

Part Two assesses Tuvalu's current and future climate risks and vulnerabilities. Drawing primarily from the Climate Impact Vulnerability and Risk Assessment (CIVRA) which integrates hazard modelling from CSIRO, Federation University, and Climate Comms (2024). This section provides the evidence base for sectoral risk analysis and adaptation planning.

Part Three introduces Tuvalu's Adaptation Pathway, detailing the strategic priorities and measures identified for this initial phase of the NAP. It reflects national priorities and builds on the risk assessment to guide future investment and action.

Part Four focuses on enabling conditions for effective adaptation. It outlines actions to strengthen institutional capacity, promote vertical and horizontal integration, and advance gender equality and social inclusion—critical elements for building systemic resilience.

Part Five presents the sectoral adaptation actions to

be implemented over the next five years. These actions are directly informed by the CIVRA findings and are designed to address the most urgent risks across Tuvalu's priority sectors.

Part Six outlines the implementation architecture of the NAP, introducing four key supplementary frameworks that will guide its execution: the Monitoring, Evaluation, and Learning Framework; the Financing Strategy; the Communications and Engagement Strategy; and the Institutional Coordination Framework. Together, these components ensure that adaptation actions are effectively delivered, tracked, and refined over time.

1.2. Our National Adaptation Plan Vision

Tuvalu's NAP has an overarching goal to protect Tuvalu from the impacts of climate change through bold and decisive actions that strengthen the resilience of our people and natural ecosystems to climate change risks.

The NAP creates the roadmap to achieve this goal. The NAP is a continuous, progressive, and iterative process that supports the Government in achieving their goal, along with key sectoral and cross-sectoral outcomes.

The overarching NAP goal and associated sectoral and cross-sectoral outcomes are aligned with the Te Vaka Fenua o Tuvalu: National Climate Change Policy 2021-2030, which formulates and upholds Tuvalu's commitment to climate change adaptation. The Te Vaka Fenua o Tuvalu also identifies the following as key focus areas or enablers:

- climate finance
- strategic partnerships
- bolstered resilience
- human mobility, and
- national sovereignty.

These elements are embedded in the NAP and tits outcome framework as presented in Table 1.

Table 1. Tuvalu's Overarching goal, sectoral, and intermediate outcomes

OVERARCHING NAP GOAL	
To protect Tuvalu from the impacts of climate change through bold and decisive actions that strengthen the resilience of our people and natural ecosystems to climate change risks.	
SECTORAL OUTCOMES	
Coastal Protection & Human Settlement	**Human Health and Well-being**
Tuvalu's coastal environments are protected from rising sea levels and the impacts of climate change.	Existing health sector planning and response to climate-induced health risks are enhanced
Fisheries	**Agriculture**
Tuvalu's marine biodiversity is protected, and ocean resources are sustainably managed.	Tuvalu's household food security is enhanced through climate-resilient agricultural practice.
Water Security	**Disaster risk management**
All Tuvaluans have access to safe, clean and undisrupted water supply from climate-resilient water sources.	Tuvalu's disaster preparedness, response and recovery systems are strengthened to minimise impacts to human lives and livelihoods from climate-related disasters.
Critical Infrastructure	
All Tuvaluans have access to safe, reliable and climate-resilient critical infrastructure. Intermediate Outcomes: • All Tuvaluans have access to safe, reliable and climate-resilient transportation services. • All Tuvaluans have access to fast and reliable communication and ICT services through modern, climate-resilient telecommunications infrastructure. • Tuvalu's buildings and structures are protected from the impacts of climate change and people are safe. • All Tuvaluans have access to undisrupted power supply from climate-resilient renewable energy systems. • All Tuvaluans live in a clean and healthy environment through integrated and climate-resilient national waste management systems.	

1.3. Values underpinning the NAP

Tuvalu's NAP is grounded in values that are embedded across the national policy landscape and reflect the country's development priorities and resilience goals (see Section 3.1 for details). These values are also consistent with international frameworks for enhanced adaptation action, including the definition and approach outlined in the Cancun Agreements under the UNFCCC (UNFCCC, 2010). These include:

- Development and implementation driven by the Government of Tuvalu and the community
- Participatory and inclusive of all stakeholder concerns and interests
- Supports implementation of equitable adaptation actions
- Guided by best available science, and where appropriate, traditional and indigenous knowledge, and local knowledge systems.

1.4. National context

1.4.1. Geography

Tuvalu is a Polynesian island state located in the western Pacific Ocean (Figure 1). Our population of 10,643 people is dispersed across nine low-lying atolls, with more than 50% of the population settled in Funafuti – the capital of the nation (Tuvalu Central Statistics Division, 2025). Tuvalu has a total land area of 26 km2, a total coastline of 24 km and an average land elevation of 0.5 m above the current normal high tide (Paeniu & Webb, 2023). The highest elevation of 4.6 m above sea level is on Niulakita Island.

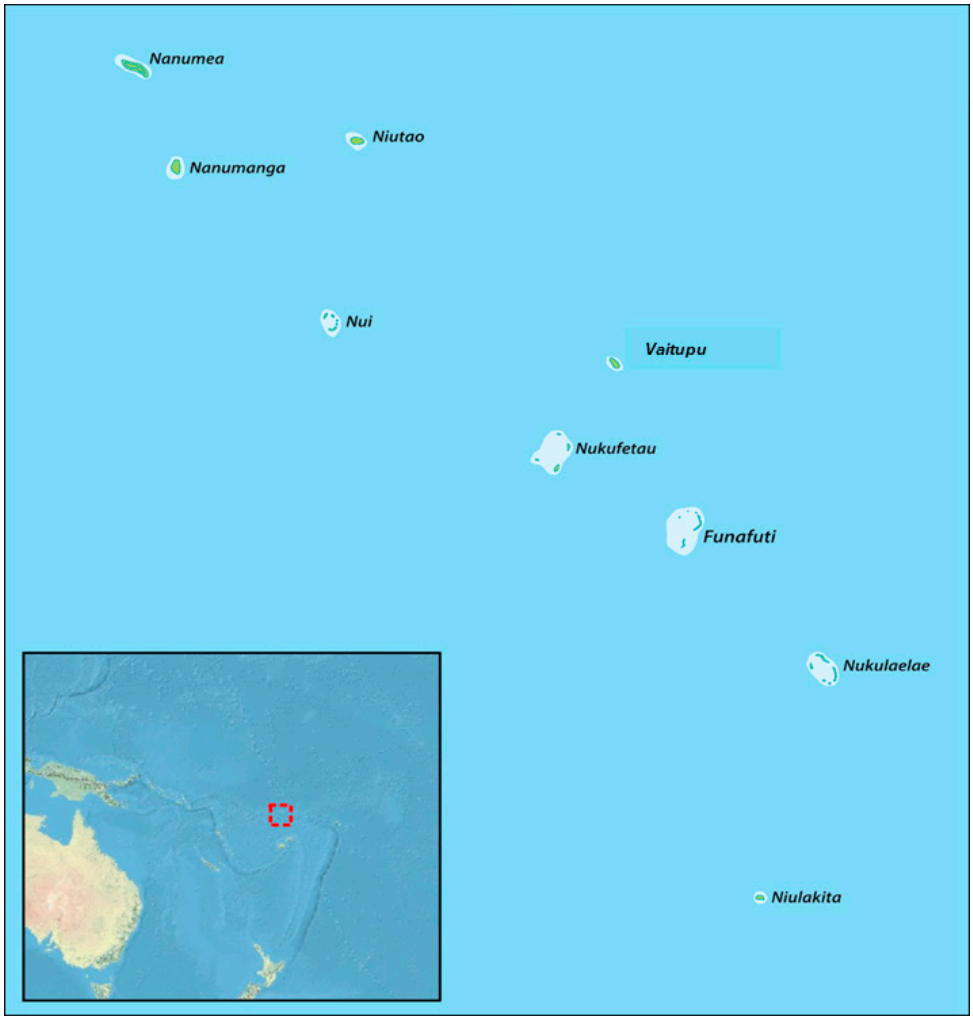


Figure 1. Map of Tuvalu and its nine atolls (Source: World Atlas)

1.4.2. Culture and heritage

Historical evidence indicates the first inhabitants of Tuvalu were of Polynesian descent, with ancestral linkages to Samoa, Tokelau, Cook Islands, Tonga, Futuna, and the Gilbert Islands (now Kiribati) (SPC, 2020). The two main languages spoken are Tuvaluan and English, with the latter typically spoken in more official settings. The Tuvaluan language includes two groups of dialects – one spoken in the Northern Islands (Nanumea, Nanumaga and Niutao), and the other in the Southern Islands (Vaitupu, Nukufetau, Funafuti, Nukulaelae and Niulakita). The dialect in Nui varies from the two main dialects and reflects influences of the i-Kiribati language (SPC, 2020).

Tuvalu's concept of wellbeing extends beyond physical health and economic indicators. Cultural traditions and religion are deeply woven into the fabric of life for Tuvaluans, forming the foundations of their community systems. Each family plays a specific role, known as salaga-tusaga, translated to "for the family", contributing to the well-being of the entire community. Traditional ceremonies also hold great cultural significance. The Ekalesia Kelisiano Tuvalu (EKT) is the predominant religion and the EKT pastor is a prominent figure on each island (SPC, 2020).

The Ola Lei Framework, developed through community-based research, reflects a holistic view of wellbeing that includes spirituality, cultural knowledge, social connectedness, vitality, and harmony with the environment (McNamara, 2021). Cultural practices such as traditional dance, music, storytelling, and communal ceremonies are central to Tuvaluan identity and contribute to emotional and social wellbeing.

1.4.3. Livelihood and economy

The population of Tuvalu is 9,492, of which 8,043 live on the main island of Funafuti. In Tuvalu, 43% of the population above 15 years of age participate in the labour force, with 32.4% engaged in formal, paid employment (Tuvalu Central Statistics Division, 2025). However, 78% of all households engage in primary activities, including livestock activities (75%), fishing (17%), agriculture (16%) and handicrafts and/or food production (5%) (Tuvalu Central Statistics Division, 2024). The annual median income for Tuvaluans is AUD 22,176, which is mainly sourced from employment-related activities. On the other hand, median annual expenditure is reported to be higher than income at AUD 24,428 (Tuvalu Central Statistics Division, 2024).

As of 2024, Tuvalu is supported by a USD 65M economy, with a GDP per capita of USD 6,598 and an annual growth rate of 3.3%. (IMF, 2025). A large proportion of government revenue comes from aid grants from development banks and bilateral relationships. Apart from foreign aid, Tuvalu's economy is supported by domestic revenue earned through fishing licence fees, remittances, dividends from the Tuvalu Trust Fund, and royalties for the "dotTV" domain name (United Nations, 2025).

Tuvalu is currently classified as a Least Developed Country (LDC) by the United Nations. However, the country has met the threshold to be reclassified as a Developing Country (United Nations, 2025) based on human development indicators and its GDP per capita, which is one of the highest in the region (World Bank, 2025).

1.4.4. Health and Education

Tuvalu's education system offers free and compulsory schooling up to Year 10, with secondary and vocational education primarily available in Funafuti. While literacy rates are generally high, challenges remain in ensuring equitable access and outcomes. A significant proportion of children, particularly those from low-income households and outer islands, do not transition to secondary education, and dropout rates are notably higher among students with disabilities (Tuvalu Central Statistics Division, 2025). There are two special schools for young children with disabilities, one in Funafuti at Nauti Primary School and another on the island of Vaitupu called the 'Tealakaikai Centre', which are both run by the Fusi Alofa Association (FAA) (Ministry of Education, Youth and Sports, 2022). Recent data shows a drop in the number of primary and secondary students out of school. The decline is especially notable among secondary students, with only 9% not enrolled in 2022, a decline from 15% the year before. This suggests more young people are attending school or pursuing TVET and university studies (Ministry of Education, Youth and Sports, 2022).

In the health sector, services are centralized in Funafuti, with limited outreach to outer islands. This geographic concentration creates barriers for vulnerable groups including women, the elderly, and persons with disabilities, who often struggle to access timely and appropriate care (WHO, 2024). Reproductive health

services are limited, especially in remote areas, and maternal health indicators remain a concern, with Tuvalu reporting ongoing challenges in maternal mortality.

Sports and recreational activities also play a vital role in community life. While formal infrastructure is limited, inter-island tournaments, school competitions, and community games foster physical health, youth engagement, and social cohesion. These activities are supported under Tuvalu's National Strategy for Sustainable Development 2021–2030, which prioritizes island and culture development as a pillar of national progress (Government of Tuvalu, 2021).

2. Institutional arrangements

2.1. Mandate for the NAP Process

The mandate for the NAP process in Tuvalu is set by the Tuvalu Climate Change Resilience Act, 2019. This Act provides the legal authority for the National Adaptation Plan and embeds adaptation planning into Tuvalu's statutory climate governance framework. Section 22 of the Act prescribes powers to the Tuvalu Climate Change Division in developing strategies and plans, including the NAP, to aid in the implementation of the Te Vaka Fenua o Tuvalu: National Climate Change Policy 2021 – 2030. These powers extend to enable the Climate Change Department (CCD) to conduct awareness and research, coordinate and deliver programs, seek funding, participate in international conventions, and other activities necessary to achieve the vision and goals of the national climate change policy. Furthermore, Action 1.4.1 of Te Kete: National Strategy for Sustainable Development 2021 – 2030 calls for the development of a long-term national adaptation strategy, including a phased land reclamation programme, that considers a worst-case scenario of sea level rise in Tuvalu of up to one metre by the year 2100. This National Adaptation Plan (NAP) fulfils that commitment.

The NAP process also recognises each sector is governed and guided by its own sectoral policies, strategies and plans. Therefore, the NAP seeks to harmonise and strengthen coordination between national and sectoral adaptation planning, ensuring a more integrated and effective approach to climate resilience.

2.2. Governing arrangements

Addressing the complex and far-reaching impacts of climate change in Tuvalu requires a whole-of-government and whole-of-society approach. While each line ministry and Government agency are responsible for implementing adaptation actions within their respective mandates and sectors, the overall coordination and strategic oversight of the NAP is led by the CCD and the National Advisory Council on Climate Change (NACCC).

This collaborative governance model ensures that adaptation planning is coherent, avoids duplication, and minimizes the risk of maladaptation, where actions in one sector may inadvertently undermine resilience in another. Effective coordination also enables the identification of synergies, the scaling-up of successful interventions, and the integration of adaptation needs across all levels of society. The NAP's success depends on the active engagement of government, civil society, the private sector, academia, and development partners, with mechanisms for stakeholder participation to be defined by the NACCC and relevant ministries based on the nature and scope of planned activities.

The implementation of Tuvalu's NAP is anchored in existing institutional frameworks to ensure continuity, efficiency, and legitimacy. The CCD is the lead agency responsible for coordinating climate actions under the Te Vaka o Fenua: National Climate Change Policy 2021–2030, supported by the NACCC. The NACCC, comprising senior and technical officers from government and civil society, oversees policy implementation and appraises climate-related projects to ensure alignment with national priorities. At the subnational level, Island Kaupule, empowered under the Falekaupule Act 2008, plays a key role in local implementation, with support from CCD and the Ministry of Local Government.

To enhance technical coordination, a NAP Technical Working Group has been established under the NACCC. Co-chaired by government and non-government representatives, the group comprises technical officers aligned with NAP principles and operates under a

formal term of reference.

To enhance the governance of Tuvalu's NAP, the role of the National Infrastructure Steering Committee (NISC) should be formally recognized and integrated into the NAP framework. The NISC provides strategic oversight and coordination for infrastructure development, ensuring that investments are climate-resilient and aligned with national priorities. Its cross-sectoral composition including representatives from climate change, infrastructure, education, and local government makes it well-positioned to support the implementation of adaptation actions across multiple sectors. By leveraging the NISC's mandate, the NAP process can strengthen vertical and horizontal integration, improve coordination between national and island-level planning, and ensure that infrastructure projects contribute meaningfully to Tuvalu's long-term resilience. Furthermore, the NISC can support monitoring and evaluation of infrastructure-related adaptation outcomes, enhancing accountability and learning within the NAP process.

To further strengthen coordination and alignment with Tuvalu's broader development agenda, the Development Coordination Council (DCC) will play a strategic role in ensuring that climate adaptation actions under the NAP are harmonized with national development priorities and donor-supported programs.

To promote transparency, accountability, and inclusive decision-making in the implementation of Tuvalu's NAP, the establishment of the National Climate Change Resilience Forum is strongly recommended. Mandated under Section 18 of the Climate Change Resilience Act 2019, the Forum is envisioned as an annual multi-stakeholder platform that brings together representatives from government ministries, Island Kaupule, civil society, faith-based organizations, the private sector, academia, and development partners. Its primary function is to guide and review the progress of climate change policies and adaptation actions, including those under the NAP. By facilitating open dialogue and collaborative planning, the Forum will strengthen coordination across sectors and governance levels, enhance public trust in climate decision-making, and support continuous learning and improvement in adaptation strategies. Integrating the Forum into the NAP governance framework will ensure that Tuvalu's adaptation efforts remain inclusive, transparent, and responsive to the evolving needs of its people and environment.

Table 2 presents a summary of institutional roles, organized by the level of delegated decision-making authority.

Table 2. Summary of proposed institutional roles

INSTITUTION/BODY	ROLE IN NAP IMPLEMENTATION
National Advisory Council on Climate Change	Oversees policy alignment, appraises climate-related projects, and ensures stakeholder engagement.
Development Coordination Council	Aligns NAP with national development strategies and donor coordination; supports resource mobilization.
National Infrastructure Steering Committee	Ensures infrastructure investments are climate-resilient and aligned with NAP priorities.
Island Kaupule	Local implementation of adaptation actions; empowered under the Falekaupule Act.
Climate Change Department	Lead agency for NAP coordination; responsible for planning, implementation, and reporting.
Adaptation Technical Working Group	Provides technical input and coordination across sectors; co-chaired by government and NGOs.
National Climate Change Resilience Forum	Annual multi-stakeholder platform for reviewing progress and promoting inclusive dialogue (to be established).

3. Policy alignment

This section describes the current policy context for the NAP. It outlines how climate change adaptation is addressed and prioritised through the national legislative and policy framework. The policy stocktake also acknowledges relevant regional policies, strategies, and plans for accelerating climate change adaptation in the Pacific.

3.1. Strategic policy linkages

The NAP is a high-level national strategic plan for driving climate change adaptation in Tuvalu. While it has been informed by existing policies and frameworks, the NAP will also seek to influence future policy development and strategic planning to ensure climate adaptation and resilience are integrated into national and sectoral development efforts. Figure 2 illustrates the links between Tuvalu's international commitments, national and sub-national policies.

Tuvalu became a party to the UNFCCC in June 1992. Tuvalu adopted the Kyoto Protocol in 1998 and the subsequent Doha Amendment to the Kyoto Protocol in 2014. In April 2016, Tuvalu ratified the Paris Agreement, which became effective on 4 November 2016.

The Tuvalu Climate Change Resilience Act was enacted in 2019 to give effect to Tuvalu's commitments to the Paris Agreement. The Act provides a legal basis for Tuvalu's climate change response and transition to a climate resilient and lower carbon future. The Act includes provisions for the establishment of the CCD (Section 12 of the Act), and the National Advisory Council on Climate Change (NACCC; Section 19). It also mandates the development of the National Climate Change Policy (Section 21) and the implementation of the NAP Process (Section 22).

The Te Vaka Fenua o Tuvalu: National Climate Change Policy 2021 – 2030 is the main policy guidance for the NAP. The policy's vision is for a strong and resilient Tuvalu that protects the identity, culture and existence of our people and meets our commitment to environmental sustainability, with three key policy outcomes:

- **Policy Outcome 1:** Strengthened access to climate finance and strategic partnerships
- **Policy Outcome 2:** Reduced vulnerability to climate change impacts through enhanced resilience; and
- **Policy Outcome 3:** Managed human mobility and protection of national sovereignty

The vision and policy outcomes of the Te Vaka Fenua o Tuvalu are closely aligned with the 10-year sustainable development vision of the Te Kete: National Strategy for Sustainable Development 2021-2030 (Te Kete). The Te Kete's vision is for a peaceful, resilient and prosperous Tuvalu, with five strategic priority areas identified as critical in achieving this vision and climate change adaptation integrated as a key theme of the strategy:

- **Strategic Priority Area 1:** Enabling environment
- **Strategic Priority Area 2:** Economic development
- **Strategic Priority Area 3:** Social development
- **Strategic Priority Area 4:** Island culture development
- **Strategic Priority Area 5:** Infrastructure development

The horizontal and vertical integration and implementation of the Te Vaka Fenua o Tuvalu and Te Kete are supported through various national, sectoral and island-level policies, plans and strategies. The linkages between these documents are mapped out in Figure 2.

Additionally in 2023, Tuvalu and Australia signed the Falepili Union Treaty, establishing a formal pathway for climate mobility. The treaty provides Tuvaluans with access to residency, education, and employment in Australia, recognising that external migration is already a reality for many. It reflects Tuvalu's proactive approach to safeguarding its people's rights and dignity in the face of climate-induced displacement and complements national adaptation efforts by embedding human mobility within Tuvalu's climate policy framework.

3.2. Streamlining implementation for climate resilience

The Pacific Islands Framework for Resilient Development (FRDP), endorsed by Pacific leaders, defines resilience as:

"The ability of Pacific peoples and systems to withstand, recover, and adapt to climate-related shocks and stresses, while safeguarding livelihoods, ecosystems, and cultural heritage" **(SPC, SPREP, UNDRR, 2016)**

The NAP serves as a high-level strategic document for climate change adaptation across different sectors and governance levels. It recognises adaptation efforts require a 'whole-of-government' and 'whole-of-society' approach and, therefore, seek to strengthen cross-sectoral coordination and streamline implementation. Furthermore, where a gap exists, the NAP integrates evidence-based climate resilient principles as a key development pillar of policies, plans and strategies.

To achieve these goals, the adaptation measures of the NAP have been identified on the basis of a stocktake of Tuvalu's policy and activity landscape for adaptation. The process reviewed current and planned actions outlined in national, island and sectoral-level plans, policies, programs and strategies, identified those with a direct or indirect adaptation objective, and assessed their ability to address Tuvalu's current and future climate risks, as determined by the Tuvalu CIVRA.

The stocktake included the review of all key documents presented in Figure 2. A key barrier identified by the stocktake was the limited coordination and fragmented approach to climate adaptation planning to date. By mapping out planned actions and the institutions responsible for implementation, the process brought a better understanding of the adaptation planning landscape, as well as the interlinks between different sectors and governance levels.

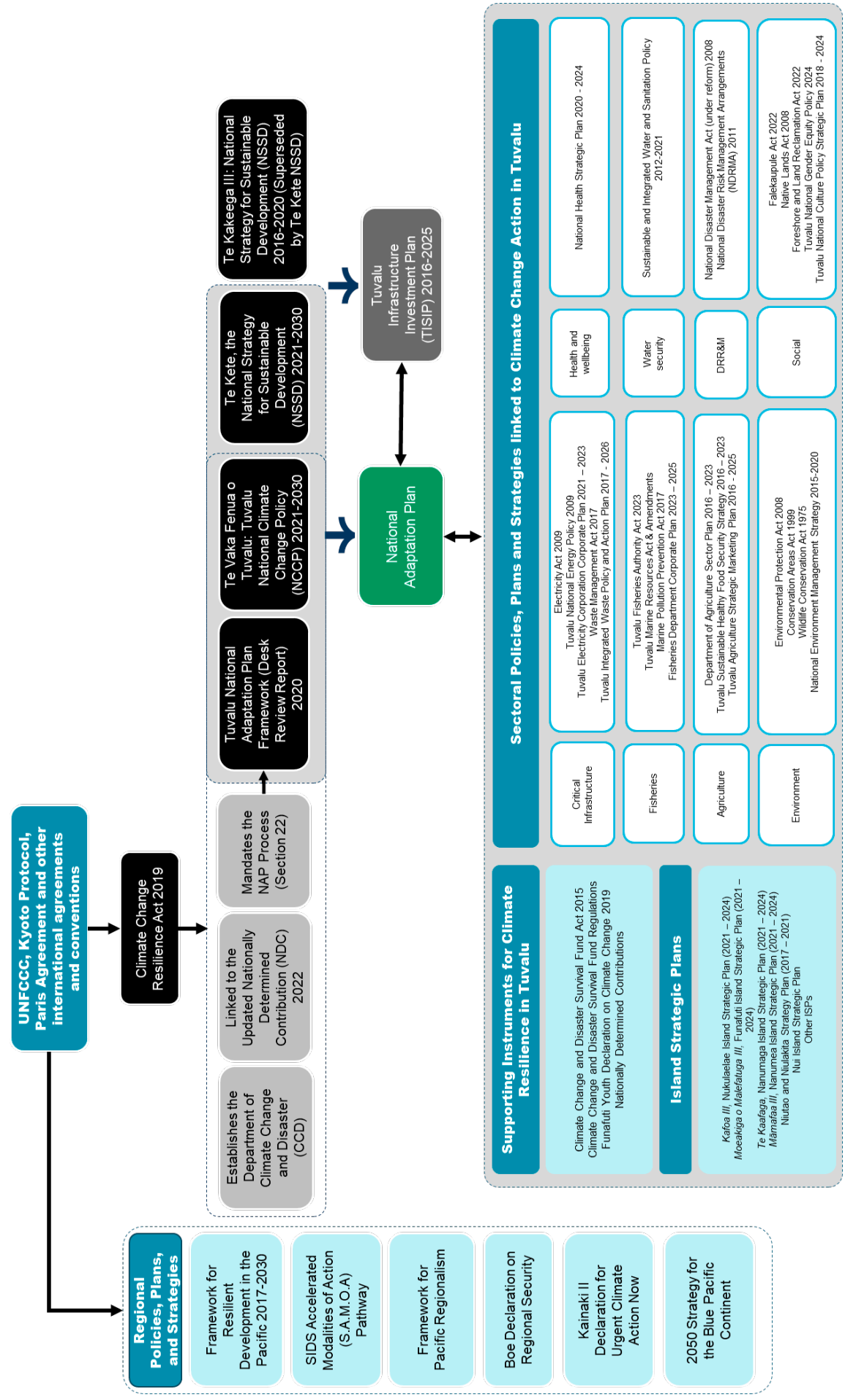


Figure 2. Strategic policy linkages

Part Two:
Climate impacts, risks and vulnerabilities

4. Current and Future Climate for Tuvalu

4.1. Introduction

This section presents a summary analysis of climate-related variables affecting Tuvalu, focusing on sea level rise, coastal inundation, air and sea surface temperatures, rainfall, drought, ocean acidification, and tropical cyclone activity. These summaries draw primarily from the Climate Hazard Report prepared for the NAP by CSIRO, Federation University and Climate Comms (2024) and the Climate Impact, Vulnerability & Risk Assessment prepared for the NAP by Deloitte (2024), along with other relevant published resources.

Of Tuvalu's nine islands, five are coral atolls, three are table reef islands, and one island exhibits characteristics of both. Together they have a total coastline of 24km and an average land elevation of 0.5m above today's normal high tide (Paeniu & Webb, 2023). All islands are low-lying, with the highest natural elevation reaching only 6.54 metres above sea level, making Tuvalu highly exposed to ocean-related hazards such as sea-level rise and coastal inundation.

Tuvalu's climate is influenced by several major atmospheric systems in the western tropical Pacific, including the Intertropical Convergence Zone (ITCZ), South Pacific Convergence Zone (SPCZ), and the West Pacific Monsoon. These systems are associated with convective activity and the formation of tropical cyclones and thunderstorms (Figure 3). These systems, along with the El Niño–Southern Oscillation (ENSO) and Madden-Julian Oscillation (MJO), contribute to the unpredictability of rainfall, sometimes triggering extreme events like floods or droughts.

Tuvalu's climate is distinctly tropical and maritime, characterized by consistently warm temperatures, high humidity, and seasonal rainfall. The country experiences two main seasons:

- Wet season (November to April): Dominated by the SPCZ this period brings frequent rainfall and thunderstorms.
- Dry season (May to October): Marked by relatively lower rainfall and more stable weather conditions.

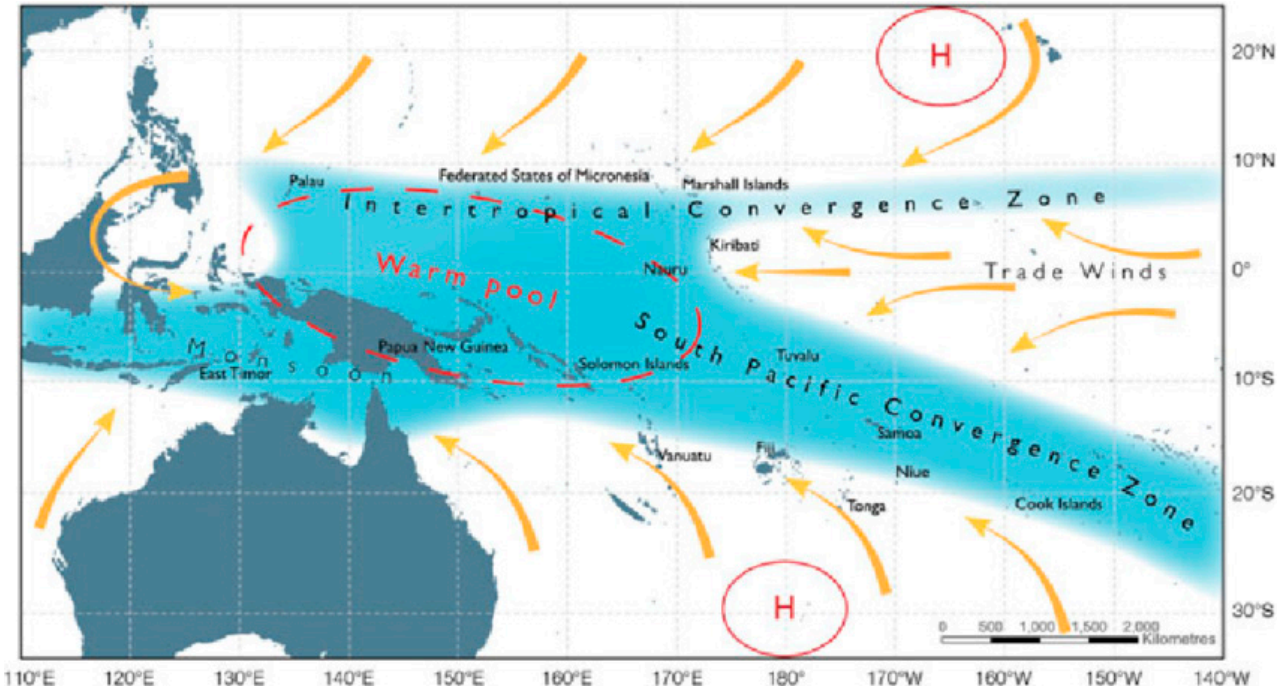


Figure 3. Climatic features of the western tropical Pacific (Australian Bureau of Meteorology and CSIRO 2011).

4.2. Sea level and coastal inundation

4.2.1. Observations and trends

One of the most pressing climate change concerns for Tuvalu is the rise in sea levels and the associated projected shoreline retreat resulting from global warming.

Because of Tuvalu's low elevation, and narrow width, most of the country's population, critical services and infrastructure are located adjacent to or within a few metres of the coast. Consequently, all of Tuvalu is vulnerable to coastal inundation and erosion, salinisation, increases to relative sea-level rise, and increasing severity of storm surge events.

Global mean sea level rose 20 cm between 1901-2018 with 15 cm in the past 30 years (CSIRO, Federation University, Climate Comms, 2024). Tide gauge measurements indicate a rise of 0.43 cm/year for the period 1992 to 2020.

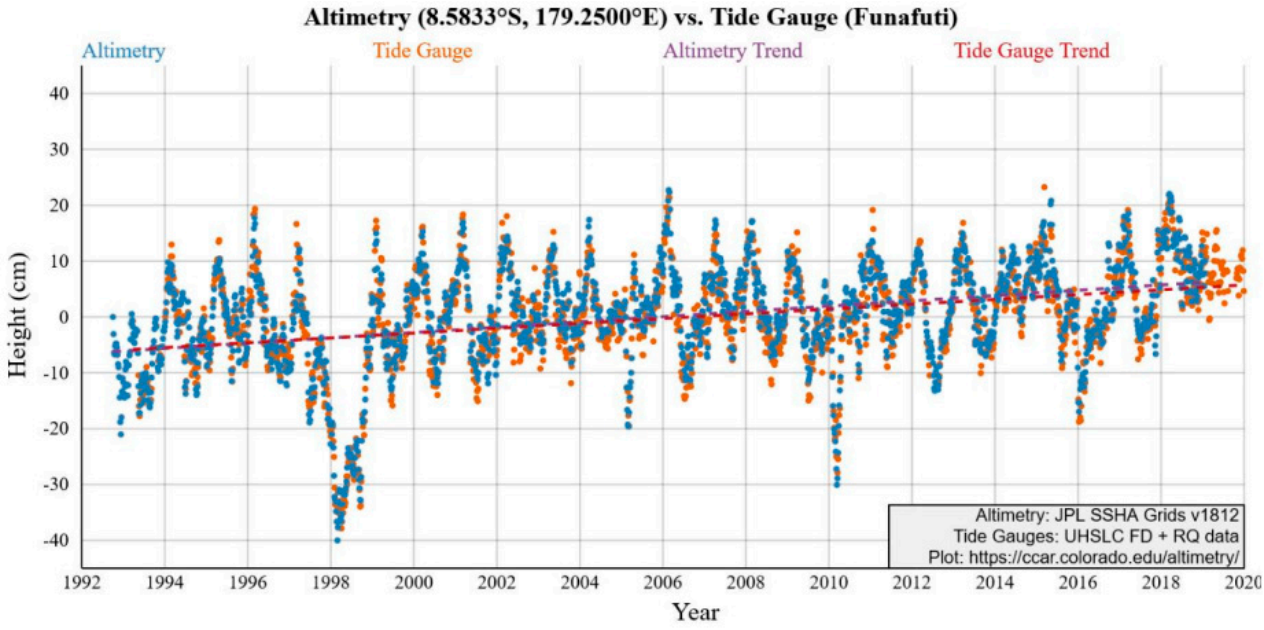


Figure 4. Daily SSH data from satellite altimetry and the Funafuti tide gauge measured relative sea level (see Sea Level Explorer Tool (https://ccar.colorado.edu/altimetry/)

Research from NASA Sea Level Change team in 2023 highlights that over the past 30 years, sea levels in Tuvalu have risen by 0.15 meters, averaging an increase of 5 mm per year since 1993. This rate is expected to accelerate, potentially more than doubling by 2100. Projections indicate that relative sea levels will rise by 0.2-0.3 meters by 2050 compared to 2005 levels, and by 0.5-1.0 meters by 2100, with worst-case scenarios approaching a 2-meter rise (Adams, et al., 2023).

4.2.2. Extreme sea level and coastal inundation

Tuvalu experiences frequent coastal inundation driven by a combination of high tides, storm surges, wave action, and interannual sea level variability. King Tide events, averaging 3.2 m at Fongafale, occur approximately 1.5 times per year and are influenced by spring tides, storm conditions, and ocean warming. While mean sea level rise is gradual, the compounding effects of tides, waves, and storms, particularly during extreme weather events such as Tropical Cyclone Pam, are already resulting in regular inundation during spring tides (Hoeke, Damlamian, Aucan, & Wandres, 2021). Offshore reefs provide some protection by dissipating wave energy, but local geomorphology and dynamic shoreline processes contribute to highly variable impacts.

4.2.3. Sea Level Rise Projections

The threat of sea-level rise for Tuvalu is clearly illustrated in both historical observations and future projections, as shown in Figure 5. Tide-gauge and satellite records show a consistent upward trend in sea levels, while climate model projections indicate that this trend will accelerate over the coming decades.

Future sea-level rise has been modelled under three global emissions scenarios (Representative Concentration Pathways (RCP)). The solid lines represent the median projection for each scenario, while the shaded areas show the 5th to 95th percentile range, highlighting the uncertainty across the full range of modelled outcomes.

According to projections by CSIRO and SPREP (2021), Tuvalu is expected to experience a median sea-level rise of approximately 0.13 metres by 2030, and 0.22 metres by 2050 under a low emissions scenario, relative to the 1986–2005 baseline.

Even under the most optimistic scenario, sea-level rise will continue, and adaptation will be essential. Under a high-emissions pathway (RCP8.5), the scale of projected sea-level rise poses a direct threat to the long-term habitability of Tuvalu's islands.

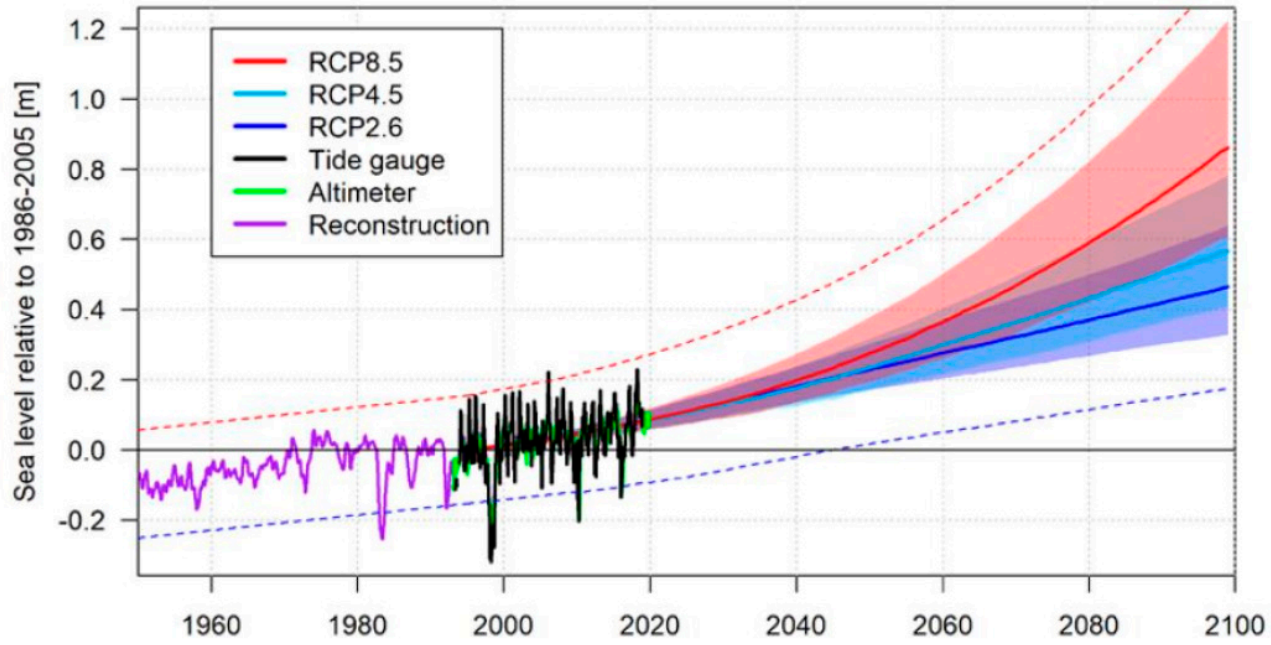


Figure 5. Observed and projected sea-level rise is shown using tide-gauge (black), satellite (green), and reconstructed (purple) monthly data, all referenced to the 1986–2005 mean. Future projections (1995–2100) under RCP2.6, RCP4.5, and RCP8.5 include median estimates (solid lines) and uncertainty ranges (5th–95th percentiles, shaded) (CSIRO, Federation University, Climate Comms, 2024)

4.2.4. Coastal Inundation Projections

Recent modelling of coastal inundation in Tuvalu incorporates nearshore processes such as wave setup and runup, in addition to tides and sea level (Wandres, Espejo, & Damlamian, 2023). These factors are essential for producing fine-scale projections across Tuvalu's nine islands. Hazard maps developed under current and future sea level scenarios (SSP2-4.5 and SSP5-8.5) show a substantial increase in flood frequency and extent by 2060 and 2100. Areas currently experiencing 50- to 250-year flood events may face flooding every 5 to 10 years by 2100. For example, under SSP5-8.5, the land area inundated during a 100-year event could increase from 27.2% to over 53% by 2060 (Wandres & Espejo, 2024).

While projections vary by island, the overall trend is consistent: flood events will become significantly more frequent across all islands. Funafuti, Nui, Nukufetau, and Vaitupu may see current 50-year flood

events occurring every 1 to 5 years by 2060, while Nanumaga, Nanumea, Niutao, and Nukulaelae may experience these events more than once every 10 years (Wandres & Espejo, A National- Scale Coastal Flood Hazard Assessment for the Atoll Nation of Tuvalu, 2024). Although changes in wave climate are expected to have minimal impact compared to sea level rise, increasing cyclone intensity due to global warming may further exacerbate coastal flood hazards.

These results indicate that the frequency of extreme floods due to climate change will threaten the habitability of all of Tuvalu's islands over the coming decades particularly when considering the already limited access to freshwater resources and agriculturally viable land.

Examples of exposed locations include densely populated Funafuti where more than 77% of the atoll area is projected to be flooded once every 5 years by 2100, irrespective of the climate change projection (see Figure 6 and Figure 7). Additionally, the consequence rating identified through the Tuvalu CIVRA for the climate change risks in coastal protection and human settlement sector is Extreme (see Deloitte, 2024 for details).

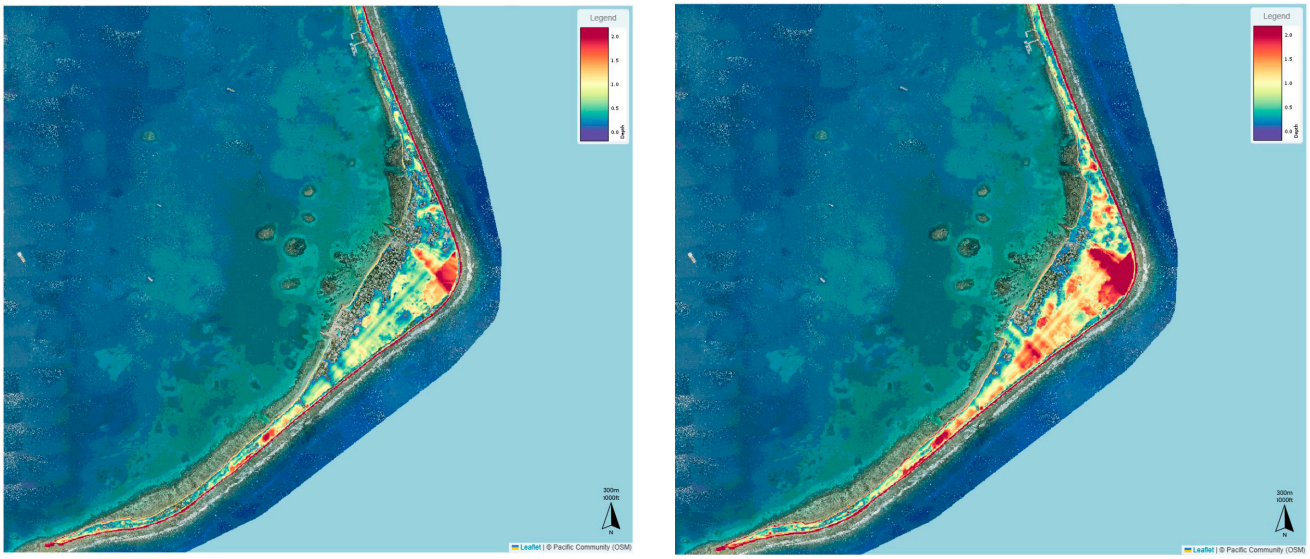


Figure 6. Map of projected inundation of Funafuti under SSP2-4.5 (left) and SSP5-8.5 (right) 2060. Sourced from TCAP

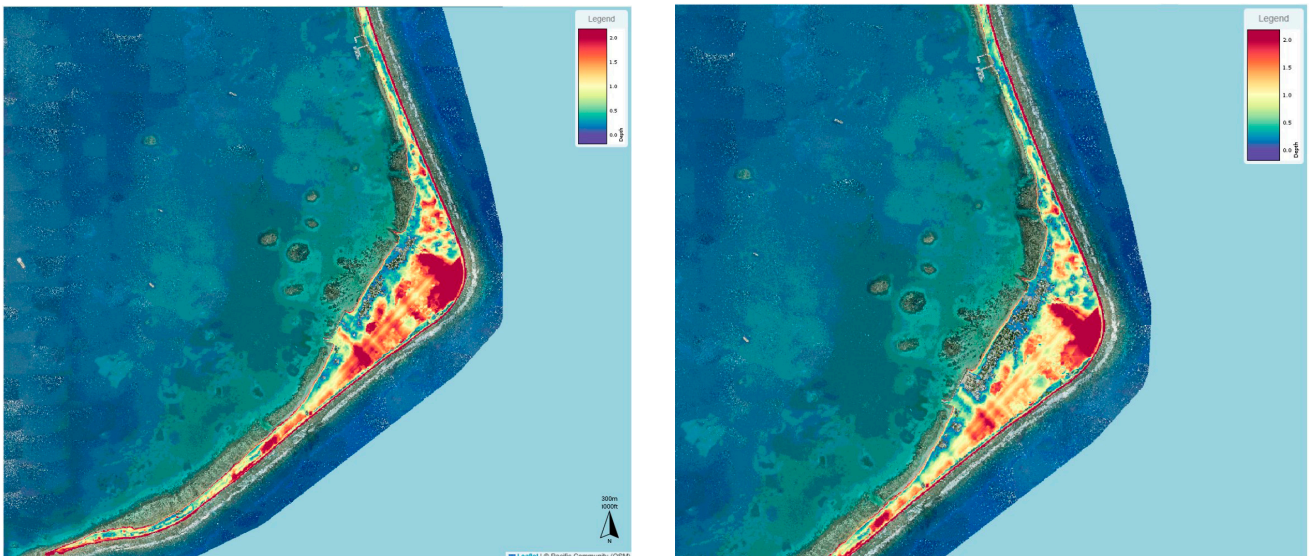


Figure 7. Map of projected inundation of Funafuti under SSP2-4.5 (left) and SSP5-8.5 (right) 2100. Sourced from TCAP

4.3. Air Temperature

4.3.1. Observations and trends

Air temperatures have a small seasonal cycle in Tuvalu, as recorded at Funafuti and Nanumea, with less than 1 °C change in average monthly maximum and minimum temperatures during the year (Figure 8). Monthly-average maximum air temperatures over Tuvalu are around 31 °C while minimum temperatures are around 26 °C.

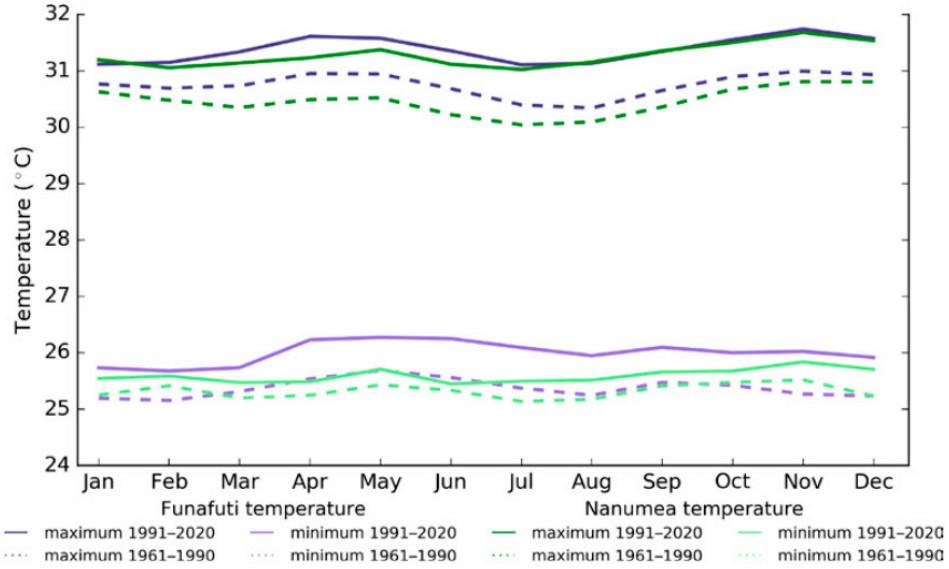


Figure 8. Monthly average maximum and minimum air temperature for Funafuti and Nanumea in Tuvalu, based on data from 1951-2020

Except for average minimum temperatures at Nanumea for April and June, there has been a clear shift towards warmer average monthly temperatures between the periods of 1961-1990 and 1991-2020 (Figure 9). Average annual and seasonal temperatures have increased significantly at Funafuti (Figure 10). May-October temperatures are warming faster than November–April temperatures.

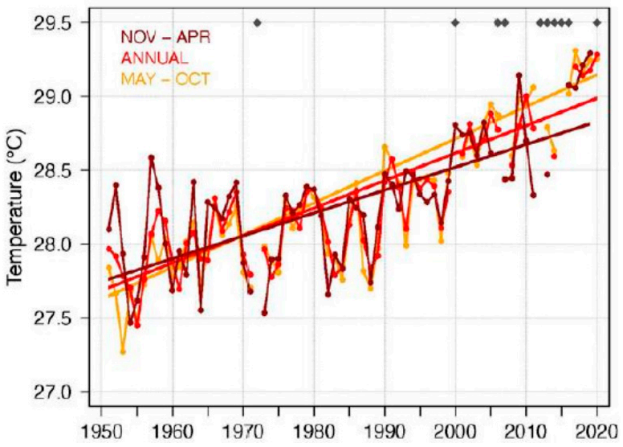


Figure 9. Annual November–April and May–October average temperatures for Funafuti. Straight lines indicate linear trends. Diamonds indicate years with insufficient data for one or more variables (McGree et al, 2022)

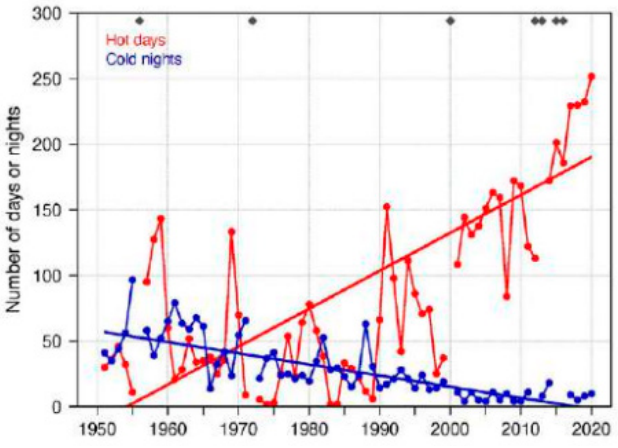


Figure 10. Annual number of hot days and cold nights at Funafuti. Straight lines indicate linear trends (McGree et al, 2022)

Observations at Funafuti indicate a clear warming trend, with an increase in the number of hot days and warm nights, and a corresponding decline in cool days and cold nights (McGree et al, 2022). Since 2015, more than half of all days each year have been classified as hot (Figure 10). This pattern aligns with rising annual and seasonal temperatures at Funafuti (Figure 10) and is consistent with broader global climate change trends.

4.3.2. Projected temperatures

Future temperature projections for Tuvalu are subject to three main sources of uncertainty: greenhouse gas emission pathways, regional climate model responses, and natural climate variability (e.g., ENSO). In the near term (2020–2039), projected warming is similar across low (RCP2.6) and high (RCP8.5) emissions scenarios. However, divergence increases over time, with high emissions leading to substantially greater warming by 2070. Projected temperature increases relative to the 1986–2005 baseline are approximately 0.7 °C by 2030 (range: 0.4–1.0 °C), 0.8 °C (0.5–1.2 °C) under low emissions and 1.4 °C (1.0–1.9 °C) under high emissions by 2050, and up to 2.1 °C (1.5–3.1 °C) under high emissions by 2070 (CSIRO and SPREP, 2021). These projections highlight the significant influence of emissions choices on Tuvalu's future climate.

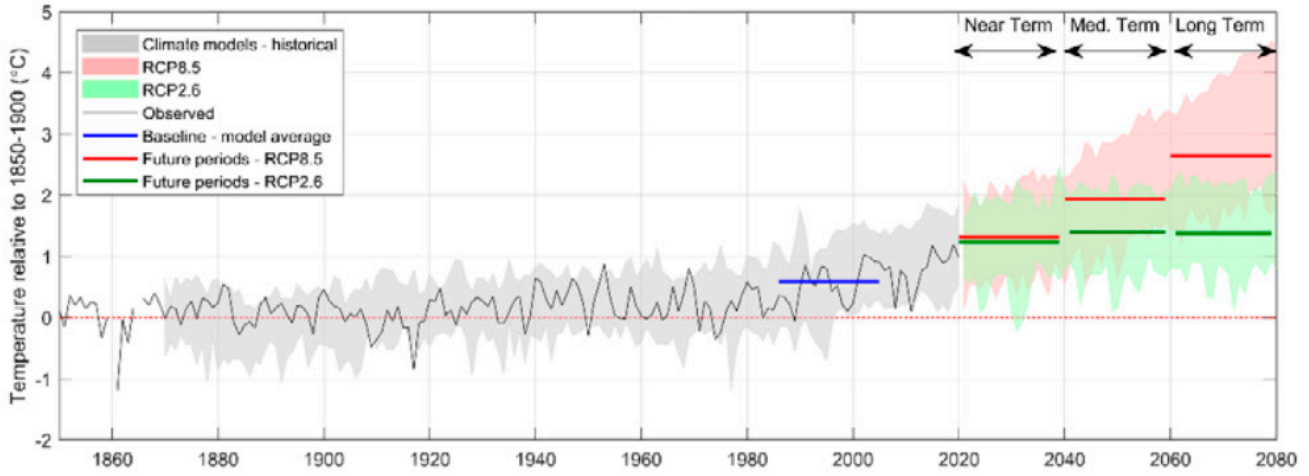


Figure 11. Average annual temperature in the Tuvalu region relative to 1850-1900 (°C) derived from observations (Berkeley shown; grey solid line) and simulated in CMIP5 models, showing the range of all models for the past period (grey band), the future under a very high emissions pathway (pink band) and a very low emissions pathway (green band). Thick horizontal lines show the mean of all models in 20-year periods of the baseline 1986-2005 (blue) and future 20-year periods centred on 2030, 2050 and 2070 (RCP8.5; red horizontal lines, RCP2.6; green horizontal lines). (CSIRO and SPREP, 2021)

4.3.3. Extreme temperatures

Climate models project that Tuvalu's annual maximum temperatures, which historically averaged slightly under 34°C, will rise significantly in the 21st century. By mid-century (2040-2060 period), temperatures are expected to increase by between 1.8°C (low emissions) and 2.5°C (high emissions) and by 2080-2100, temperatures could reach as much as 5.8°C under high emissions.

During 1985-2014, Tuvalu experienced an average of 12 days per year where temperatures exceed extreme heat thresholds [1]. The number of extremely hot days is projected to increase dramatically, reaching up to 264 extra extreme heat days by mid-century, and over 350 days under high emissions, by the end of the century. Additionally, analysis of extreme temperature events indicates that such extremes will become increasingly frequent in Tuvalu. For example, a 35 °C temperature, once expected roughly every 40 years, could occur every year by mid to late century under all emissions scenarios. This means Tuvalu will face much more frequent and intense heat extremes, with significant implications for health, infrastructure and environment (CSIRO, Federation University, Climate Comms, 2024).

1 Extremely hot days are defined as exceeding the 95th percentile of historical temperatures.

4.4. Rainfall

4.4.1. Observations and trends

Tuvalu has a wet season from December to March and a dry season from April to November. The seasonal cycle is strongly affected by the SPCZ, which is most intense during the wet season. The percentage of rainfall received at Funafuti and Nanumea during December–March is 43 % (Figure 12). Funafuti averages about 3460 mm of rain per year, with 410 mm in January and about 210 mm in June. Nanumea averages around 325 mm in January and almost 160 mm in September.

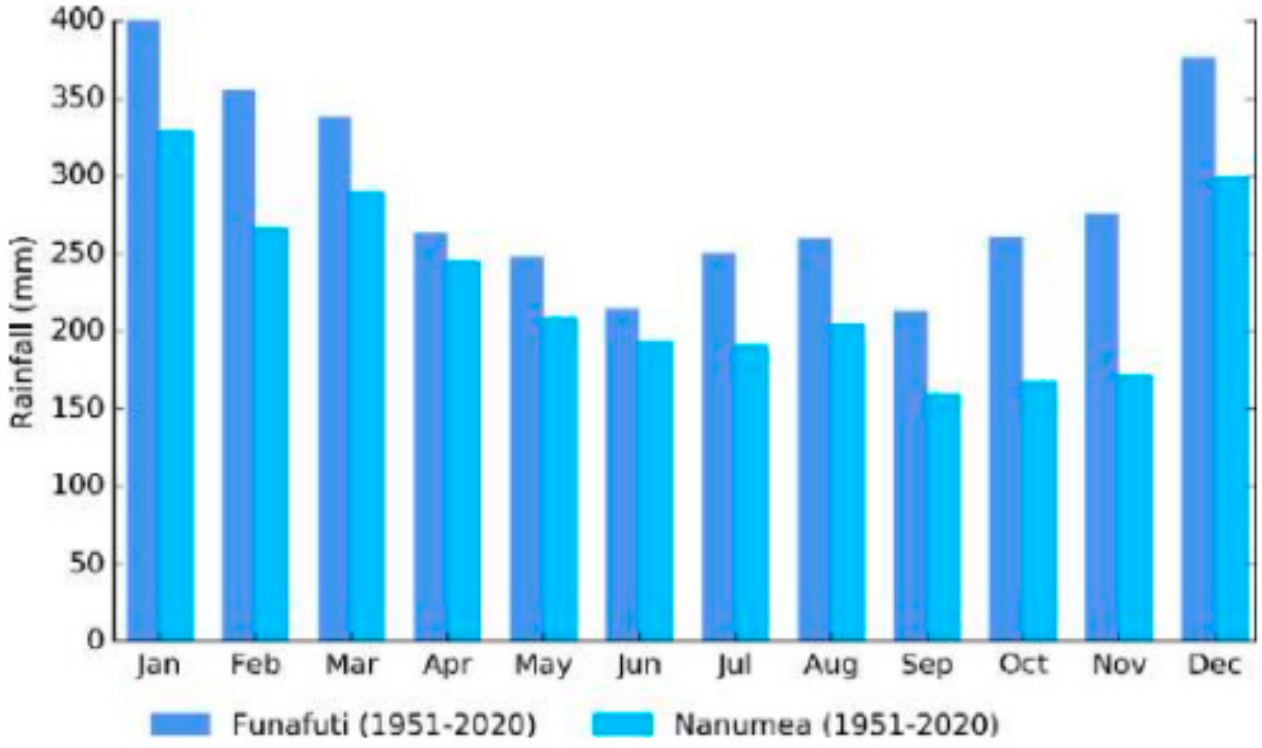


Figure 12. Monthly average rainfall at Funafuti and Nanumea in Tuvalu, based on data from 1951-2020 (Mcgree et al, 2022)

There is no statistically significant trend in annual total rainfall or annual maximum one-day rainfall at Funafuti since 1951. Annual rainfall during this period has ranged from approximately 2,000 mm to 4,800 mm. Around 2011, the lowest recorded annual rainfall being 2000mm spread throughout the year. On average, rainfall occurs on more than half of the days each year. Over the period 1951–2020 at Funafuti, trends in annual and seasonal rainfall are not statistically significant (Figure 13) The number of wet days each year has decreased (2.2 days/decade), though this trend is not statistically significant. A statistically significant increase in consecutive dry days (0.36 days/decade) has been observed in Funafuti (1951–2020) with longer dry spells and droughts being typically experienced during La Niña years (Figure 14)

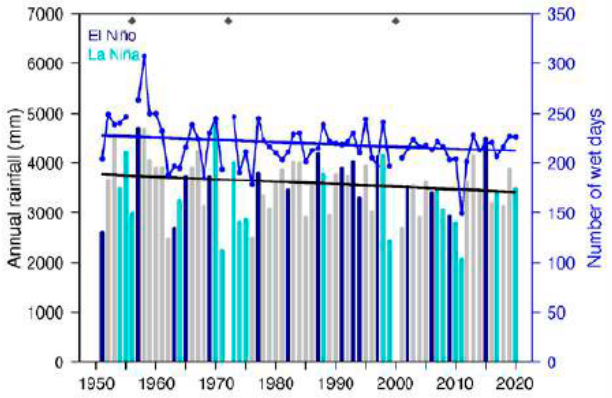


Figure 13. Annual rainfall (bar graph) and number of wet days (where rainfall is at least 1 mm; line graph) at Funafuti (left). (McGree et al, 2022)

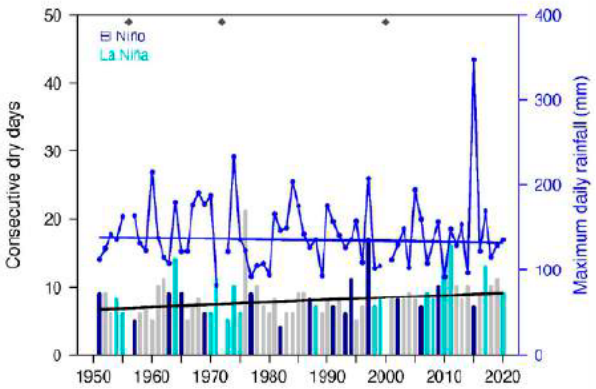


Figure 14. Annual longest run of consecutive dry days (bar graph) and maximum daily rainfall (line graph) at Funafuti (McGree et al, 2022)

The maximum daily rainfall amount varies from around 100-350 mm/day (Figure 14). This amount has decreased slightly (-1 mm/decade) since 1951, but the trend is not statistically significant. The tropical cyclone contribution of 1-day, 2-day and 3-day rainfall to annual maximum rainfall in Tuvalu is 19 %, 21 % and 22 %, respectively, so about 80 % of the extreme rainfall comes from non-cyclone weather systems. During El Niño events, the SPCZ tends to move northeast, resulting in warmer sea surface temperatures, heavier rainfall and more tropical cyclones, with the opposite during La Niña events.

4.4.2. Projected rainfall

Projected changes in annual average rainfall for Tuvalu show modest increases across all emissions scenarios. By 2030, rainfall is expected to rise by approximately 4% compared to the 1995 baseline, regardless of the emissions pathway. By mid-century (2050), the increase remains around 3% under both low and high emissions scenarios. Toward the end of the century (2070), rainfall is projected to increase by about 3% under low emissions and up to 6% under high emissions. When assessed against global warming thresholds, rainfall is projected to increase by 3% at 1.5 °C warming, 5% at 2.0 °C, 7% at 3.0 °C, and 11% at 4.0 °C, with uncertainty ranges widening at higher warming levels (CSIRO and SPREP, 2021).

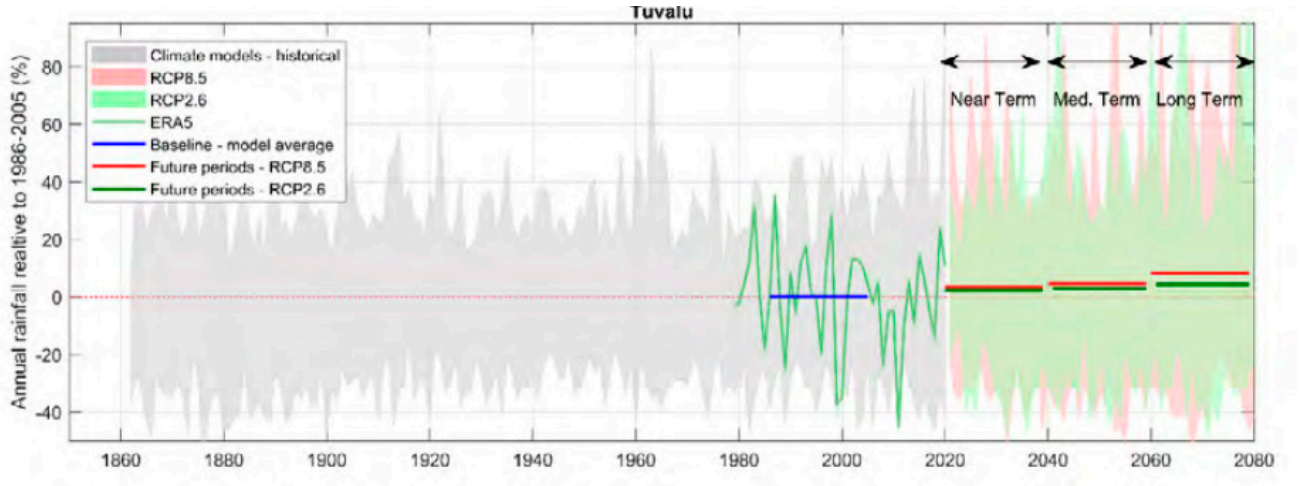


Figure 15. Average annual rainfall in the Tuvalu region relative to 1850-1900 (%) in ERA5 and simulated in CMIP5 models, showing the range of all models for the past period (grey), the future under a very high emissions pathway (pink band) and a very low emissions pathway (green band). Thick lines show the mean of all models in 20-year periods: the baseline 1986-2005 (blue) and future 20-year periods centred on 2030, 2050 and 2070 (RCP8.5; red lines, RCP2.6; green lines). (CSIRO and SPREP, 2021)

Simulations of daily rainfall for Tuvalu from 1950 to 2100 show a slight upward trend in annual maximum rainfall intensity, with strong interannual variability. The historical average (1985–2014) was approximately 134 mm/day. By 2100, this is projected to increase by up to 28% under high emissions, reaching around 172 mm/day (Chand S. e.). The number of extreme rainfall days[2] is also expected to rise from 18.7 to 24.2 days annually under high emissions, a 29% increase.

Return periods for very intense rainfall events are projected to shorten significantly. A 175 mm/day event, which historically occurred once every 80 years, may occur every 3.6 years by the end of the century under high emissions. These changes reflect a clear intensification and increased frequency of extreme rainfall events, with potential amplification from more frequent extreme ENSO events (CSIRO, Federation University, Climate Comms, 2024).

4.5. Drought

4.5.1. Observations and trends

Drought, defined as a prolonged period of below-average rainfall, poses significant challenges in Tuvalu. Meteorological drought, characterized by reduced rainfall, was the focus of the CSIRO assessment and is commonly measured using the Standardised Precipitation Index (SPI). SPI enables comparison of rainfall anomalies over different time scales, helping to identify drought events and their severity, ranging from minor to extreme.

In Tuvalu, SPI-3 (three-month accumulation) is most relevant due to the absence of streams, limited groundwater, and reservoirs. Analysis from 1951 to 2023 reveals 32 SPI-3 drought events, often linked to La Niña phases of the ENSO which typically bring drier conditions. Although trends in drought intensity, duration, and frequency show some variation over time, they are not statistically significant (Figure 16).

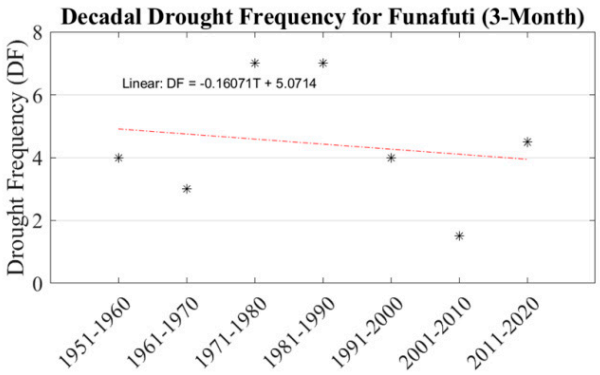


Figure 16. Linear regression of decadal drought frequency (SPI with 3-month accumulation period) over Tuvalu for the 1951 – 2020 period. The trend is not statistically significant at the 95% confidence level.

4.5.2. Projected drought

Under a high emissions scenario, future droughts in Tuvalu are projected to become shorter and less frequent, particularly for moderate and severe categories, while drought intensity remains largely unchanged (CSIRO, Federation University, Climate Comms, 2024). The drought projections in Figure 17 are based on the SPI which does not account for rising temperatures and increased evapotranspiration, factors that could make future droughts more severe than indicated.

Since 1951, Tuvalu has experienced steady warming, with maximum temperatures increasing by 0.17 °C and minimum temperatures by 0.21 °C per decade (McGree et al, 2022). The number of hot days has risen by 29 per decade, and warm nights by 14, suggesting that droughts are becoming increasingly heat-intensified despite stable rainfall trends.

2 Extreme rainfall days are defined as those exceeding the 95th percentile

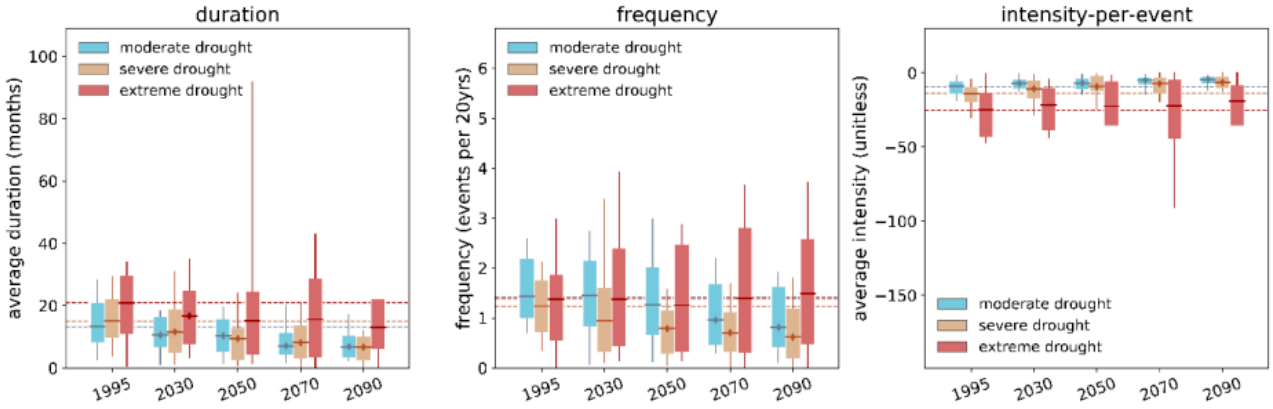


Figure 17. Tuvalu average of drought duration (left), frequency (middle) and intensity (right) in the reference period (20 years centred on 1995) and future periods (20-years centred on 2030, 2050, 2070, 2090) for a high greenhouse gas emission pathway (RCP8.5). Different drought categories (moderate, severe, and extreme) are given. Drought duration is in months, frequency is in "number of events per period," while intensity is unitless (NB: the more negative the value the more intense the event (CSIRO, Federation University, Climate Comms, 2024)

4.6. Sea surface temperature

4.6.1. Observations and trends

Across Tuvalu, annual average sea surface temperatures (SSTs) range from approximately 28.6 °C in the south to 29.5 °C in the north. Measurements from the Funafuti tide gauge (1993–2021) show SSTs ranging between 29 °C and 30 °C, with bimodal peaks around November–December and April–May (Figure 18). Monthly extremes can reach up to 31.5 °C, while minimum averages dip to 29 °C in August. Half of all observations fall within ±1 °C of the mean. Satellite-derived SST data (OISST v2-1) averaged over Tuvalu's EEZ indicate a warming trend of 0.22 °C per decade from 1981 to 2021 (Figure 19).

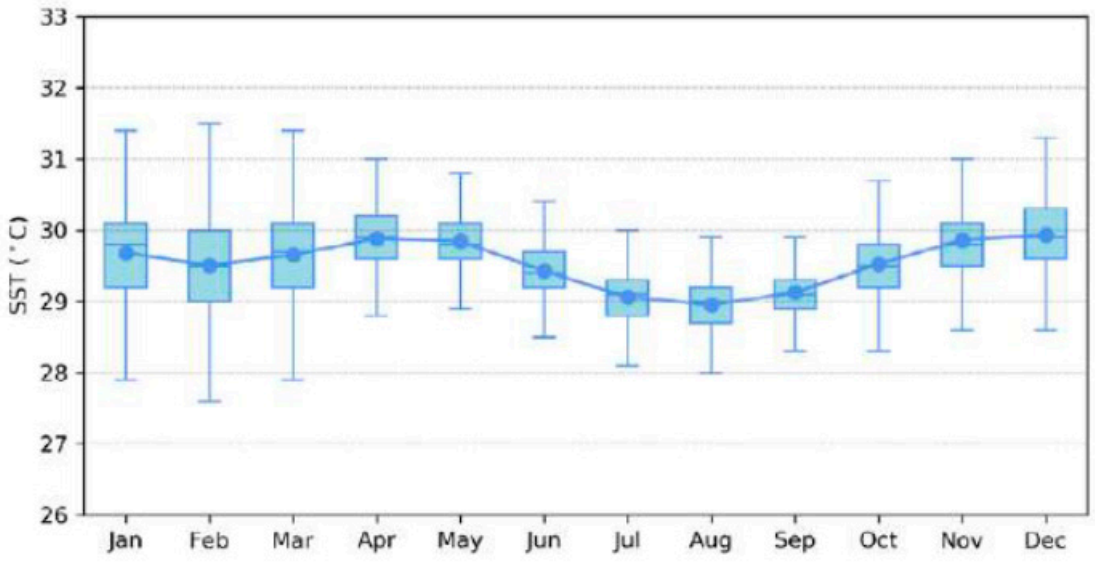


Figure 18. Annual SST measured at the Funafuti tide-gauge. Blue dots show the monthly average, and shaded boxes show the middle 50% of hourly observations. Lines show the top and bottom 25% of hourly observations. (McGree et al, 2022)

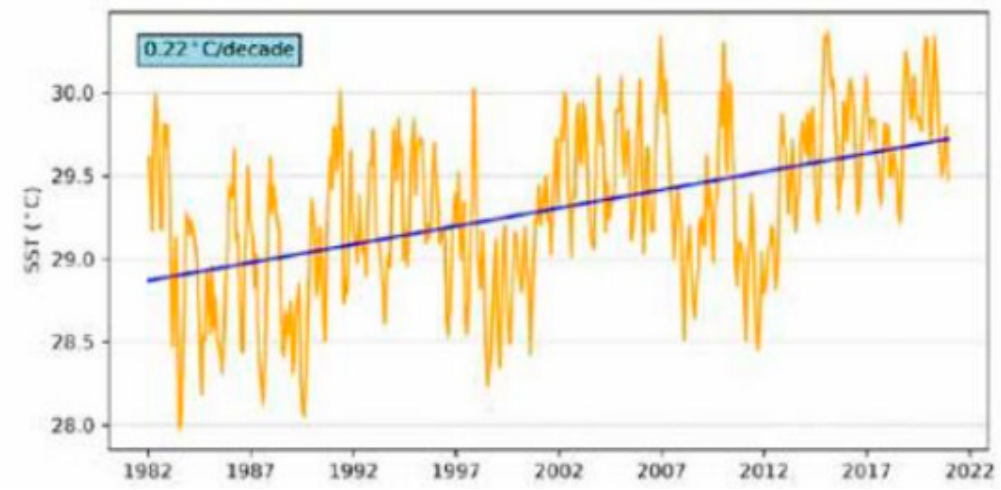


Figure 19. SST from satellite measurements averaged across the Tuvalu EEZ, with annual averages shown as the orange line. The blue line shows the linear regression trend (Huang, 2022)

4.6.2. Projected sea surface temperature

By 2050, the sea surface temperature (SST) in Tuvalu's EEZ is projected to rise by approximately 0.9°C to 1.3°C, depending on the emissions scenario. By 2090, increases range from 1.0°C under low emissions (SSP1-2.6) to 2.8°C under high emissions (SSP5-8.5), relative to the 1995–2014 baseline. Under high emissions, average SSTs could exceed 32.1°C by the end of the century, compared to the historical average of 29.3°C (CSIRO, Federation University, Climate Comms, 2024).

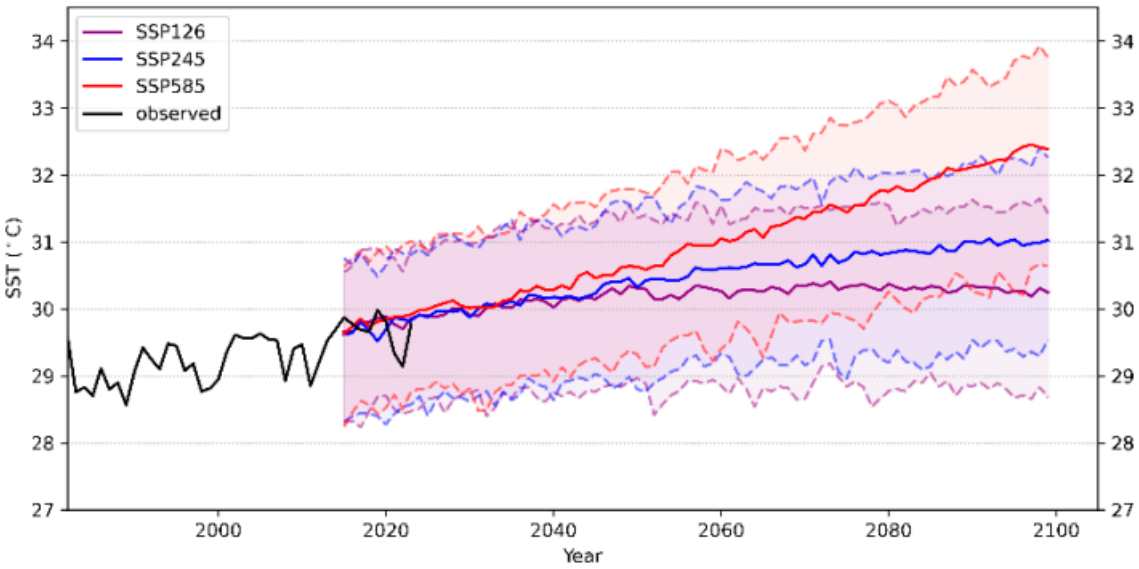


Figure 20. Time series of projected increase in annual average SST (°C) (2010-2100) for the Tuvalu EEZ from 23 CMIP6 models over three emission scenarios: SSP126, SSP245, and SSP585. Shown are the median values (bold line) and the 10th and 90th percentile under each scenario. OISSTv2.1 observed annual average SST over the Tuvalu EEZ is shown by the solid black line. (CSIRO, Federation University, Climate Comms, 2024)

4.6.3. Marine heat waves

Marine heatwaves (MHWs) [3] are projected to increase in frequency and intensity. In Tuvalu, MHWs have become more frequent between 1982 and 2023, particularly in the moderate to strong categories. Event durations have lengthened, especially around Nanumea and Niutao, while intensity trends are mixed, with some areas showing slight declines. Most islands are equally exposed, though sites like Nukufetau and Niulakita have seen notable increases in MHW frequency and duration (CSIRO, Federation University, Climate Comms, 2024).

MHWs are projected to increase dramatically due to long-term ocean warming. Historically, MHWs occurred for about 10 days per year across Tuvalu's sites. By 2050, this number is expected to rise to 130–150 days per year under low emissions and low warming scenarios, and up to 290–340 days under low emissions with high warming (Holbrook, et al., 2022). Under high emissions, projections range from 220–250 days (low warming) to 350–360 days (high warming), with many of these events falling into the strong and severe intensity categories (Holbrook, et al., 2022).

By 2090, the number of MHW days continues to rise, particularly in northern areas. Under low emissions, sites may experience 200–350 MHW days annually, with a notable increase in strong events. Under high emissions, Funafuti alone could see up to 360 MHW days per year, with a marked increase in severe and extreme events.

4.7. Ocean acidification

4.7.1. Observations and trends

Atmospheric CO- concentrations have increased by 47% since 1750, with approximately 24–33% absorbed by the oceans (Johnson, Bell, & Gupta, 2015). In the southern Pacific (35°S to 7°S), surface ocean pH declined by 0.070 units between 1982 and 2022, indicating an 18% increase in acidity. Aragonite saturation in the same region decreased from ~3.7 to below 3.4 over the same period. While these values vary across longitudinal bands the levels described in Figure 21 cannot be directly applied to Tuvalu, trends in the western tropical Pacific Warm Pool (1985–2016) show average annual declines of −0.0013 in pH and −0.0083 in aragonite saturation state.

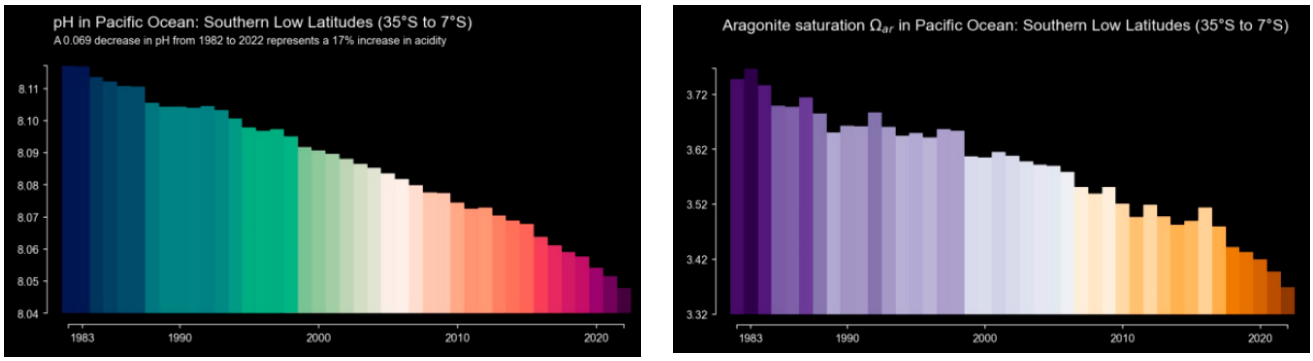


Figure 21. pH (left) and aragonite saturation(right) levels in the low latitudes of the Pacific Ocean Basin measured from 1982-2022 (Data Source: OceanSODAETHZ)

4.7.2. Projected aragonite saturation and pH

Under all global carbon dioxide (CO^2) emission scenarios, a net decrease in pH and aragonite saturation state occurs, with the largest changes associated with the highest atmospheric CO^2 (CSIRO, Federation University, Climate Comms, 2024). Spatial patterns of projected changes in aragonite saturation state near Tuvalu are shown in Figure 22. Larger changes are obvious for the high emissions scenario compared to the low emissions scenario. For Tuvalu, the projected change in pH by the year 2050 is 0.05 units for a low emissions scenario and 0.12 units for a high emissions scenario (Figure 23). While the projected change in pH seems small, it is important to remember that the pH scale is logarithmic, so the reduction in pH in surface ocean waters that we have already seen actually represents a 30 % increase in acidity

3 MWH are defined as prolonged periods of unusually warm sea surface temperatures

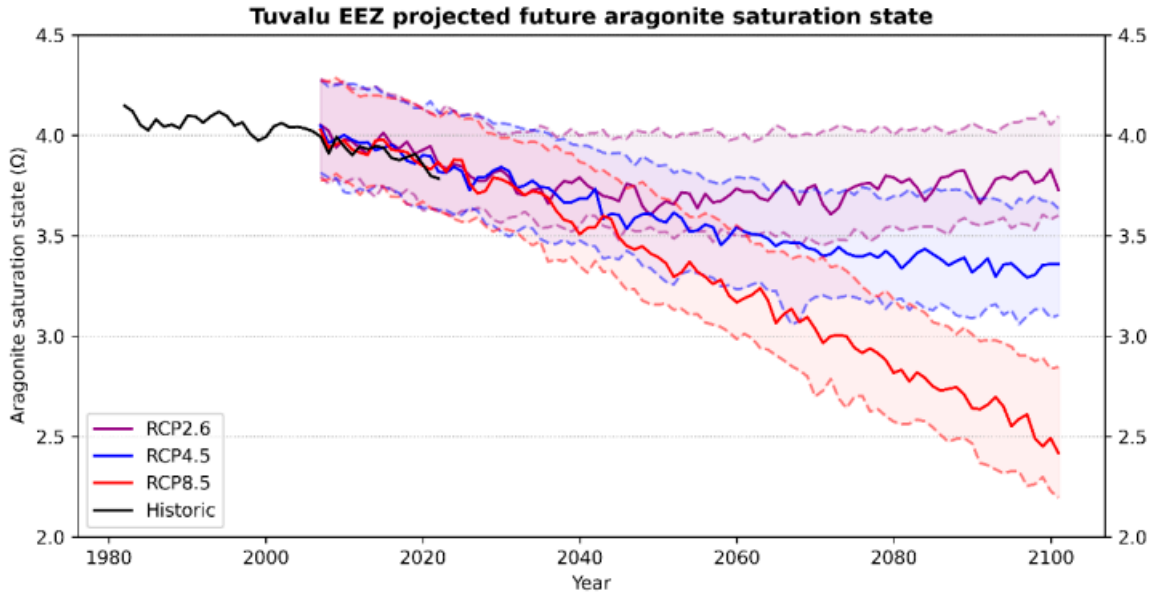


Figure 22. Projected decreases in aragonite saturation state (CSIRO, Federation University, Climate Comms, 2024)

Values are shown for the Tuvalu Exclusive Economic Zone (EEZ) from six CMIP5 climate models under three emissions scenarios: RCP2.6, RCP4.5, and RCP8.5. Shown are the median values (bold lines), and the 10th and 90th percentiles (dashed lines and shading). Also shown are historic data (black line) from the OceanSODA-ETHZ dataset from 1982 – 2022.

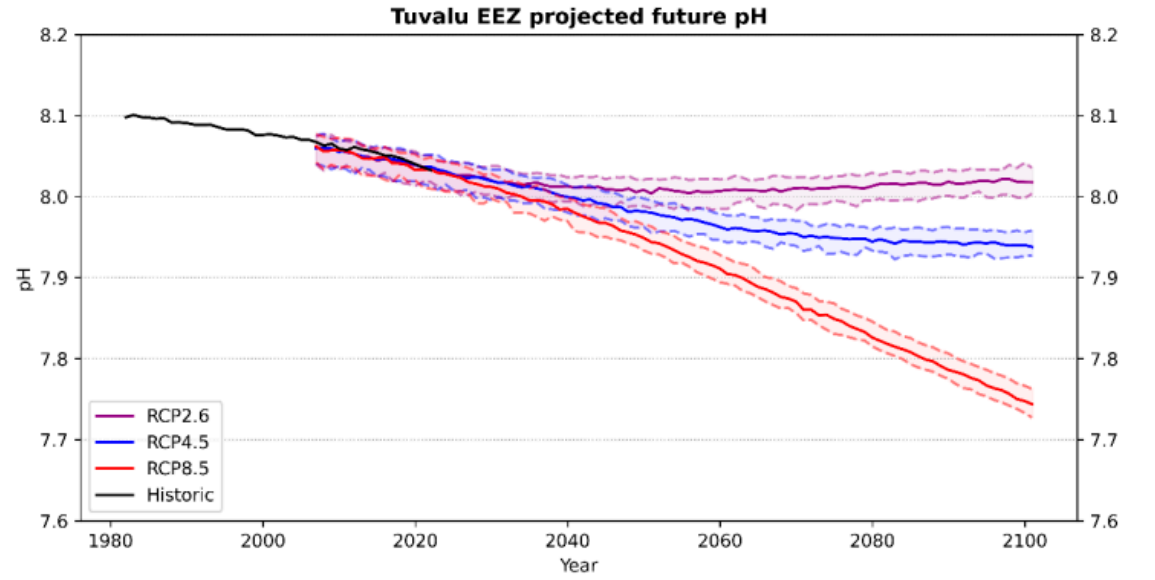


Figure 23. Projected decreased in pH (CSIRO, Federation University, Climate Comms, 2024)

There is very high confidence that the ocean will become more acidic, with a net reduction in ph. There is also high confidence that the rate of ocean acidification is, and will continue to be, proportional to the CO2 emissions (CSIRO, Federation University, Climate Comms, 2024)

4.8. Tropical cyclone and extreme wind

4.8.1. Observations and trends

Tropical cyclones usually affect Tuvalu during the southern hemisphere tropical cyclone season, which is from November to April, but also occasionally occur outside the tropical cyclone season (McGree, et al., 2022). A total of 59 TCs from the SPEArTC database were identified within the Tuvalu EEZ that either developed or passed the zone between the 1970/71 and 2021/22 TC seasons (Figure 24). This represents an average of 11.6 cyclones per decade for Tuvalu.

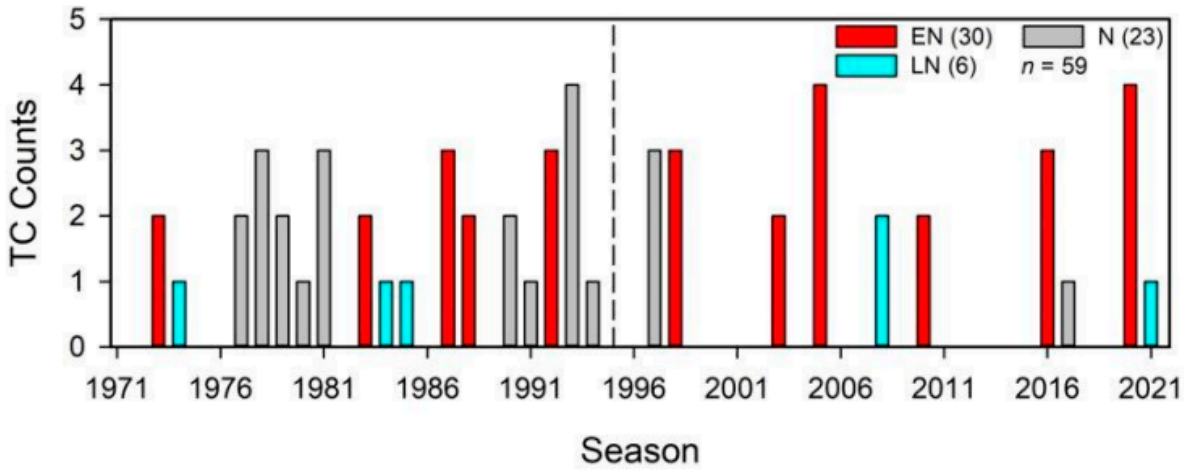


Figure 24. Number of tropical cyclones passing within the Tuvalu EEZ per season (CSIRO, Federation University, Climate Comms, 2024)

Tropical cyclone (TC) activity in Tuvalu's EEZ shows high interannual variability, ranging from zero to four events per season, largely driven by ENSO phases. Cyclones are most frequent during El Niño years (~6 per decade), less so in neutral years (~4.6), and least frequent during La Niña (~1.2).

Comparing two climatological periods (1971–1995 vs. 1996–2021), TC frequency declined from 13.6 to 9.6 per decade, though not significantly. Mean wind speed increased by ~10.6%, also not statistically significant. El Niño events are associated with more frequent and intense cyclones, while La Niña brings fewer but potentially more impactful events due to elevated sea levels (Chand & Walsh, 2009). Overall, while long-term trends are difficult to confirm due to limited data, there is evidence of increasing TC intensity and proportion of severe events in the broader Pacific region (Knutson, et al., 2019).

4.8.2. Tropical cyclone projections

Projections of future tropical cyclone (TC) activity in Tuvalu remain uncertain. Climate models, including those from the CMIP6 ensemble, do not yet provide consistent or reliable estimates of changes in TC frequency or intensity at the local scale. Simulations under high (SSP3-7.0) and very high (SSP5-8.5) emissions scenarios suggest potential changes, but the results vary widely across models, limiting confidence in regional projections (CSIRO, Federation University, Climate Comms, 2024). Due to limitations in model resolution and parameterisation, TC frequency is likely underestimated, and confidence in local-scale projections remains low (CSIRO, Federation University, Climate Comms, 2024). Mid-century projections show mixed results, with some models indicating a slight increase in TC numbers, though not statistically significant. By late century, more models suggest a decline in TC frequency, consistent with broader southwest Pacific trends from CMIP5 models (Bell, et al., 2019). However, these projections vary widely, with some models showing up to a 50% decline and others a 10% increase.

ENSO remains a key driver of TC variability in Tuvalu, with El Niño conditions linked to increased TC frequency and intensity. Future El Niño events are projected to produce 20–40% more TCs in the central Pacific compared to present-day El Niño periods, while La Niña and neutral conditions may see fewer TCs. Given CMIP6 projections of more frequent El Niño-like conditions (Erickson & Patricola, 2023), increased TC activity in Tuvalu during these phases warrants attention, despite the broader trend of declining TC numbers globally (CSIRO, Federation University, Climate Comms, 2024).

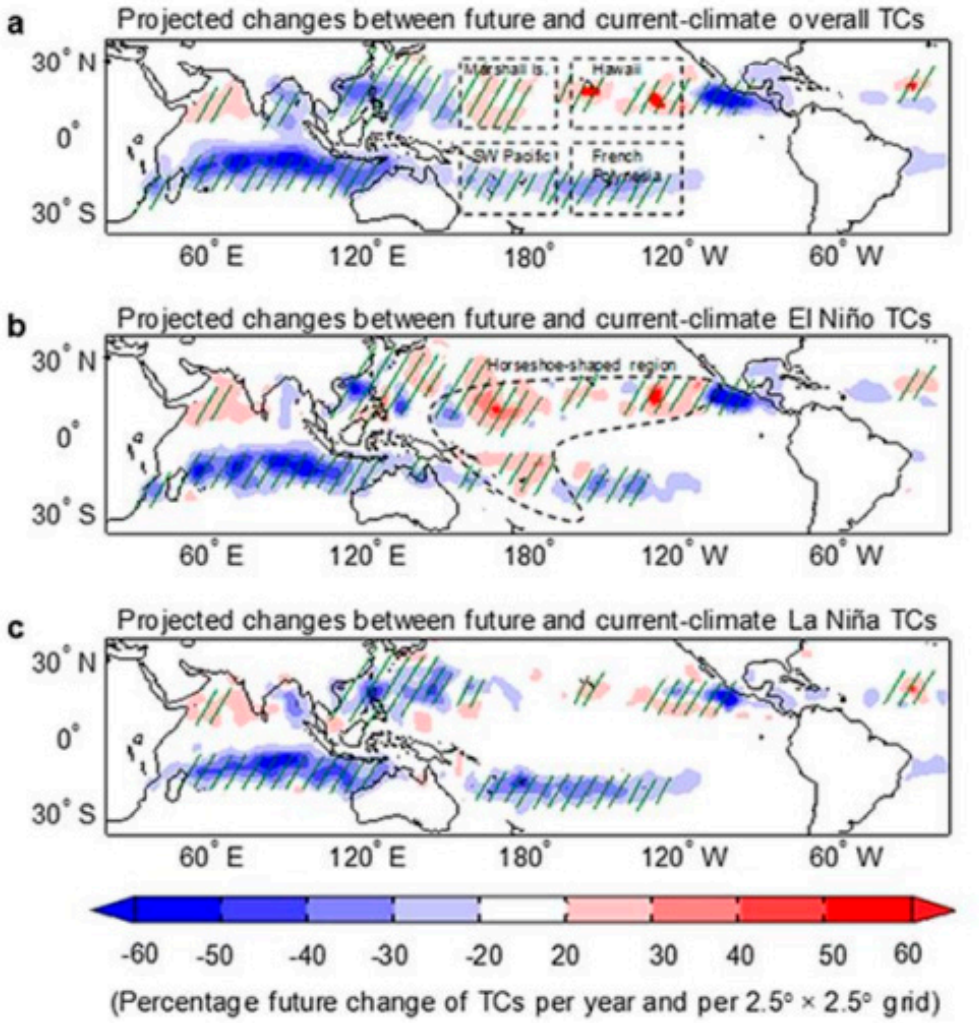


Figure 25. Changes in TC frequency for late 21st century (2070-2100) vs late 20th century (1970-2000) overall (top), for El Niño conditions (middle) and La Niña conditions (bottom). Blue indicates decrease while red indicates increase. Projections are derived from 13 CMIP5 global climate models driven by a high emissions pathway (RCP8.5) (Chand S. e.)

In terms of intensity, mean TC wind speeds are projected to increase by 24–36% under SSP3-7.0, though no significant change is seen under SSP5-8.5. However, the number of extreme wind events rises under both scenarios. Return periods for high-intensity cyclones are expected to shorten events like TC Gavin (1997), historically occurring once every 30 years, may occur every 10–20 years by century's end, depending on the emissions scenario. These projections, while indicative, carry low confidence due to model limitations and should be interpreted cautiously (Chand, et al., 2021).

4.9. Summary of climate data

The summary in Table 3 consolidates observed trends and future projections for Tuvalu's climate based on Section 4 of the NAP. It includes data on sea level rise, coastal inundation, air and sea surface temperatures, rainfall, drought, ocean acidification, and tropical cyclone activity. Projections are presented for low (RCP2.6) and high (RCP8.5) emissions scenarios, with quantified changes in temperature, rainfall intensity, marine heatwaves, and extreme weather events. These data provide the scientific foundation for assessing climate risks and informing adaptation priorities across all sectors.

Table 3. Summary of observed trends and future projections for Tuvalu climate. Projected change in Tuvalu annual-average temperature and rainfall for 20-year periods centred on 2030, 2050 and 2070, relative to a 20-year period centred on 1990, for low (RCP2.6) and high (RCP8.5) emissions pathways. Median changes are shown with the 10-90 percentile range of uncertainty in brackets. Changes are also shown for different global warming levels. (CSIRO, Federation University, Climate Comms, 2024).

HISTORICAL CLIMATE		PROJECTED CHANGE			
20-YEARS CENTRED ON 1995	CLIMATE VARIABLE	2030	2050 LOW EMISSIONS RCP2.6	2050 HIGH EMISSIONS RCP8.5	CONFIDENCE
ATMOSPHERIC VARIABLES					
Min 26 °C Max 31 °C	Annual average temperature (°C)	+0.7 (0.4 to 1.0)	+0.8 (0.5 to 1.2)	+1.4 (1.0 to 1.9)	high
12 (0 to 31)	Hot days (days > 33 °C) a	No data	+181 (140 to 222)	+264 (140 to 331)	high
3460 mm	Annual average rainfall (%)	+4 (-4 to +12)	+3 (-6 to +11)	+3 (-11 to +17) (3,480 – 4,048mm)	medium
134 (119 to 160) mm/day	Annual maximum daily rainfall (mm/day)	No data	+12 (-17 to 39)	+15 (-15 to 65)	medium
	Average drought intensity (more negative = more intense)	Slight increase	No data	Slight increase	medium
1.2 per 20 years	Average drought frequency (per 20 years)	Slight decrease	No data	Slight decrease	medium
~17 months	Average drought duration (months)	Slight decrease	No data	Slight decrease	medium
~30 (20-39) m/s	Tropical cyclone windspeed (m/s)	No data	No data	Increase	low
12 per decade	Tropical cyclone frequency (%)	No data	No data	Decrease	low
OCEAN VARIABLES					
0m	Annual average sea level (m)	+0.13 (0.09 to 0.17)	+0.22 (0.17 to 0.29)	+0.27 (0.19 to 0.37)	high
11 km2	Extreme sea level proxy: 50-yr ARI Tuvalu flooded area (km2) b	No data	~16 (2060; SSP2-4.5)	~16.5 (2060)	high
28.6-29.5 °C	Sea surface temperature (°C) over EEZ c, f	+0.7 (-0.6 to 1.7)	+0.9 (-0.5 to 2.1)	+1.3 (0.0 to 2.5)	high

~ 10 days/ yr	Marine heatwave frequency (days/year) c, f	110-290	130-340	220-360	high
0 days/ 20 yr	Coral bleaching days (per 20 years) d, f	No data	169-2934	1652-6460	high
~8.08 (8.1-8.07)	Annual average ocean pH over EEZ (c, e)	8.02 (7.99-8.04)	8.0 (7.99-8.02)	7.95 (7.93-7.96)	high
~4.1 (4.0-4.2)	Annual average aragonite saturation (c, e)	3.77 (3.51-4.06)	3.69 (3.53-4.01)	3.4 (3.18-3.70)	high

a number of days over the 95th percentile of 1985-2014 daily temperatures **b** data source Wandres et al, 2021.**c** Future values are reported, not changes. **d** Exceed coral bleaching Alert level 2 at Niutao. **e** Baseline figures are estimated from Figure 112. **f** CMIP6/SSPs and baseline period 1994-2014 used

5. Vulnerabilities of key economic and social sectors

5.1. Introduction

This section outlines the vulnerability of Tuvalu's key economic and social sectors to climate-related hazards. As a low-lying island nation, Tuvalu is increasingly exposed to the impacts of rising sea levels, extreme weather events, and shifting climate patterns. These changes not only threaten the natural environment but also the systems that underpin national development, public wellbeing, and economic stability.

The analysis draws on the Climate Integrated Vulnerability and Risk Assessment (CIVRA) prepared by Deloitte (2024), which incorporates hazard modelling from CSIRO, Federation University, and Climate Comms (2024), summarised in Section 4, as a core component. Together, these provide a national-scale, evidence-based assessment of climate risks across six priority sectors critical to Tuvalu's resilience: coastal protection and human settlements, critical infrastructure, food security (fisheries and agriculture), human health and wellbeing, water security, and disaster risk reduction and management.

Vulnerability is not just about physical exposure to hazards like cyclones, droughts, and heatwaves. It also reflects how sensitive each sector is to these impacts, how well-prepared they are, and what capacity they have to adapt. For example, while the health sector is highly exposed to heat-related illnesses and waterborne diseases, its ability to respond is limited by infrastructure gaps and workforce shortages. Similarly, the agriculture sector faces increasing drought and saltwater intrusion but lacks access to climate-resilient technologies and land availability.

Understanding these layered vulnerabilities is essential for guiding targeted investments, shaping effective policy, and prioritising resilience-building efforts. These sectoral insights draw on the findings of the CIVRA and provide the foundation for adaptation actions outlined in Part Four and Five of this report.

5.2. Coastal protection and human settlements

Tuvalu's infrastructure is increasingly vulnerable to intensifying climate hazards, including rising sea levels, stronger tropical cyclones, and extreme heat events. These hazards contribute to flooding, erosion, saltwater intrusion, and salt spray damaging both natural and built coastal defences such as seawalls, levees, coral reefs, and mangrove forests. As these defences weaken, repair and maintenance costs rise, and the risk to critical infrastructure grows.

Public and private assets (including homes, schools, roads, drainage systems, causeways, harbours, jetties, airport runways, septic tanks, water supply systems, power lines, and telecommunications networks) are especially at risk in low-lying coastal areas. With all residents living within 1 km of the coast, and 66% of infrastructure located within 100 m of the shoreline, Tuvalu's exposure is near total (Deloitte, 2024).

In response, Tuvalu has undertaken significant efforts to identify and mitigate coastal hazards. The Tuvalu Coastal Adaptation Project (TCAP) has played a central role in advancing risk-informed protection measures. TCAP has delivered accurate land elevation and seafloor depth data across all nine atolls, developed coastal inundation models, and projected population and asset exposure under various climate scenarios. In Funafuti, Nanumea, and Nanumaga, TCAP interventions aim to reduce erosion, expand land availability, and establish long-term coastal defences.

Despite these efforts, the threat remains severe. Table 4 from TCAP (UNDP, GCF, 2025) shows that under high-emission scenarios (SSP5-8.5), up to 100% of the population in some islands could be exposed to one-in-ten-year coastal inundation events by 2100. This level of exposure could lead to cascading impacts, including permanent relocation and widespread infrastructure loss, especially as climate change alters the frequency and magnitude of hazards.

Table 4. Summary of population exposed to coastal hazard risk

MANAGEMENT UNIT	PORTION OF NATIONAL POPULATION (%)	CURRENT EXPOSURE OF RESIDENT POPULATION	PROJECTED EXPOSURE OF RESIDENT POPULATION (BASED ON A 10-YEAR RETURN PERIOD)				NOTES
			SSP2-4.5 (2060)	SSP2-4.5 (2100)	SSP5-8.5 (2060)	SSP5-8.5 (2100)	
Funafuti*	57%	58%	77%	79%	94%	97%	Capital location with all critical infrastructure. Suitable geomorphology for adaptation
Nanumaga**	4%	3%	3%	23%	4%	23%	Inner lagoon exposed to upwelling
Nanumea**	6%	18%	44%	45%	79%	89%	-
Niulakita	0%	0%	0%	0%	0%	0%	Small population (40), inner lagoon exposed to upwelling
Niutao	8%	2%	2%	2%	3%	11%	Inner lagoon exposed to upwelling
Nui	5%	26%	37%	38%	65%	78%	-
Nukufetau	6%	35%	74%	74%	100%	100%	Suitable geomorphology for adaptation
Nukulaelae	3%	37%	73%	80%	96%	99%	-
Vaitupu	11%	29%	52%	54%	67%	70%	-

*Large scale reclamation works to increase land area and reduce likelihood of inundation
**Berm top barriers to reduce likelihood of wave overtopping

Natural coastal assets are equally vital. Coral reefs and mangrove forests buffer Tuvalu's coastlines from wave energy and heat stress. The Funafuti Conservation Area (FCA), located on the western side of Funafuti Atoll, includes fringing and patch reefs that protect the lagoon and nearby settlements. Mangrove forests found on islands such as Funafuti, Nanumea, Nukufetau, and Nui stabilize shorelines with their root systems and provide shade that mitigates heat stress (Veitayaki, Waqalevu, Varea , & Rollings, 2017). However, these ecosystems are limited in extent and increasingly degraded by bleaching, acidification, storm damage, and land clearing.

The degradation of natural defences compounds vulnerability across sectors. Coral bleaching events, particularly during El Niño years, have reduced reef resilience. Mangrove loss due to urban development and climate stressors like drought and salinisation diminishes protection and increases exposure to heat, affecting health, infrastructure, and food security. The loss of these ecosystems is not just environmental it directly undermines community resilience and the sustainability of life in Tuvalu (Deloitte, 2024).

Tuvalu's coastal protection strategy must therefore be multifaceted, combining engineered solutions with ecosystem-based approaches. Strengthening both physical infrastructure and natural assets is essential to safeguard communities, preserve livelihoods, and maintain sovereignty in the face of escalating climate threats.

The consequence rating identified through the Tuvalu CIVRA for the climate change risks in coastal protection and human settlement sector is Extreme. For detail see Deloitte Technical Reports (Deloitte, 2024)..

5.3. Critical infrastructure

5.3.1. Internet and telecommunications

Intensifying chronic and acute climate hazards such as coastal flooding, heatwaves, and cyclones are putting Tuvalu's internet and mobile phone infrastructure at serious risk. Key systems like satellite connections, communication towers, and underground copper cables are vulnerable to damage, which leads to more frequent service outages, blackspots, and unreliable telecommunications (Deloitte, 2024). These failures can have knock on effects across other essential services, including emergency response, health, and education. Maintaining this infrastructure is also becoming more expensive, especially with the need to regularly clean salt spray from towers and upgrade outdated systems. For example, replacing copper cables with more resilient fibre optics and installing backup power generators and cooling systems for data servers are becoming urgent needs (Deloitte, 2024).

Heatwaves can also disrupt and damage internet and telecommunications infrastructure by causing power outages and overheating server equipment. For example, following a 2023 power grid failure the information and communication technology (ICT) system required a full re-boot after power was restored. Heatwaves can also disrupt connectivity by preventing critical maintenance of ICT infrastructure, such as salt removal from the Funafuti telecommunications tower. ICT infrastructure is impacted by extreme sea level events with significant impacts for disaster risk management and human health in Tuvalu. Underground copper wire infrastructure, including wiring and pits, are damaged by inundation and saline intrusion, disrupting fixed line and broadband services. Low-lying surface-level ICT infrastructure is damaged by coastal erosion and inundation. Flooding of electricity infrastructure including underground wiring, junction boxes and inspection pits also causes loss of telecommunications and internet (Deloitte, 2024).

An unreliable telecommunications system has implications for multiple sectors, including transport (in particular air and sea transport logistics), education, and health. It also increases vulnerabilities during disasters, with unreliable communications compounded by a lack of integrated SMS-based early warning system for climate-related disasters.

5.3.2. Transport and supply chains

Tuvalu's transport infrastructure including roads, causeways, ports, and airports is increasingly affected by intensifying chronic and acute climate hazards such as sea level rise, cyclones, heavy rainfall, and flooding. These events can damage key transport routes and disrupt supply chains both within the country (especially between Funafuti and the outer islands) and internationally. Heatwaves also reduce the productivity of workers who maintain and operate these systems. As a result, communities may face isolation, delays in receiving essential goods and services, and interruptions to economic activities. These impacts lead to higher costs for repairs, maintenance, and upgrades, and can also affect the health and wellbeing of local communities.

Maritime trade and transport infrastructure in Tuvalu is vulnerable to damage from cyclones. For example, Cyclone Pam in 2015 and Cyclone Tino in 2020 caused severe flooding and erosion across many of the outer islands (Deloitte, 2024). These events damaged key infrastructure like boat ramps and blocked transport routes with debris such as boulders and sand, making it difficult for vessels to access ports and for communities to maintain regular transport and trade.

Roads and transport infrastructure can be made inaccessible or destroyed during extreme sea level events. Funafuti airport is also vulnerable to water table levels and sea tidal fluctuations that can cause sub-surface pressures that lift the pavement surface. Recent survey by LiDAR confirmed that the current runway is below the sea level and predicted to be submerged in 100 years' time (Deloitte, 2024). The roads and the airstrip in Tuvalu are made of asphalt, with bitumen being an important component. Bitumen is sensitive to extreme temperatures, when it becomes more fluid and this affects the asphalt road surface performance (Deloitte, 2024), causing disruptions to transport services and the supply chain.

5.3.3. Buildings and structures

Tuvalu's buildings including homes, schools, hospitals, government offices, and other essential facilities are affected by intensifying chronic and acute climate hazards such as sea level rise, cyclones, heavy rainfall, and flooding. Without a climate-resilient building code to guide the design and construction of new buildings or upgrades, many structures are not built to withstand these conditions. Rising temperatures and heatwaves also reduce the comfort and usability of buildings, especially where there is not enough shade, ventilation, or air-conditioning. These impacts can disrupt the services provided in these buildings, shorten their lifespan, and increase maintenance and repair costs. In some cases, buildings may become unsafe or unusable, leading to lost livelihoods and the need for costly replacements or upgrades. Critical infrastructure at risk includes hospitals, schools, evacuation centres, petrol stations, supermarkets, churches, power stations, telecom towers, and water treatment plants.

Extreme sea level events are causing flooding and saltwater intrusion that damage vital infrastructure, putting community safety, wellbeing, and livelihoods at risk. Currently, around 1,565 buildings (30% of all buildings) are exposed to flooding at least once every five years, resulting in an average annual damage cost of $42 million (Deloitte, 2024). School buildings are especially at risk, with 10 out of 28 assessed structures showing high or very high exposure to coastal inundation. This widespread vulnerability affects both individuals and government services, highlighting the urgent need for resilient infrastructure planning.

5.3.4. Energy security

Intensifying chronic and acute climate hazards like heatwaves and rising sea levels are expected to increase Tuvalu's energy demand especially for air conditioning, desalination, telecommunications, and health services while also reducing the reliability of existing energy systems. Both diesel generators and renewable energy sources like solar panels and battery storage may struggle to perform under extreme conditions. Many current systems, including generators and transformers, are not designed to perform under future climate extremes, which could lead to more frequent and longer power outages. These blackouts can disrupt critical services such as hospitals, communication networks, disaster response, and water supply. As a result, there will be greater need for backup power solutions like generators and batteries, and for safe, cool, and elevated spaces where communities can gather during emergencies.

Many buildings in Tuvalu such as homes, schools, and evacuation centres are poorly ventilated and fail to stay cool during extreme heat events. Even buildings with air conditioning can become unsafe when power outages occur, which are more likely during heatwaves due to high energy demand. These extreme conditions place heavy pressure on the electricity grid, especially on generators and electrical components like conductors and switches, increasing the risk of system failure. When the power goes out, essential services like hospitals, schools, and emergency centres are all affected. Additionally, extreme heat can damage machinery used to maintain buildings and infrastructure, and because Tuvalu relies heavily on imported goods, replacing damaged equipment can be difficult and delayed.

5.3.5. Waste management

Waste management is a long-standing challenge in Tuvalu due to its small land area and growing use of imported products that generate waste. Solid waste often ends up polluting the coastline, while leaking septic systems, overflowing landfills, and stormwater runoff into the lagoon lead to algal blooms, plastic pollution, and poor water quality. This not only poses health risks but also harms fish stocks, threatening food security and the livelihoods of communities that rely on traditional reef fishing. Urbanisation and climate change are making these problems worse, especially in Funafuti. Managing electronic waste (like lithium batteries and solar panels) and industrial waste (such as old machinery and pipes) is expected to become an even bigger issue in the future.

Tuvalu's waste management infrastructure varies significantly between Funafuti, the capital, and the outer islands. Funafuti has made notable progress, operating a lined landfill, an organics collection and processing system, and a recycling/transfer facility that handles household recyclables. It also implements a Waste Levy system for items like aluminium cans, PET bottles, glass, and car batteries, which has been running successfully since 2019 (SPREP, 2020).

In contrast, the outer islands rely on open dumps managed by Kaupule (local councils), which lack containment systems and are vulnerable to coastal erosion, flooding, and contamination of shallow groundwater. These sites often receive mixed waste, including recyclables, due to the absence of infrastructure to support separation and transport. Over 20% of waste in these dumps consists of recyclable materials that could otherwise be processed if facilities were available (SPREP, 2023).

The Department of Waste oversees the management of various waste types, including septic, landfill, e-waste, and plastics. Most households in Tuvalu use septic tanks, though pit latrines are more common in the outer islands. Waste collection methods vary in Funafuti; 76% of households rely on the Kaupule for collection, while in the outer islands, 58% use designated collection sites. All outer islands have a dumpsite and incinerator, allowing for more varied disposal methods like burning, which is less common in Funafuti. Recyclables are collected at a transfer station in Funafuti, and composting is undertaken at the island level, with each Kaupule maintaining a compost area and shredder for green waste.

5.4. Food security

5.4.1. Agriculture

Intensifying chronic and acute climate hazards such as rising sea levels, higher temperatures, unpredictable rainfall, and extreme droughts is already affecting the productivity and suitability of crops and livestock in Tuvalu, and these impacts are expected to worsen. This puts pressure on subsistence households and communities that rely on farming, livestock, and related jobs, including those in transport, storage, and food processing. As crop yields decline and livestock struggle, food security and community health are threatened, and local economies may suffer. This could lead to greater dependence on imported food, which is often expensive and highly processed, increasing the risk of non-communicable diseases (NCDs). In Funafuti, limited land availability for agriculture is further strained by competing needs, such as space for rainwater tanks. On some outer islands, expanding crop production is also reducing the availability of wild-harvested foods like land crabs, which many communities rely on as a supplementary food source.

Rising air temperatures and extreme heat are significantly affecting Tuvalu's agriculture sector, particularly the farming workforce and crop productivity. Farmers are experiencing reduced productivity on hot days and facing health risks such as heat stress, dehydration, and heat stroke. Crops are also suffering from heat stress, which disrupts essential physiological processes like photosynthesis and water regulation, leading to poor growth, increased susceptibility to disease, and greater water demand. Additionally, higher temperatures are contributing to a rise in invasive pests and crop diseases, with notable increases in fruit flies, coconut scale pests, and fungal infections in areas like Nanumaga and Vaitupu (Deloitte, 2024). Invasive species such as the yellow crazy ant are also becoming more problematic, damaging crops and attacking local wildlife, particularly during hot and humid conditions.

Rising air temperatures and more frequent extreme heat events are significantly affecting livestock welfare in Tuvalu, particularly for pigs and free-range chickens. These animals are highly sensitive to heat, with chickens and pigs having relatively low thermal comfort zones. Without adequate shade, shelter, and water infrastructure, livestock are prone to heat stress, which can lead to dehydration, reduced productivity, and in the case of sows, diminished milk production for piglets. This vulnerability is especially pronounced in areas like Vaitupu, Niutao, and Nanumaga, which collectively house 60% of the nation's free-range chickens (Deloitte, 2024). Additionally, the lack of modern bird pens in places like Nukufetau and the use of basic or no housing in Nanumea and Vaitupu further increase the risk of heat-related illness among livestock.

5.4.2. Fisheries

Intensifying chronic and acute climate hazards is increasingly affecting Tuvalu's oceanic fisheries, especially due to rising sea surface temperatures, more frequent marine heatwaves, and ocean acidification. These changes are already impacting the productivity and catch of key commercial species like tuna, which are vital to Tuvalu's economy. Tuna populations are highly sensitive to changes in ocean conditions, particularly those driven by the El Niño Southern Oscillation (ENSO), which is itself being altered by climate change. As a result, the availability and value of Tuvalu's tuna fishing quotas could vary significantly

depending on future global emissions. A major drop in quota value would have wide-reaching effects across the entire economy. The long-term impacts of deep ocean warming and acidification on fish populations, biodiversity, and the overall value of oceanic fisheries in Tuvalu are still not fully understood and require further research.

Tuvalu's coastal fisheries are increasingly threatened by intensifying chronic and acute climate hazards such as marine heatwaves, tropical cyclones, and ocean acidification. These events damage coral reefs through storm impacts and bleaching, which directly affects fish biodiversity, productivity, and catch levels. In Funafuti lagoon, poor water quality caused by stormwater and wastewater runoff is making things worse, encouraging the growth of invasive seaweed like Sargassum species. Current management strategies, including Fish Aggregating Devices (FADs) and protected marine areas, may not be enough to respond to these growing environmental pressures.

Locally caught fish are more likely to spoil during transport, storage, and processing due to rising temperatures, without sufficient cold storage or transport from outer islands to Funafuti and beyond. Fishers and processors are also facing reduced productivity, fewer safe fishing days, and limited access to fishing grounds, which affects the commercial viability of coastal fisheries. The loss of marine biodiversity disrupts the food chain and overall ecosystem health, leading to lower fish catches. This decline threatens food security for local communities, increases reliance on agricultural and processed foods, and may result in poorer health outcomes and lost livelihoods. Heatwaves also reduce workers' performance and can cause heat stress related illnesses (see Section 5.5.1) (Deloitte, 2024).

Rising sea surface temperatures and increasingly frequent marine heatwaves are placing growing pressure on Tuvalu's coastal and oceanic fisheries, threatening the sustainability of fish stocks and the nation's food security, economy, and public health. As ocean warming shifts the location of prime fishing grounds and alters tuna migration patterns, Tuvalu may face reduced access to fish within its Exclusive Economic Zone (EEZ) and a decline in fisheries licensing revenue. Additionally, more intense marine heatwaves are accelerating coral bleaching, risking the collapse of vital coastal ecosystems. These changes are compounded by the spread of invasive species like crown-of-thorns starfish and the rise in ciguatera poisoning linked to toxic algae blooms, all of which further endanger marine biodiversity and human wellbeing. Rising sea levels in Tuvalu threaten to submerge coral reefs that cannot grow at the rate of sea level rise. Increased wave energy with rising sea levels may damage and destroy already stressed reef ecosystems, reducing fish stocks and impacting critical fishing infrastructure. As such, continued sea level rise will pose greater threats to both coastal and oceanic fisheries.

5.5. Human health, wellbeing, social cohesion and heritage

5.5.1. Public health

Intensifying chronic and acute climate hazards such as heatwaves, flooding, and rising sea levels are expected to cause more public health issues in Tuvalu. These include heat-related illnesses, waterborne and foodborne diseases, increased risk of injury, and mental health challenges. At the same time, growing urbanisation and reliance on imported, low-nutrition foods are contributing to a rise in non-communicable diseases like diabetes and heart conditions. Migration from outer islands to Funafuti is adding further pressure on the healthcare system, as well as on food, water, and energy resources. Altogether, these challenges are likely to affect the overall wellbeing, livelihoods, and income of the population.

Rising temperatures, heavier rainfall, and more frequent extreme weather events are increasing the spread of vector-borne diseases in Tuvalu, especially dengue fever. Mosquitoes that carry dengue Aedes aegypti and Aedes albopictus are thriving in warmer, wetter conditions, leading to more frequent outbreaks (CSIRO, Federation University, Climate Comms, 2024). Although dengue is not always present, spikes now occur every two to three years and are becoming more common. Children are particularly vulnerable, with 29% of the population under age 15, placing extra pressure on the paediatric health system, which relies on visiting specialists (CSIRO, Federation University, Climate Comms, 2024). Unsealed water tanks and stagnant water pools provide ideal breeding grounds for mosquitoes, further increasing the risk.

Extreme heat is also causing more cases of heat stress and related illnesses such as heat stroke and dehydration, especially among children, the elderly, and outdoor workers, 29% of whom are employed in agriculture (International Labour Organisation, 2022). Heatwaves have reduced workforce productivity in Funafuti, disrupted business operations, and worsened existing health conditions like respiratory and heart diseases. Hospital admissions rise during heatwaves, with more cases of dehydration, flu, and mental health symptoms (Deloitte, 2024).

Extreme heat affects food safety. Poor handling and lack of cooling for perishable foods, especially imported goods shipped in containers without proper refrigeration, have led to more outbreaks of gastrointestinal illnesses. Funafuti is experiencing more severe heat than the outer islands, making these health risks even more pressing.

5.5.2. Health infrastructure

Intensifying chronic and acute climate hazards such as tropical cyclones, extreme winds, flooding, sea level rise, and heavy rainfall can damage hospitals, clinics, and evacuation centres, disrupt medical supply chains and transport, and cause power outages that affect essential services like lighting, cooling, water pumps, and refrigeration for medicines. Rising seas and groundwater intrusion also threaten the function of septic systems, rainwater tanks, and desalination plants, worsening water, sanitation, and hygiene (WASH) conditions in communities.

Heatwaves, combined with limited green spaces and unreliable energy and water services, will increase demand for healthcare services and emergency facilities. These growing pressures will make it harder for Tuvalu's health system to deliver essential care, especially in the outer islands, and may widen health inequalities between urban and rural areas, and between different socio-economic groups.

Funafuti International Airport is vulnerable to flooding from king tides and heavy rainfall, which can lead to runway closures and damage. This is a serious concern, as the airport is essential for bringing in visiting specialist doctors and for residents who need to travel overseas for advanced medical treatment. Flooding also affects local roads, making it difficult for people, especially those with limited mobility, to reach healthcare facilities. In severe cases, ambulances cannot operate due to submerged roads. The main hospital in Funafuti and the medical clinic in Vaitupu are both located in areas that are already exposed to climate-related hazards (CSIRO, Federation University, Climate Comms, 2024).

5.5.3. Social cohesion and heritage

Intensifying chronic and acute climate hazards such as coastal flooding, groundwater saline intrusion, and heavy rainfall are increasingly damaging places of cultural and historical importance in Tuvalu. These include grave sites, traditional meeting areas, and natural landmarks like shade trees, beaches, and bathing spots. As more people migrate from outer islands to Funafuti, these pressures are expected to grow. The loss of these culturally significant places can lead to a breakdown in social identity and community bonds, causing feelings of grief and trauma. Over time, this can affect mental health and wellbeing across generations, as communities struggle to preserve their heritage and sense of belonging.

Rising sea levels, coastal flooding, and marine heatwaves are disrupting Tuvalu's communities by damaging cultural sites, displacing people, and harming agriculture and fisheries. These impacts can lead to a loss of identity, income, and social connection, increasing stress and anxiety. Migration to Funafuti driven by climate and economic pressures is adding to urban challenges like overcrowding, limited resources, and strain on land access due to traditional land ownership systems. This can reduce trust and social cohesion, increase inequality, and heighten the risk of conflict, unemployment, and civil unrest.

While the number of tropical cyclones may decrease, their intensity is projected to increase. During these events, women and children in temporary shelters face a higher risk of sexual violence (Deloitte, 2024). Safer shelter design that keeps families and social groups together can help reduce this risk and build community trust. Cyclones and floods also damage homes, increasing the risk of homelessness, and can disrupt education for young people, leading to long term disadvantages. These events strain social cohesion by

worsening living conditions, increasing inequality, and eroding cultural identity especially when sacred sites are damaged or destroyed.

Rising temperatures and heatwaves are leading to more frequent power outages due to increased demand for cooling. This puts socially isolated individuals and those in overcrowded households at greater risk of heat stress and illness. Women, who often take on traditional caring roles, face added pressure, reducing their participation in the workforce and weakening social cohesion (Deloitte, 2024).

In Tuvalu, drought is sometimes seen as a spiritual consequence of wrongdoing or poor leadership, with some communities even replacing their chiefs in hopes of restoring prosperity. While these beliefs help maintain social order, droughts also create serious challenges. Most households lack enough water storage to endure long dry spells, leading to anxiety, water theft, and conflict at distribution points. Despite national water policies, around 70% of the population still lacks adequate water storage (Deloitte, 2024). Drought also increases the risk of gender-based violence, as women face pressure to manage household tasks without adequate fresh water. These stresses weaken trust, shared values, and social bonds, ultimately eroding community cohesion.

5.6. Water security

Tuvalu's water security is shaped by its unique geological and climatic conditions. With no rivers or lakes and limited groundwater resources, the country relies heavily on rainwater harvesting and desalination to meet its water needs (Government of Tuvalu, 2021). Sanitation infrastructure remains underdeveloped, with most waste managed through decentralized systems.

5.6.1. Water demand

Water demand in Tuvalu varies across islands and is influenced by population density, household size, and seasonal climate conditions. Domestic use including drinking, cooking, and hygiene accounts for most of the demand. Public institutions such as schools and clinics also require reliable water access. During periods of extreme heat, demand increases significantly, placing additional pressure on limited supplies.

The agreed minimum usage rate per person per day is 15 litres of water according to Tuvalu Public Health's standard which aligns with the WHO minimum standard. The actual usage is unknown; however, the usage is likely much higher in periods of extreme heat than during normal conditions. As living standards improve and urbanization increases, water demand is expected to rise, potentially outpacing current supply capabilities.

Agricultural activities, though small-scale, also contribute to demand, particularly for crops like pulaka that depend on areas of shallow groundwater. There are three commercial gardens in Tuvalu that rely on rainwater for irrigation in Funafuti, Funafala and Vaitupu (see Section 14.1.1). All other household gardening and pig water consumption is supplied through household rainwater harvesting.

5.6.2. Water availability

Intensifying chronic and acute climate hazards are putting increasing pressure on Tuvalu's water supply. These events reduce the availability and quality of drinking water, while also affecting water needed for agriculture. Heavy rainfall and cyclones further degrade water quality by washing pollutants and septic waste into groundwater, and rising sea levels especially during king tides can cause saltwater to seep into fresh groundwater sources. At the same time, rising temperatures and population growth are increasing the demand for water in homes and for agriculture.

As noted in Section 4.4.1, rainfall is spread reasonably throughout the months of the year and the lowest recorded average annual rainfall in Funafuti is approximately 2000 mm (in the year 2011). Annual rainfall is also predicted to increase. Despite the reasonable quantity of rainfall received, many households lack adequate rainwater harvesting and storage, which increases reliance on shared or government-run systems like desalination plants. These systems are also vulnerable to power outages caused by extreme weather, making water shortages more likely. This can lead to health and hygiene problems, stress, and reduced food production, especially as limited water supplies are prioritized for people over crops and livestock.

Tuvalu's heavy reliance on rainwater makes its communities highly vulnerable to drought, which can lead to serious water, sanitation, and hygiene (WASH)

issues. Water shortages and poor water quality during droughts increase the risk of diseases like typhoid and bacterial infections. Aging septic systems worsen the problem by leaking sewage, further threatening public health. During the 2011 drought, water was rationed to just 2.1 litres per person per day (CSIRO, Federation University, Climate Comms, 2024), and many households had to rely on unsafe brackish well water. This led to a decline in hygiene practices and a diarrhoea outbreak that hospitalized several people.

Most households only have enough water storage for about one month, causing stress and anxiety during prolonged dry spells. Despite national efforts to improve water infrastructure, around 70% of the population still lacks adequate water catchment and storage (Deloitte, 2024). Droughts have also led to social tensions, including water theft and disputes at distribution centres, further straining community cohesion.

5.6.3. Water infrastructure

Tuvalu's water infrastructure is under escalating threat from both chronic and acute climate hazards including intensifying heatwaves, coastal flooding, and increasingly severe cyclones. These events are damaging critical infrastructure such as pumps, storage tanks, wells, desalination plants, and treatment facilities, while also disrupting operations through power outages and delayed maintenance. The compounded effect is a growing vulnerability in the systems that underpin the nation's water security, with cascading consequences for public health, food production, and economic stability.

Water availability and quality for drinking, agriculture, and daily use are declining, and repair and maintenance costs are rising sharply. These impacts are particularly severe in the context of Tuvalu's limited resources and geographic isolation. The strain on the already vulnerable electricity grid will intensify as temperatures rise, increasing the likelihood of water supply interruptions, especially for desalination and treatment systems that rely on stable power. Coastal flooding, especially during king tides and storm surges, is already damaging low-lying infrastructure such as pipelines, tanks, and desalination units. These events also accelerate erosion, which undermines foundations, clogs drainage systems, and pollutes freshwater sources with sediment and debris.

Tuvalu's water infrastructure is decentralized and varies in quality across islands. Most households rely on individual rainwater tanks, which differ in size, material, and condition. In Funafuti, the average household has two tanks serving seven people, but 11% of these tanks require maintenance or replacement. Many of these systems are damaged, leaking, or disconnected, and the availability of skilled labour and financial resources is a persistent barrier to repairs. This leaves many households without reliable access to safe water, especially during periods of drought or extreme heat.

Public buildings may have larger underground reservoirs, but these are not universally available. The absence of a centralized water distribution system means that infrastructure is fragmented and often poorly coordinated. This fragmentation limits the ability to respond effectively to climate-related disruptions and increases the risk of service failure during emergencies. The lack of integrated planning and oversight further compounds these vulnerabilities, leaving critical gaps in resilience across the system.

Desalination units exist on each island and serve as emergency water sources during droughts. However, they are not standardized, and many have broken down due to inconsistent maintenance and lack of spare parts. This has made it difficult to develop a strategic approach to operations and upkeep. Without reliable desalination capacity, communities face heightened risks during prolonged dry periods.

5.6.4. Sanitation and hygiene

Wastewater infrastructure, particularly septic tanks, is especially at risk in Tuvalu. Saltwater intrusion from rising seas and storm surges compromises the integrity of these systems, preventing effective containment and treatment. This leads to localised flooding and the dangerous spread of untreated sewage, posing direct threats to public health and contaminating groundwater and coastal ecosystems. The increasing frequency of these events is overwhelming Tuvalu's limited drainage capacity, resulting in widespread septic overflows and stormwater contamination.

Additionally, aging septic systems pose a persistent risk to both water quality and public health, with frequent reports of overflow and contamination. There is currently no centralised wastewater treatment facility in Tuvalu. Septic tanks and pit latrines remain the primary means of sewage containment, yet there are no treatment or disposal facilities available for solids and septage from these systems. Overflow from these aging systems has been reported to affect neighbouring properties, groundwater lenses, and lagoons across several islands.

According to the 2019–2020 Tuvalu Multiple Indicator Cluster Survey (MICS) (Central Statistics Division, 2021), only 83% of the population has access to improved sanitation facilities, and just 45% of households use safely managed sanitation services. This means that a significant portion of the population is still exposed to sanitation systems that do not adequately separate human waste from human contact or the environment. Furthermore, only 38% of households reported having a handwashing facility with both soap and water available, highlighting critical gaps in basic hygiene infrastructure.

These sanitation and hygiene challenges are compounded by Tuvalu's geographic isolation and limited technical capacity. The absence of a centralised wastewater system, combined with the vulnerability of existing infrastructure to climate hazards, creates a high-risk environment for disease outbreaks, particularly during and after extreme weather events. The lack of consistent hygiene practices, especially in rural and outer island communities, further increases the risk of waterborne illnesses and undermines public health resilience.

5.6.5. Water quality

Water quality in Tuvalu is vulnerable to contamination from both natural and human sources. During droughts, stored rainwater can become stagnant, increasing the risk of bacterial growth and waterborne diseases. Groundwater, where used, is often saline and may contain pollutants from septic system leakage. Flooding and storm surges can introduce land-based pollutants into water catchments, further degrading water quality. The lack of centralized water treatment means that households are responsible for managing their own water safety, often without adequate resources or knowledge. Waterborne illnesses such as typhoid and diarrhoea have been reported, particularly during periods of water stress.

5.7. Disaster risk reduction and management

As climate change intensifies, Tuvalu is expected to face more frequent and severe natural disasters, including coastal flooding, tsunami, cyclones, droughts, and heatwaves. This will increase the need for systems and infrastructure that help communities prepare for, respond to, and recover from these events. Key priorities include improved early warning systems for extreme weather, safe and air-conditioned evacuation centres, reliable access routes, and essential public services.

To ensure safety and resilience, new or upgraded disaster shelters must follow climate-resilient building standards. Meeting these needs will require significant investment and likely continued reliance on international aid for disaster preparedness, emergency infrastructure, and recovery efforts including support for affected households. These disasters also pose risks to physical and mental health, potentially impacting the overall wellbeing and social stability of communities. Many evacuation centres lack air conditioning, making them unsafe during heatwaves, especially when power outages disrupt cooling and food storage. Higher temperatures also increase the risk of foodborne and vector-borne diseases, placing additional strain on health services.

During droughts, limited water storage and reliance on rainwater for both household and agricultural use reduce water availability and quality. Emergency water supplies are often reserved for human use, leaving agriculture more vulnerable. Poor sanitation during water shortages increases the risk of illness, and aging septic systems worsen these issues. Some islands also struggle to maintain desalination plants, further limiting emergency water access.

Sea level rise and storm surges threaten low-lying infrastructure, including evacuation centres. Older septic systems can overflow during king tides, contaminating water sources and increasing health risks. There is also a lack of clear guidelines for declaring natural disasters, which delays access to international disaster relief funds.

Communication and coordination challenges further increase vulnerability. Early warning systems are often unreliable, and post-disaster updates from outer islands can take weeks. Many evacuation centres are not accessible for people with disabilities or the elderly, and schools used as shelters often lack basic facilities like kitchens. The 4G network is still being rolled out to outer islands, and there is no integrated early warning system linked to Tuvalu's telecom network. Additionally, there is no structured training program for cyclone preparedness, and some islands lack certified carpenters to support safe building practices.

Part Three:
Tuvalu's Adaptation Pathway

6. Tuvalu's Adaptation Pathway

6.1. Our climate reality

The Adaptation Pathway for Tuvalu is no less than a survival strategy and should be recognised as such domestically and internationally. It is an evolving approach that recognises the dynamic nature of climatic conditions and social considerations.

As outlined in Section 4.2, sea levels around Tuvalu have risen by approximately 0.15 metres over the past 30 years, and this rate is accelerating. Projections indicate a further rise of 0.2 to 0.3 metres by 2050 and between 0.5 and 1.0 metres by 2100. In high-end scenarios, sea-level rise could approach 2 metres by the end of the century.

Due to our low elevation and narrow landmass, nearly all of Tuvalu's population, infrastructure, and essential services are located within close proximity to the coast. This geographic reality makes us highly susceptible to coastal hazards, including inundation, erosion, salinisation, and storm surges. King tides, which average 3.2 metres at Fongafale, already result in regular flooding. Events such as Tropical Cyclone Pam have demonstrated how tides, waves, and ocean warming can combine to intensify these impacts.

These changes pose direct risks to our homes, infrastructure, freshwater sources, and food systems. In Funafuti, our most densely populated atoll, over 77% of the land area is projected to flood every five years by the end of the century, regardless of the emissions pathway.

The frequency and severity of coastal flooding are expected to increase across all islands. This trend places the long-term habitability of Tuvalu at risk, particularly given our limited access to freshwater and agriculturally viable land. Our national climate risk assessment has classified the threat to coastal protection and human settlements as Extreme (Deloitte, 2024).

The following sections present an overarching pathway with many elements of the sectoral activities included, as well as discussion on Loss and Damage (L&D) explicitly. In this context the Tuvalu Adaptation Pathway emphasises managed relocation, land reclamation projects, and legal frameworks to ensure sovereignty and identity persist despite climate-driven displacement.

6.2. Limits to adaptation

For Tuvalu, adaptation is critical in reducing the risks and impacts of climate change, but there are clear limits to the protection adaptation can provide. As a small island nation facing rising sea levels and increasingly severe weather events, we experience the harsh reality that adaptation cannot prevent all climate-related impacts. These limits, often referred to as thresholds, tipping points, or regime shifts, mark the point where adaptation efforts are no longer sufficient to secure communities, ecosystems, and livelihoods from intolerable risks.

The Intergovernmental Panel on Climate Change (IPCC) defines an adaptation limit as "the point at which an actor's objectives or system's needs cannot be secured from intolerable risks through adaptive actions" highlighting the inevitable transition from adaptation to unavoidable loss and damage (IPCC, 2022).

In our case, adaptation limits manifest in the loss of habitable land, degradation of freshwater sources, and threats to food security. The distinction between hard and soft adaptation limits is particularly relevant here: hard limits mean there are no foreseeable options to prevent impacts, such as land submersion due to rising seas. Soft limits, however, represent barriers that could potentially be overcome with advancements in technology, increased resources, or institutional support, such as improved desalination infrastructure to address freshwater shortages.

Global mitigation failures exacerbate adaptation limits in Tuvalu, making us disproportionately vulnerable to climate change impacts. Socio-economic and institutional challenges, including constrained financial resources, governance limitations, and difficulties in implementing large-scale adaptation strategies, accelerate the point at which adaptation ceases to be effective.

Moreover, cultural and social factors, including the strong desire to preserve the Tuvaluan homeland and way of life, influence the willingness and ability to enact transformational adaptation measures such as planned relocation. As these limits are surpassed, Tuvalu faces an urgent need for international support, both for

adaptation and for addressing the irreversible loss and damage that climate change inflicts. The following graphic illustrates approaches and actions across the spectrum of mitigation-adaptation-loss and damage in response to climate change (Figure 26).

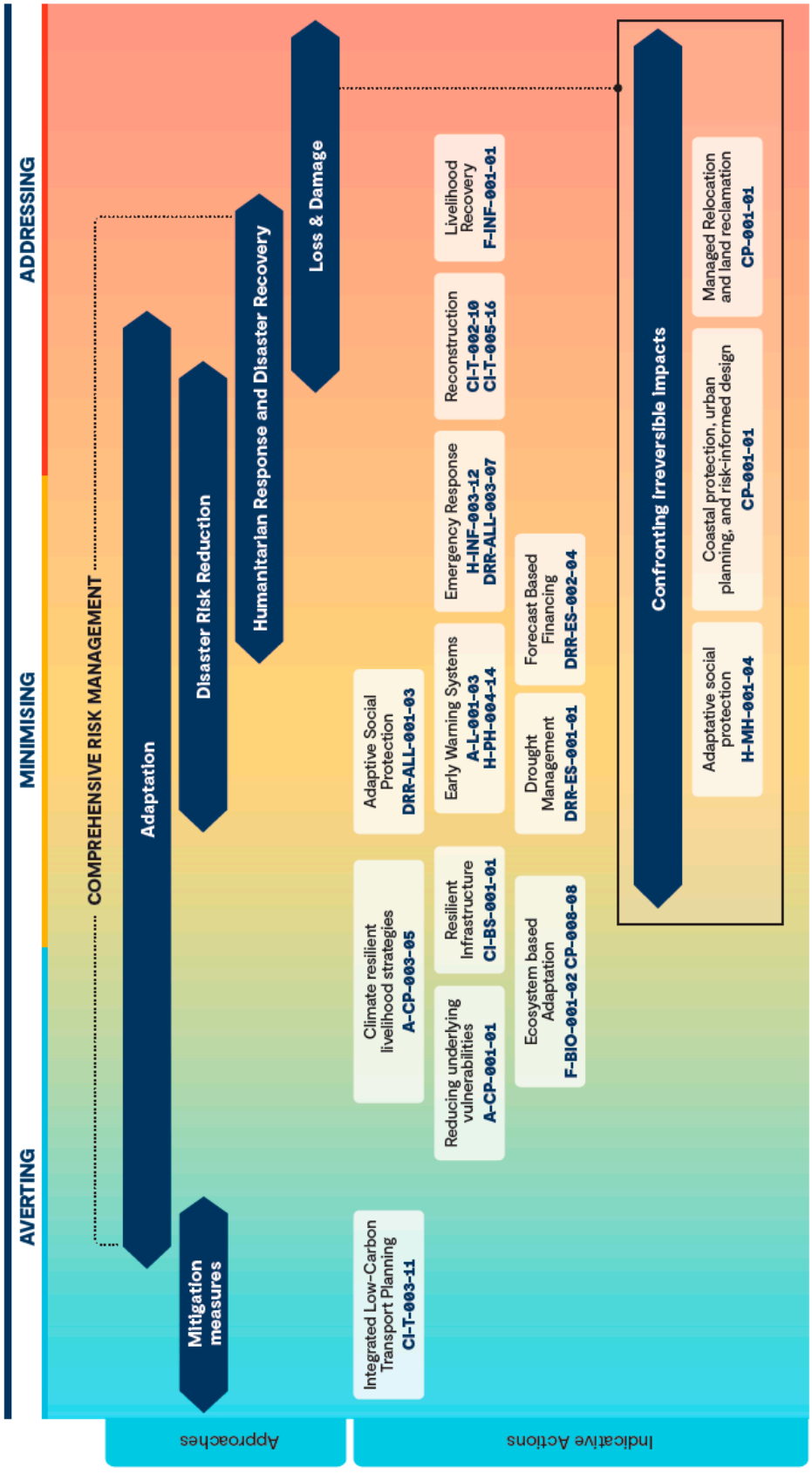


Figure 26. Spectrum of approaches and action in addressing climate change

6.2.1. Loss and damage

Loss and damage in climate adaptation refers to the unavoidable impacts of climate change that exceed what communities can prepare for or recover from. While adaptation efforts such as seawall construction, drought-resistant agriculture, and disaster response improvements aim to reduce vulnerability, some climate effects are too severe or unpredictable to be fully mitigated.

Loss includes irreversible damage, like the permanent submersion of coastal land or species extinction. Damage refers to harm that might be repaired, such as storm-related infrastructure destruction or declining agricultural yields.

For Tuvalu, rising sea levels threaten habitable land, freshwater sources, and food security, leading to forced displacement. Beyond physical loss, these impacts endanger cultural heritage, economic stability, and social identity, posing an existential challenge for Tuvalu's future.

Loss and damage from climate change can be further categorized into economic and non-economic impacts.

- **Economic** loss and damage include measurable financial costs, such as damage to infrastructure, reduced fish catch, loss of livelihoods, and disaster recovery expenses. These can be quantified in monetary terms and often require financial support for reconstruction and adaptation.
- **Non-economic** loss and damage encompass impacts that are harder to quantify but deeply affect communities. These include the loss of biodiversity, cultural heritage, social cohesion, and even the psychological toll of displacement. For Tuvalu, the risk of losing ancestral land to rising sea levels represents an irreplaceable loss beyond financial metrics.

Attributing loss and damage to climate change in Tuvalu presents unique challenges due to the country's small size, limited data availability, and the slow-onset nature of many climate impacts. Traditional attribution methodologies rely on long-term, high-quality datasets to establish clear links between climate change and specific events. However, Tuvalu lacks extensive climate records, making it difficult to apply these methods effectively. Additionally, the impacts Tuvalu faces such as rising sea levels, saltwater intrusion, and coastal erosion, develop gradually over time, complicating efforts to pinpoint direct causation.

Despite these methodological constraints, Tuvalu and the Pacific Small Island Developing States (PSIDS) unequivocally attribute their loss and damage to anthropogenic climate change. Tuvalu often relies on simpler attribution approaches, such as physical reasoning, where observed environmental changes are linked to well-documented climate drivers. For example, the global rise in temperatures has led to higher sea levels and increased storm intensity, both of which directly threaten Tuvalu's infrastructure and habitability. Despite these challenges, improving attribution methods is crucial for securing international support and funding to address the irreversible consequences of climate change in Tuvalu.

As global temperatures continue to rise, and drive changes to the climatic conditions in the Pacific and for Tuvalu specifically, these generally more extreme conditions may result in loss and damage for Tuvalu. Table 5 summarises these into non-economic and economic potential loss and damage.

Table 5. Potential loss and damage in Tuvalu[4]

SECTOR	NON-ECONOMIC LOSS AND DAMAGE	ECONOMIC LOSS AND DAMAGE
Displacement and relocation	Loss of ancestral land and whole inhabited islands. Loss of ways of living, livelihood and knowing associated with land and sea. Loss of traditional knowledge and language associated with place. Psychological impacts of ecological damage and loss of homeland.	Expenses related to relocating communities and building new land and settlements. Expenses related to documenting and preserving traditional knowledge and languages.
Biodiversity	Loss of keystone species. Loss of ecosystem goods and services. Decline in coral reef health.	Disruptions to tuna stocks due to warming seas and change in migration. Decline in reef fish availability.

4 This list is not exhaustive. Many other loss and damage items both realized and currently unrealized may occur

SECTOR	NON-ECONOMIC LOSS AND DAMAGE	ECONOMIC LOSS AND DAMAGE
Critical infrastructure and human settlement	Loss of ancestral land and islands.	Damage to critical infrastructure. Increased infrastructure maintenance costs. Increased costs of insurance in high-risk locations.
Water resources and sanitation	Reduced water availability. Increased pollution of freshwater resources through salinisation.	Damage to household and municipal water supply systems.
Government and institutional capacity	Erosion of institutional trust and social cohesion due to repeated crises.	Increased administrative costs for emergency response, adaptation planning, and international negotiations.
Health and wellbeing	Increased incidence of vector- and water-borne diseases (e.g. dengue, leptospirosis) due to warmer temperatures and flooding.	Increased healthcare costs, loss of productivity due to illness, strain on health infrastructure.
Education and Human capital	Disruption of schooling due to displacement or disaster events; loss of traditional knowledge systems.	Damage to school infrastructure; increased costs for relocating or rebuilding educational facilities.

In addressing some of these potential outcomes, the following 14 activities within the sectoral components were identified as related to Loss & Damage. Some of these actions address irreversible impacts in the context of adaptation, for example, managed relocation is a pre-emptive response to loss of land but may also be considered an adaptation strategy. These activities are summarised in Table 6 and relate to specific sectors. The actions are detailed for each relevant Sector in Part 5.

Table 6. Summary of potential Loss and Damage related activities within the NAP

SECTOR	CODE[5]	ACTION	L&D ELEMENT
Coastal Protection and Human Settlements	CP-001-01	National Reclamation and Relocation Strategy: Tuvalu Survival Pathway. Objective: To develop and implement an integrated framework for reclamation, relocation, and coastal protection to enhance environmental resilience, safeguard critical infrastructure, and promote sustainable urban development.	Displacement, Infrastructure Damage, Non-economic Loss (identity, culture), Ecosystem Loss
	CP-003-03	Continue with the next phases of the TCAP Projects. Continue with foreshore and coastal hazard monitoring program for whole area and take note of lessons learned and opportunities to improve future projects.	Infrastructure Damage, Ecosystem Degradation
	CP-008-08	Assess feasibility of design and implementation of targeted nature-based solutions (NbS), and eco-system-based adaptation (EbA) projects for outer islands that require short-term coastal protection and would contribute to long-term ecosystem conservation.	Ecosystem Degradation, Non-economic Loss
Critical Infrastructure	CI-T-005-16	Prepare International Airport on Funafuti Master Plan for relocation to long term safe location.	Infrastructure Damage, Displacement
	CI-T-002-10	Prepare Funafuti Port Master Plan for expansion and reclamation works.	Infrastructure Damage, Economic Loss

5 Codes reference their sectoral code. See individual sector sections for more details

SECTOR	CODE[5]	ACTION	L&D ELEMENT
Fisheries & Agriculture	F-BIO-001-02	Enhance environmental resilience and mitigate the impacts of climate change on coral reefs to safeguard marine ecosystems. Deliver a national Coral Reef Protection & Resilience approach.	Ecosystem Degradation, Non-economic Loss (biodiversity, cultural value)
	F-ALL-001-04	Establish a program dedicated to preserving and documenting traditional fishing techniques, farming practices and food preservation techniques. By systematically capturing and recording traditional practices, the initiative will safeguard cultural heritage, foster knowledge sharing across generations, and promote sustainable fishing and farming practices.	Non-economic Loss (cultural heritage, indigenous knowledge, social cohesion), Ecosystem services and livelihoods
Health and Wellbeing	H-MH-001-04	Develop and implement a National Mental Health Resilience and Support Initiative to enhance mental health resilience and well-being in Tuvalu, addressing the psychological impacts of climate change and relocation, by integrating comprehensive strategies into the national health framework.	Non-economic Loss (mental health, psychosocial well-being)
	H-SOC-001-08	Update the cultural policy with objectives to manage internal migration. (Link to Coastal Protection CP-003).	Displacement, Non-economic Loss (cultural identity)
	H-MH-002-09	Revise and enhance the National Gender Equity Policy (2024) to integrate the recognition and mitigation of climate and natural hazard-induced gender-based violence (GBV) risks affecting women and children.	Non-economic Loss (social cohesion, safety, dignity)
	H-SOC-002-10	Comprehensively include Cultural Heritage into Loss & Damage policies and develop a distinct Preserving Cultural Heritage Plan, as required.	Non-economic Loss (cultural heritage, identity)
	H-SOC-003-16	Develop national systems and a heritage register for Tangible Cultural Heritage (TCH) protection.	Non-economic Loss (cultural heritage)
	H-SOC-004-17	Support community-based heritage initiatives and establish a National Culture Centre and museum.	Non-economic Loss (cultural heritage, community cohesion)
Water Security	WS-WA-004-09	Develop water and sanitation masterplan for the outer islands that reduces the climate vulnerabilities associated with high emission scenario.	Infrastructure Damage, Public Health Risk, Ecosystem Degradation

6.3. Tuvalu's Adaptation Pathway

Tuvalu's Adaptation Pathway is a strategic, phased response to the existential threat posed by climate change. It is intentionally designed to be flexible and responsive, progressing from near-term resilience building to medium-term transformative options, and long-term contingency planning. This approach reflects the urgent need to secure habitable land, protect livelihoods, and preserve Tuvaluan identity in the face of rising seas and intensifying climate extremes.

Grounded in the understanding that adaptation can reduce but not eliminate climate risk, especially in the context of insufficient global mitigation, the pathway sets out priority actions for the 2025–2030 period while laying the foundation for longer-term transformation. These actions were identified through national consultations and reflect Tuvalu's commitment to proactive, inclusive, and forward-looking adaptation.

The forthcoming National Reclamation and Relocation Strategy will provide the detailed roadmap for implementation, including site-specific designs, governance mechanisms, and financing strategies.

Even under the most optimistic emission scenarios (e.g., SSP2-4.5 with 0.5–1.0m sea level rise by 2100), Tuvalu will require significant land reclamation and relocation planning to remain habitable. The actions taken now must ensure that we can remain in our homeland for as long as possible and that if relocation becomes necessary, it is done with dignity, agency, and foresight.

In recognition of the increasing risks to habitability posed by climate change, Tuvalu has taken proactive steps to secure the dignity and rights of its people through international partnerships. The Falepili Union Treaty, signed between Tuvalu and Australia in 2023, establishes a formal pathway for climate mobility, enabling Tuvaluans to migrate with access to residency, education, and employment opportunities in Australia. This treaty reflects a new era of regional solidarity and acknowledges that external climate migration is already a reality for many Tuvaluans. While Tuvalu remains committed to adaptation and resilience-building at home, the Falepili Treaty provides a vital safety net and affirms Tuvalu's sovereignty and cultural identity beyond its borders. Climate mobility, therefore, is not only a contingency measure but a strategic component of Tuvalu's long-term adaptation pathway.

This pathway is not static. It will evolve with new data, technologies, and climate realities. But its core objective remains constant: to secure a future for Tuvalu on Tuvaluan terms.

Phased Adaptation Timeline

ACTIVITY DESCRIPTION	ACTIVITY CODE
Years 1–2 (2025–2027): Laying the Foundations	
Develop and implement an integrated framework for reclamation, relocation, and coastal protection to enhance environmental resilience, safeguard critical infrastructure, and promote sustainable urban development.	CP-003 and CP-001
Initiate nature-based adaptation interventions on outer islands (e.g., mangrove restoration, berm top barriers).	CP-003 and CP-006
Continue land reclamation in priority areas (e.g., Funafuti, Nukufetau) to ensure future relocation options.	CP-008
Initiate a comprehensive review, design and establishment of a National Coastal Agency that will be the centralized body to coordinate and implement national reclamation and urban development activities.	CP-002
Develop and implement an Integrated Water Quality Laboratory and Monitoring Initiative.	WS-WQ-001 and H-PH-001
Short-Term (0–10 years): Building Resilience	
Develop and implement a detailed and costed national master plan for climate proofing buildings and houses.	CI-BS-001
Finalize and implement Island-Specific Coastal Protection Plans.	CP-002 and CP-006
Scale up coastal defences and monitor reclamation effectiveness through TCAP and MTAP.	CP-008
Develop an advocacy and communication plan for oceanic and coastal fisheries.	F-INF-003
Support peer-reviewed research to validate and refine adaptation techniques for atoll environments.	CP-008
Deliver a national Coral Reef Protection and Resilience program.	F-BIO-001
Begin pilot relocation planning in high-risk areas, aligned with community preferences and cultural values.	-
Medium-Term (10–30 years): Transition and Transformation	
Trigger managed relocation at pre-identified thresholds as defined in the Reclamation and Relocation Strategy (e.g., frequency of flooding, infrastructure failure).	-
Expand sustainable marine and fisheries management to protect food security.	-
Strengthen freshwater resilience through desalination, rainwater harvesting, and aquifer protection.	WS-WA-002
Ongoing migration under the Falepili Union Treaty and other visa pathways	-
Integrate ecosystem-based adaptation into land-use and marine spatial planning.	-
Long-Term (30+ years): Sustaining Sovereignty	
Maintain and expand reclaimed land to support population needs.	-
Institutionalize relocation governance, ensuring rights, identity, and cultural continuity.	-
Explore innovative adaptation technologies (e.g., floating infrastructure, offshore energy).	

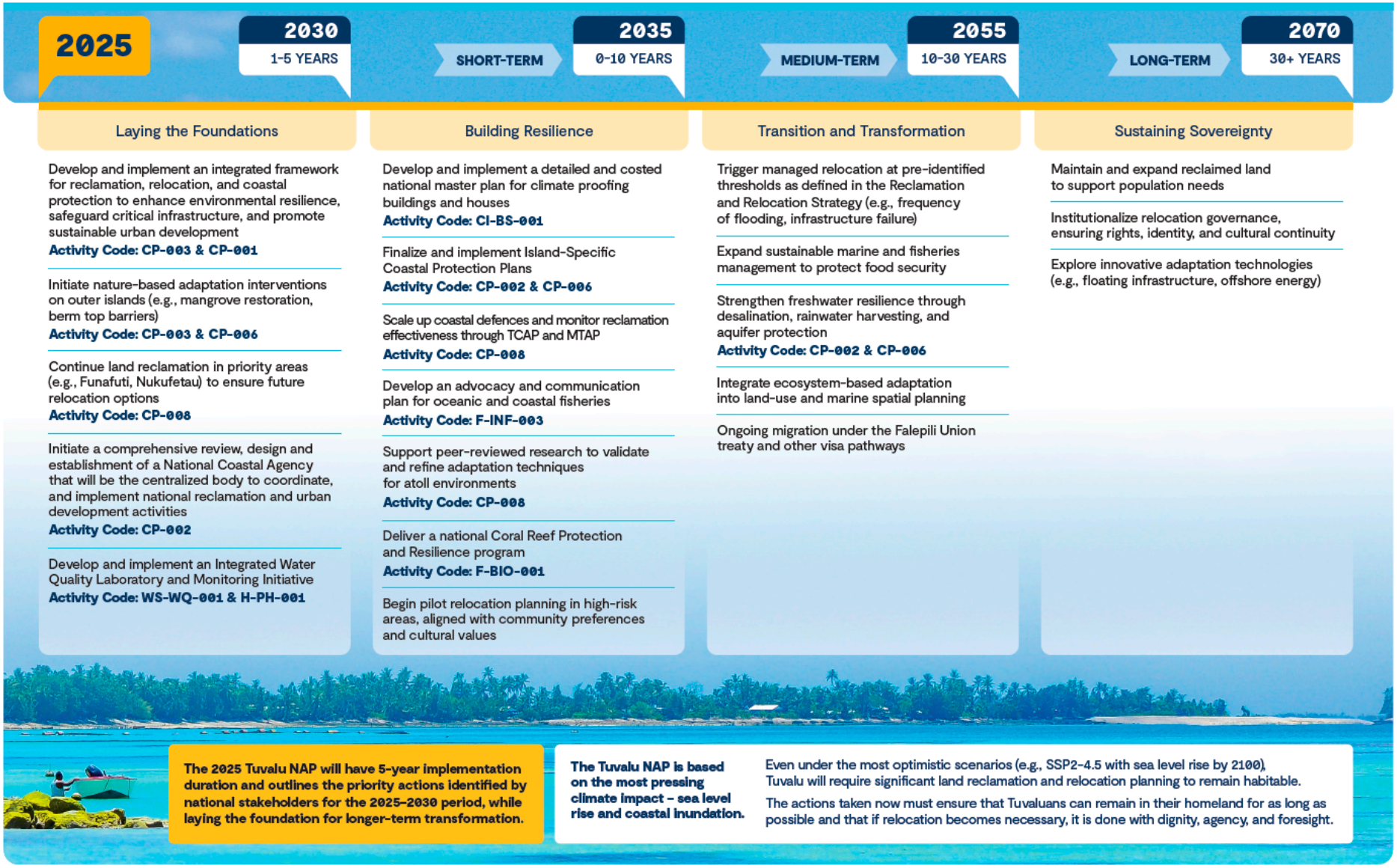


Figure 27. Tuvalu National Adaptation Pathway (2025)

Part Four:
System components for adaptation

7. Whole of government approach

7.1. Introduction

Whole of government or horizontal integration involves incorporating climate change considerations into cross-sectoral national development planning processes to ensure they are adequately informed by climate realities. This concept is a core principle of the NAP process. It is essential because climate change is an overarching challenge that affects various government ministries, departments, the Kaupule and Island Councils. By promoting horizontal integration, the Government of Tuvalu will be better equipped to address the underlying issues that contribute to national vulnerability and enhance efforts to mitigate the impacts of current and future climate challenges.

One of the key benefits of horizontal coordination is its ability to identify and resolve contradictions between programs and policies. While individual departments may implement initiatives to achieve their specific mandates, certain actions can unintentionally conflict with adaptation goals. By integrating climate considerations early in policy development, Tuvalu can eliminate the need for retrofitting adaptation measures later and ensure that climate challenges affecting various government entities are recognized and addressed collectively.

Through the implementation of Te Vaka Fenua o Tuvalu and the NAP, horizontal integration provides a critical opportunity to foster deeper collaboration between sectors. This is especially important for large-scale adaptation projects and addressing social complexities that impact decision-making. Issues such as land tenure, ownership rights, and the equitable distribution of resources are central to adaptation planning, requiring inclusive governance and transparent coordination. Strengthening inter-agency cooperation and ensuring equitable access to adaptation resources will be crucial in building a resilient and sustainable future for Tuvalu.

7.1.1. Institutional arrangements for climate resilience

Tuvalu has made significant strides in fostering integrated climate adaptation planning over the last two decades. Through initiatives such as the National Adaptation Programs of Action (NAPA), Integrated Water Resource Management Projects, and the Tuvalu Coastal Adaptation Projects, government agencies have progressively adapted to cross-sectoral planning approaches. However, while planning efforts have improved, implementation remains a challenge due to systemic barriers that hinder effective coordination and delivery.

Strengthening horizontal integration, particularly through the National Advisory Council on Climate Change (NACCC) will be crucial in overcoming these obstacles. The NACCC serves as Tuvalu's governance body for climate-related issues, facilitating collaboration between government departments and non-governmental actors. The Te Kete National Development Plan and Te Vaka Fenua o Tuvalu: National Climate Change Policy have also mainstreamed climate action across key sectors, ensuring alignment between national adaptation efforts. By reinforcing existing institutional arrangements and where necessary establishing new ones, and improving communication mechanisms, Tuvalu can enhance cooperation across agencies, ensuring that adaptation strategies are effectively implemented.

With the establishment of a National Coastal Agency (or similar) there is an opportunity to enhance engagement among local stakeholders, including government representatives, agencies, utilities, and community groups, to ensure a more proactive approach to addressing climate challenges. Strengthening local leadership in decision-making will allow Tuvalu to shape projects and funding priorities in a way that aligns with national and community needs, rather than simply adopting initiatives proposed by external organizations.

7.1.2. Cross-sectoral coordination for adaptation planning

Effective climate adaptation requires a cohesive, coordinated response across all sectors of governance. The whole-of-government approach ensures that adaptation efforts are not confined to individual ministries or agencies but are instead embedded across the entire governmental framework. This approach fosters collaboration, resource sharing, and policy alignment, enabling a unified response

to climate risks. By integrating adaptation strategies across multiple sectors, from infrastructure to health and economic planning, the government strengthens resilience and enhances the ability to address complex environmental challenges.

Particularly in Tuvalu with limited resources and a small workforce, embracing horizontal integration is crucial for achieving sustainable and inclusive outcomes. By promoting inter-agency cooperation and leveraging expertise from diverse sources, the country can implement comprehensive adaptation strategies that align with national priorities and community needs. A well-integrated approach ensures that climate adaptation is not only effective but also equitable, benefiting all sectors and islands while minimising duplication and inefficiencies.

An essential aspect of cross-sectoral coordination in adaptation planning is urban land use management, particularly for Tuvalu's limited available land and vulnerable coastal areas. Coordinated urban land use planning ensures that adaptation objectives are aligned with infrastructure development, housing expansion, and environmental conservation. By enforcing zoning regulations, resilient building codes, and developing sustainable land use policies, Tuvalu can enhance disaster preparedness and reduce exposure to climate-induced risks such as coastal erosion, flooding, and seawater intrusion.

7.1.3. Climate information services and accessibility

Tuvalu provides a wealth of climate change and disaster preparedness information to stakeholders through face-to-face meetings, scientific modelling, national consultations, and project-specific initiatives. However, despite the availability of these data, there is limited evidence that it is effectively informing adaptation planning—whether in donor-funded projects or island-specific development efforts.

A key issue is the lack of guidance on how to apply this information to project ideation and planning. Stakeholders receive valuable climate data but are rarely supported in translating it into actionable strategies. Additionally, coordination between government agencies, NGOs, and community groups remains weak, leading to fragmentation in both information dissemination and utilization.

Furthermore, weather and climate forecasting services are often inaccessible at the Kaupule (local government), community, and household levels. Limited access to early warning systems reduces the ability of local communities to proactively respond to climate risks. Strengthening coordination mechanisms, improving accessibility to climate forecasting tools, and fostering capacity-building efforts to integrate climate information into adaptation planning will be essential in addressing these gaps.

7.2. Implementation considerations

Effective implementation of Tuvalu's whole-of-government adaptation actions requires a deliberate focus on institutional coordination, capacity building, and resource mobilization. While the policy and planning frameworks are increasingly robust, translating these into tangible outcomes on the ground remains a challenge due to limited human, technical, and financial resources.

Institutional Capacity and Coordination

The success of horizontal integration hinges on the ability of institutions to collaborate effectively. Strengthening the role of the National Advisory Council on Climate Change (NACCC), continuing the use of the AdaptationTechnical Working Group for NAP implementation, and operationalizing a National Coastal Agency will be critical. These bodies must be empowered with clear mandates, adequate staffing, and decision-making authority to coordinate across ministries and ensure alignment with national priorities.

Local Government and Community Engagement

Kaupule and Island Councils play a vital role in adaptation delivery. Implementation must be grounded in local realities, with mechanisms to ensure that community voices are integrated into planning and decision-making. This includes building capacity at the local level to interpret climate information, manage adaptation projects, and engage with national institutions.

Financing and Resource Allocation

Securing and managing climate finance is a persistent challenge. Implementation will require a mix of domestic budget allocations, international climate finance, and donor support. A forecast-based financing mechanism (WG-013) and centralized data management tools (WG-015) can enhance transparency, accountability, and timely disbursement of funds.

Data, Monitoring, and Learning

Robust monitoring and evaluation systems are essential to track progress, assess effectiveness, and inform adaptive management. The development of a centralized data platform (WG-015) will support evidence-based decision-making and reporting. Regular reviews of implementation progress should be institutionalized, with feedback loops to adjust strategies as needed.

Policy Coherence and Legal Frameworks

Modernizing outdated policies (WG-004), integrating climate risk into environmental safeguards (WG-008), and enacting provisions of the Climate Change Resilience Act (WG-007) will provide the legal backbone for implementation. Ensuring coherence between sectoral policies and adaptation goals will reduce duplication and effort.

Partnerships and Technical Assistance

Tuvalu will benefit from strategic partnerships with regional organizations, universities, and technical agencies. These partnerships can provide targeted support in areas such as climate modelling, urban design, and nature-based solutions. However, partnerships must be structured to build national capacity and avoid dependency.

7.3. Adaptation actions

Some of the actions identified in this section are also included in distinct sectoral adaptation actions. This duplication is intentional to convey the importance of these activities for horizontal integration within the NAP document itself, whilst maintaining the sector specific ownership of the activity. The interlinkage is identified in the final column where relevant. For monitoring and reporting, however, these activities have one unique identifier.

CODE[6]	ACTION	TIMEFRAME	RESPONSIBLE AGENCY	INTERLINKAGES
WG-002	Initiate a comprehensive review, design and establishment of a National Coastal Agency that will be the centralized body to coordinate and implement national reclamation and urban development activities associated with the long-term survival pathways for Tuvalu. This Agency will be tasked with overseeing the design, implementation, and management of projects including coastal reclamation, development associated infrastructure, and community and stakeholder engagement.	2025-2026	Climate Change Department	CP-002
WG-003	Review and streamline as necessary the roles and responsibilities of NACCC membership, potential to align with the NAP communications strategy and National Coastal Agency. Continue with the permanent Technical Working Group for the NAP implementation.	2025-2026	Climate Change Department	-
WG-004	Review and modernise (as required) domestic public policies to allow for large-scale development in relation to land reclamation and coastal protection, replace outdated policies, improve government responsiveness and ability to manage and effectively deliver projects.	2026-2027	Climate Change Department	CP-004
WG-005	Conduct a comprehensive review and modernization of the Emergency Response Management regulatory and operational framework, with the goal of enhancing acute response capabilities and ensuring the safety and resilience of all communities	2028	NDMO	DRR-ALL-002

6 WG = Whole of Government

CODE[6]	ACTION	TIMEFRAME	RESPONSIBLE AGENCY	INTERLINKAGES
WG-006	Develop and institutionalize national Nature-based Solutions (NbS) guidelines for climate adaptation.	2026	Dept of Environment, Climate Change Department	-
WG-007	Enact Section 18 of the Climate Change Resilience Act 2019 to convene the National Climate Change Resilience Forum at least on an annual basis as a multi-stakeholder and participatory process for guiding NAP implementation.	2026	Climate Change Department	-
WG-008	Review the EIA process and safeguards elements of the Department of Environment to mainstream climate risk and adaptation, and donor safeguard requirements into regulatory processes.	2026-2030	Dept of Environment	-
WG-009	Masterplan for Reclamation Activities: • Prepare a staged masterplan for large-scale reclamation projects, utilizing data from TCAP initiatives to identify suitable locations for reclamation activities. • Prioritise areas based on ecological, economic, and social factors to ensure effective and sustainable implementation.	2025-2026	Climate Change Department (National Coastal Agency)	CP-003
WG-010	Comprehensive Urban Design Plan for Funafuti: • Develop an urban design plan aimed at creating a sustainable, functional, and aesthetically appealing urban environment in Funafuti. • Integrate key elements such as land use planning, transportation options, public spaces, and essential infrastructure while aligning with existing infrastructure plans to foster environmental sustainability and improve community well-being.	2026	Climate Change Department (National Coastal Agency)	CP-003
WG-011	Risk-Informed Relocation Masterplan: • Design a relocation masterplan for critical infrastructure, prioritizing necessary relocation activities, including CI-T-001 and CI-T-002 projects. • Incorporate risk assessments to ensure safe and effective relocation strategies.	2026-2028	Climate Change Department (National Coastal Agency)	CP-003
WG-012	Development of Multi-Hazard Early Warning Systems: Establish and implement robust multi-hazard early warning systems, incorporating impact-based forecasting to effectively communicate risks and facilitate preventative measures.	2026	Tuvalu MET Service	DRR-ES-001
WG-013	Forecast-Based Financing Mechanism: Establish a forecast-based finance (FbF) system to enable the rapid mobilization of funds and implementation of pre-planned, anticipatory actions ahead of climate shocks, minimizing potential losses and damages.	2027-2030	Tuvalu MET Service	DRR-ES-001
WG-014	Integrate meteorological and climate early warning information into health information systems.	2027	Dept of Health	H-PH-004
WG-015	Develop or purchase data management tools for tracking, monitoring and evaluating climate adaptation activities across government. To be held in a central unit – whether this is NAP Unit or Implementation Agency is TBD.	2026	Climate Change Department	-

8. Whole of society approach

8.1. Introduction

Achieving ambitious climate policy objectives in Tuvalu requires public support, political commitment, and capacity-building across all levels of governance and society. A whole-of-society approach ensures that adaptation efforts engage a diverse range of stakeholders—including island-level administrative structures such as the Kaupule, Falekaupule, and Island Planning Units, alongside non-governmental organizations, education providers, community groups, and national planning entities.

8.1.1. Communication and engagement

Communication processes in Tuvalu involve both traditional and digital methods, with strategies in place to ensure effective information dissemination and stakeholder engagement apparent in all distinct development partner programs. Effective communication among national stakeholders is hindered by limited infrastructure and geographic isolation. The dispersed nature of Tuvalu's islands makes it difficult to ensure consistent and efficient communication, which is essential for coordinated policy implementation and community engagement. This challenge is exacerbated by the need to maintain traditional knowledge and means of dissemination, and integrate with modern communication methods.

Deepening engagement with Island Councils and Kaupule is especially critical for tailoring adaptation activities to the specific challenges and opportunities within each island community. Tuvalu has already demonstrated strong coordination in this area, and sustained support for these governance systems will allow them to expand their role in resilience-building initiatives.

A truly resilient Tuvalu depends on community-driven leadership in shaping its own future. Climate adaptation and development planning must be guided by local voices, lived experiences, and cultural values, rather than relying solely on donor-driven priorities. When communities take an active role in designing projects, setting funding agendas, and leading implementation efforts, adaptation becomes more effective, sustainable, and locally relevant.

Rather than waiting for external partners to dictate priorities, Tuvalu can empower its people to define their own resilience pathways. This means fostering inclusive consultation processes, building technical capacities within local institutions, and strengthening governance mechanisms to ensure decision-making reflects local needs, aspirations, and environmental realities.

8.1.2. Cultural heritage

Climate-related loss and damage will deeply impact Tuvaluan cultural heritage. Many cultural practices, oral histories, and customs are tied to the land and ocean, meaning their erosion risks severing generational connections and collective memory. Integrating cultural resilience into adaptation planning ensures that heritage preservation is prioritized alongside disaster response efforts. By supporting knowledge transmission, safeguarding historical sites, and recognizing indigenous leadership, Tuvalu can protect its rich traditions while enhancing national resilience in the face of climate change.

8.1.3. Gender equality, disability, and social inclusion mainstreaming

Gender equality, disability inclusion, and social inclusion (GEDSI) are integrated throughout the NAP's planning, implementation, and monitoring processes.

8.2. Implementation considerations

Implementing a whole-of-society approach to climate adaptation in Tuvalu requires inclusive governance, sustained community engagement, and the integration of cultural values into national planning. While Tuvalu has made significant progress in fostering participatory processes, several key considerations must be

addressed to ensure that adaptation actions are both effective and equitable.

Community Empowerment and Local Leadership

Empowering communities to lead adaptation efforts is essential for long-term resilience. This involves not only consultation but also co-design and co-implementation of projects. Strengthening the capacity of Kaupule, Falekaupule, and Island Planning Units will ensure that local governance structures are equipped to manage adaptation initiatives and represent community interests in national decision-making.

Inclusive Communication and Engagement

Effective communication is foundational to a whole-of-society approach. The implementation of the NAP Communication and Engagement Strategy (WS-003, WS-004) must prioritize equitable access to information, especially for remote islands and marginalized groups. This includes using both traditional and digital platforms, supporting translation into local languages, and ensuring that climate information is actionable and relevant to daily life.

Cultural Integration and Heritage Protection

Adaptation planning must recognize and protect Tuvalu's cultural heritage. Implementation should include the development of a Preserving Cultural Heritage Plan (WS-010), a heritage register (WS-011), and support for community-based heritage initiatives (WS-013). These efforts will help safeguard identity, traditional knowledge, and social cohesion in the face of climate-induced displacement and change.

Education, Youth Engagement, and Knowledge Transfer

Building climate literacy and fostering intergenerational knowledge transfer are critical. National education campaigns (WS-008) and citizen science initiatives can engage youth and communities in adaptation, while programs to document traditional practices (WS-012) will ensure that valuable knowledge is preserved and applied.

Coordination and Resource Mobilization

Whole-of-society implementation requires coordination across government, civil society, and development partners. Establishing clear roles, responsibilities, and funding mechanisms for activities such as the Public Communication Program (WS-002) and consultative dialogues (WS-006) will be essential. Budget allocations must be formalized to support sustained engagement and capacity-building at all levels.

Monitoring, Learning, and Adaptation

To ensure accountability and continuous improvement, implementation should include mechanisms for monitoring social outcomes, documenting lessons learned, and adapting strategies based on community feedback. This will help ensure that adaptation remains responsive to evolving needs and grounded in local realities.

8.3. Adaptation actions

Some of the actions identified in this section are also included in distinct sectoral adaptation actions. This duplication is intended to convey the importance of these activities for vertical integration within the NAP document itself, whilst maintaining the sector specific ownership of the activity. The interlinkage is identified in the final column were relevant. For monitoring and reporting, however, these activities have one unique identifier.

CODE	ACTION	TIMEFRAME	RESPONSIBLE AGENCY	INTERLINKAGES
WS-001	Develop and implement a nationwide consultation process that will support the development of the National Reclamation and Relocation Strategy (Tuvalu Survival Pathway). Include targeted communication around national law and policies as they relate to land reclamation activities and ownership.	2026 – 2028	Climate Change Department, Kaupule (National Coastal Agency)	CP-001

CODE	ACTION	TIMEFRAME	RESPONSIBLE AGENCY	INTERLINKAGES
WS-002	Develop and launch a comprehensive Public Communication Program focused on disaster and climate risk early warning systems. This program will emphasize equitable access to information, inclusive preparedness measures, and community empowerment, fostering heightened public awareness and enabling effective responses to disaster risks and climate challenges.	2027	NDMO, Climate Change Department, Kaupule	DRR-ALL-001
WS-003	Resource the NAP Communication and Engagement Strategy and prepare TOR for role to facilitate activities.	2025	Climate Change Department	-
WS-004	Allocate and formalise budget for implementing the activities outlined in the Communications and Engagement Strategy.	2025	Climate Change Department	-
WS-006	Organize and facilitate a consultative dialogue between CCD, Kaupule, other agencies and NGOs on how best to operationalise adaptation measures in ISP and coordinate with outer islands.	2026	Climate Change Department, Kaupule	-
WS-007	Develop an advocacy and communication plan for oceanic fisheries and the protection of Tuvalu's interests as fisheries shift east.	2027	Tuvalu Fisheries Authority	F-OF-001
WS-008	Conduct national climate education and citizen science campaigns targeting youth and communities.	2026-2027	Dept of Environment, Climate Change Department	-
WS-009	Continue awareness programmes to drive behavioural change related to water conservation.	Ongoing	Climate Change Department, Public Works Department	WS-WD-002
WS-010	Comprehensively include Cultural Heritage into Loss & Damage policies, and as required develop a distinct Preserving Cultural Heritage Plan.	2026-2027	Climate Change Department, Department of Culture	-
WS-011	Develop national systems and a heritage register for Tangible Cultural Heritage (TCH) protection.	2027	Climate Change Department, Department of Culture	H-SOC-003
WS-012	Establish a program dedicated to preserving and documenting traditional fishing techniques, farming practices and food preservation techniques. This program will provide skill-building opportunities, access to resources, and financial support to enhance women's participation and leadership in the fisheries and farming sector. By systematically capturing and recording traditional practices, the initiative will safeguard cultural heritage, foster knowledge sharing across generations, and promote sustainable fishing practices.	2027	Dept of Agriculture. Tuvalu Fisheries, TNCW, Tuvalu Red Cross	H-SOC-001
FS-ALL-001				
WS-013	In recognition of potential loss of land and cultural attributes due to changing sea levels, support community-based heritage initiatives and establish a National Culture Centre and museum.	2027-2029	Department of Culture, TNCW, Climate Change Department	FS-ALL-001
WS-014	Update the cultural policy with objectives to manage internal migration.	2029	Department of Culture, TNCW, Climate Change Department	H-SOC-002

9. Capability strengthening for resilience and adaptation

9.1. Introduction

Tuvalu faces significant challenges in developing the technical expertise necessary for effective climate adaptation. Because of a small population base, the shortage of skills in areas such as climate modelling, impact assessment, and infrastructure design and delivery severely limits the country's ability to plan and implement robust adaptation measures. This technical gap is compounded by inefficiencies in project management, where many initiatives suffer from delays, unclear reporting lines and insufficient coordination amongst and between development partner led projects. High staff turnover and insufficient staffing levels further exacerbate these issues, leading to a loss of continuity and momentum.

High staff turnover in key government departments and agencies leads to a significant loss of institutional knowledge and skills. Succession planning is essential to ensure continuity and to retain expertise within these critical areas. Developing future leaders who can champion climate adaptation initiatives is crucial for the long-term success of Tuvalu's NAP. This includes implementing mentorship programs and leadership training for young professionals to prepare them for future leadership roles.

Ensuring the sustainability of adaptation programs beyond their project lifecycles requires building local capacity and ownership. Training local staff to take over project management and implementation roles is vital for fostering a culture of continuous learning and improvement. By addressing these needs, Tuvalu can build a resilient and capable workforce that is well-equipped to manage and adapt to the impacts of climate change, ensuring the long-term success of its NAP.

9.2. Implementation considerations

Building national capability for climate resilience in Tuvalu requires a long-term, systematic approach that addresses both technical skill gaps and institutional weaknesses. While many capacity-building initiatives are already underway, their effectiveness depends on how well they are embedded within national systems, aligned with sectoral needs, and sustained beyond project cycles.

Institutionalization of Capacity-Building Programs

To ensure continuity, training and upskilling efforts must be institutionalized within government agencies and education systems. This includes formalizing programs such as the Climate Project Management Training Program (CB-008), integrating climate knowledge into school curricula (CB-003), and establishing permanent units like a national well-being department (CB-015). These efforts should be supported by clear mandates, budget allocations, and long-term planning that provide foundations for success.

Retention and Succession Planning

High staff turnover remains a critical barrier to institutional memory and program continuity. Implementing retention and succession strategies (CB-002) across key departments is essential. These strategies should include mentorship programs, career development pathways, and incentives for long-term service in climate-critical roles.

Peer Learning and Regional Collaboration

Tuvalu can benefit from structured peer-to-peer learning with other Pacific Island Countries (CB-006), as well as twinning programs with donors and technical agencies (CB-005). These partnerships should be designed to build local ownership and avoid dependency, with a focus on practical, context-specific knowledge transfer.

Community-Based Capacity Development

Local communities are central to the success of adaptation efforts. Programs that engage communities in project delivery (CB-009), mental health support (CB-016), and food security (CB-010) not only build resilience but also foster social cohesion and cultural relevance. These initiatives must be adequately resourced and supported by local governance structures.

Sector-Specific Technical Strengthening

Targeted capacity-building is needed in sectors such as health (CB-014, CB-015), energy (CB-011), infrastructure (CB-007), and water quality monitoring (CB-017). These efforts should be guided by sectoral assessments and aligned with national development priorities to ensure relevance and sustainability.

Monitoring, Evaluation, and Learning

To track progress and adapt strategies, capacity-building programs must include robust monitoring and evaluation frameworks with associated funded positions to manage them. This includes setting clear indicators, collecting disaggregated data, and fostering a culture of continuous learning within institutions.

9.3. Adaptation actions

Some of the actions identified in this section are also included in distinct sectoral adaptation actions. This duplication is intentional to convey the importance of these activities for capability strengthening within the NAP document itself, whilst maintaining the sector specific ownership of the activity. The interlinkage is identified in the final column where relevant. For monitoring and reporting, however, these activities have one unique identifier.

CODE	ACTION	TIMEFRAME	RESPONSIBLE AGENCY	INTERLINKAGES
CB-001	Continue building the GCF-NDA and the Adaptation Fund Designated Authority capacity for development of project proposals, procurement, project management and due diligence.	Ongoing	Climate Change Department	-
CB-002	Implement retention and succession strategies within key sectoral departments and agencies to counter attrition of skilled staff. This could be done as an element of the Coastal Hazard and Relocation Strategy development to address the HR needs for the successful implementation of that work.	2026	Development Coordination Committee, (National Coastal Agency)	-
CB-003	Strengthen the integration of climate knowledge into the school curriculum through the development and support of Tuvalu-specific courses with climate skill pathways.	2026-2027	Dept of Education, Climate Change Department	-
CB-004	Provide scholarships/internships to strengthen qualifications in PM and disciplines related to infrastructure and coastal development (engineering, environmental scientists, etc).	2026-2029	PMO's, Development Coordination Committee	-
CB-005	Implement twinning programs with donors for peer-to-peer training, similar to those provided by the Green Climate Fund (GCF), Global Environment Facility (GEF), and other donors.	2026-2029	PMO's, Climate Change Department	-
CB-006	Continue to organise peer-to-peer training with other Pacific Island Countries for the Project Management Unit (PMU) under the Climate Change Division to enable knowledge sharing learning from those who have successfully delivered similar projects in the region.	2026-2029	Climate Change Department	-
CB-007	Enhance the capacity of the Building Code Assessment Unit (BCAU) at the Public Works Department to effectively enforce the Building Regulations and Building Code, ensuring compliance and promoting safe and sustainable building practices.	2027	Public Works Department	CI-BS-002-02

CODE	ACTION	TIMEFRAME	RESPONSIBLE AGENCY	INTERLINKAGES
CB-008	Develop a Climate Project Management - Training Program: Design and implement training programs to build technical skills in climate risk assessment, project management, and infrastructure maintenance. This should include both formal education and on-the-job training.	2026-2029	Climate Change Department	-
CB-009	Community Involvement: Engage local communities in coastal protection projects to build local capacity and ensure sustainability.	2026-2029	Kaupule, PMO's	CP-006
CB-010	In the context of enhancing Food Security enterprises, design and deliver a Basics of Business training for the producers or Micro, Small Enterprises to support their success.	2027	Dept of Agriculture	A-CP-002
CB-011	Design, finance, and deploy a comprehensive capacity-building program tailored to the energy sector. This program will identify redundancy requirements and succession plans for key technical roles.	2027-2028	Dept of Energy	CI-ES-002
CB-012	Expand the cohort of National Emergency Response personnel that are trained and certified.	2027-2028	NDMO, Red Cross	DRR-ALL-002
CB-013	Capacity Building for Monitoring and Forecasting Systems: Invest in the enhancement of equipment, infrastructure, and technical support to strengthen monitoring, ocean and climate modeling, and impact-based forecasting. This will ensure accurate and timely data to inform decision-making.	2027-2029	Tuvalu MET, Climate Change Department	DRR-ES-001
CB-014	Strengthen the capacity of health workers and coordination capacity of the MoH and other ministries to manage climate-sensitive health risks and disaster risk management in health.	2028	Dept of Health	H-ALL-003
CB-015	Enhancing Mental Health Workforce: Increase the availability of trained mental health professionals to address conditions associated with climate change and disasters. This includes establishing a national well-being department/unit within the Ministry of Health (MoH), hiring dedicated counsellors, and conducting training programs for health professionals.	2026-2028	Dept of Health, Red Cross	H-MH-001
CB-016	Community-Based Mental Health Support: Train church leaders, community leaders, and health professionals to manage mental health challenges and provide informal counselling services. This ensures culturally sensitive and community-driven support for affected individuals.	2026-2028	Dept. of Health, EKT, Red cross	H-MH-001
CB-017	Capacity Building for Continuous WQ Monitoring: Invest in ongoing staff development and capacity building to ensure the laboratory functions effectively and maintains high-quality monitoring standards over time. This includes the establishment of protocols for shared data management and analysis between agencies.	2026-2029	PWD, Dept of Health, Climate Change Department	H-PH-001 WS-WQ-001

Part Five:
Sectoral components for adaptation

10. Introduction

10.1. Sectoral components

The impacts of climate change pose significant challenges to the livelihoods, environment, and economy of Tuvalu. To effectively tackle these challenges, it is important to implement targeted, sector-specific actions that reduce both current and future climate risks across the country.

This section of the NAP outlines the adaptation actions identified and validated for six priority sectors chosen by the people and Government of Tuvalu (Table 7). These sectors are: (i) coastal protection and human settlements, (ii) critical infrastructure, (iii) food security (including agriculture and fisheries), (iv) human health and wellbeing, (v) water security, and (vi) disaster risk reduction and management. Each of these sectors is already feeling the effects of climate change, and it is clear that strategic actions are needed to make a real difference for our people.

Table 7. Overview of each sectoral component section

SECTORAL SECTION	
Introduction	Provides an overview of the sector and explains why taking climate action is important.
Policy Linkages	Outlines the policies that support climate change adaptation within the sector.
Addressing Climate Change Impacts	Summaries the key findings from the Climate Risk and Vulnerability Assessment, focussing on the significant climate risks, vulnerabilities and impacts.
Adaptation Action	Presents the validated, shortlisted actions that will help the sector adapt to climate change and who is responsible for carrying out the action.

Each chapter focuses on a specific sector and is divided into four key sections to ensure a clear and practical approach to addressing the challenges and opportunities within these areas. The adaptation actions set out in this section are in line with the priorities and frameworks outlined in our national policies, sector plans, and international agreements.

Adaptation actions are numbered according to their sectoral category, activity number and the priority number. For example:

CP	001	01
Coastal Protection	Activity 001	Priority rank = 01

A full list of prioritised adaptation activities can be found in Appendix C.

11. Coastal protection and human settlements

WHY WE NEED TO TAKE ACTION
Almost all our homes, infrastructure, cultural heritage sites and economic activity is located along the coastline and exposed to climate impacts. Thoughtful land use planning and construction can play a key role in helping us adapt.

SECTOR	Climate change risks in coastal protection and human settlement.
SIGNIFICANT RISKS	Ongoing sea level rise and coastal inundation from cyclone-induced and regular storm surges.
OTHER RISKS	Extreme temperatures impacting natural coastal defences.

The actions in this chapter address the following risks identified in the national Climate, Impact, Risk and Vulnerability Assessment 2024:

11.1. Introduction

Tuvalu has a total land area of 26 square kilometres, a coastline of 24 kilometres, and an average land height of 0.5 metres above today's normal high tide (Paeniu & Webb, 2023). Due to our island's low elevation and narrow width, all of the population, essential services, and infrastructure are located close to or just a few metres from the coast. As a result, the entire country is vulnerable to coastal flooding, erosion, salinisation, rising sea levels, and stronger storm surges.

In recent decades, significant research has taken place to identify and assess coastal hazards in the country. A key initiative in this regard is the Tuvalu Coastal Adaptation Project (TCAP), which has implemented risk-based coastal protection measures in Funafuti, Nanumea, and Nanumaga. These measures aim to reduce erosion, increase land space, and strengthen long-term coastal defences.

Adaptation actions for the coastal management sector are listed in Section 11.4.

11.2. Policy linkages

The Coastal protection and human settlements sector activities are driven by the Climate Change Resilience Act 2019 and Te Vaka Fenua o Tuvalu: National Climate Change Policy (2021-2030). The relevant strategic objectives and mandates for climate adaptation in the coastal management sector within these two national documents are as follows:

- Te Vaka Fenua o Tuvalu: National Climate Change Policy (2021-2030) aims to promote and protect coastal environments from rising sea levels and the impacts of climate change (Policy Objective 2.6).
- Climate Change Resilience Act 2019 mandates the following to be undertaken at a national level – Tuvalu shall:
  - » Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems.
  - » Cooperate in preparing for adaptation to the impacts of climate change and develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas affected by drought and desertification, as well as sea level rise and floods.

The Act requires the Climate Change Department to develop strategies and plans to address climate change resilience, including strategies, and plans to:

- address the effects of climate change within Tuvalu on its water resources, coastal areas, lands and land usage, food security, biodiversity, fisheries, economic welfare, public infrastructure and its vulnerability to disasters, and
- implement programs and facilitate projects to protect its water resources, coastal areas, mangroves, lands, biodiversity, fisheries and public infrastructure, and to contribute to the health, well-being and livelihoods of Tuvaluans.

These policy linkages are delineated in Figure 28.

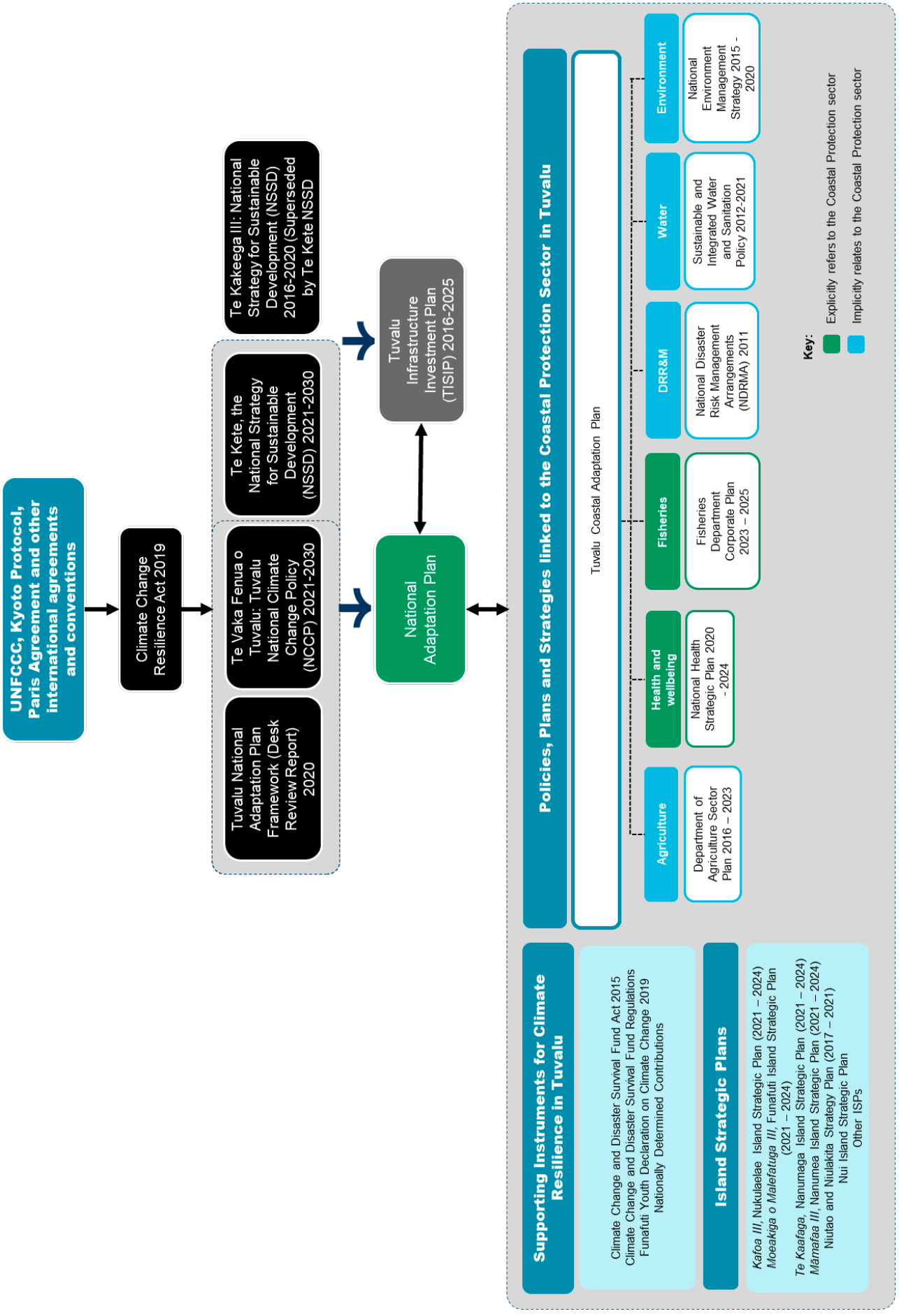


Figure 28. Relevant policy linkages for coastal protection and human settlements

11.3. Addressing climate change impacts

11.3.1. Damage to our homes and other critical infrastructure

All of our homes and buildings are located along the coastline. As the climate changes, an increasing number of buildings are at risk of becoming damaged due to frequent flooding from coastal inundation, loss of land caused by ongoing sea level rise and coastal erosion. There is also impact to critical infrastructure such as ports, roads, and power supply and services such as our hospitals. Loss of land can eventually lead to loss of our homes and livelihoods. In the long-term, all our islands are at risk of becoming uninhabitable.

11.3.2. A threat to our cultural heritage

Climate change affects connection to our land and culture, two aspects of our lifestyle that are very important to who we are as a people.

11.3.3. Loss of natural defences

As ocean temperatures increase, our natural defences such as coral reefs and coastal trees will struggle to withstand the impacts. This could result in the loss of these vital ecosystems, which the country depends on for protection and resilience.

11.4. Adaptation actions

The Government has identified one long-term objective and eight overarching actions to help the coastal management sector become resilient to changing climate.

Table 8. Adaptation actions for the coastal management sector

OBJECTIVE			
Tuvalu's critical coastal environments are protected from rising sea levels and the impacts of climate change.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
CP-001-01	National Reclamation and Relocation Strategy: Tuvalu Survival Pathway. Objective: To develop and implement an integrated framework for reclamation, relocation, and coastal protection to enhance environmental resilience, safeguard critical infrastructure, and promote sustainable urban development. Initial actions include:	2026-2030	Climate Change Department Lands and Survey Department
	Masterplan for Reclamation Activities: • Prepare a staged masterplan for large-scale reclamation projects, utilizing data from TCAP initiatives to identify suitable locations for reclamation activities. • Prioritise areas based on ecological, economic, and social factors to ensure effective and sustainable implementation.		
	Comprehensive Urban Design Plan for Funafuti: • Develop an urban design plan aimed at creating a sustainable, functional, and aesthetically appealing urban environment in Funafuti. • Integrate key elements such as land use planning, transportation options, public spaces, and essential infrastructure while aligning with existing infrastructure plans to foster environmental sustainability and improve community well-being.		

OBJECTIVE			
Tuvalu's critical coastal environments are protected from rising sea levels and the impacts of climate change.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
	Risk-Informed Relocation Masterplan: • Design a relocation masterplan for critical infrastructure, prioritizing necessary relocation activities, including CI-T-002-10 and CI-T-005-16 projects. • Incorporate risk assessments to ensure safe and effective relocation strategies.		
	Nationwide Consultation Process: • Implement a robust consultation process (CP-002-02) to engage stakeholders and communities in the development of the strategy. • Ensure inclusivity and transparency in policy and strategy formulation to build consensus and local ownership.		
	Island-Specific Coastal Protection Plans: • Develop tailored coastal protection plans for each island, focusing on ecosystem-based adaptation measures as near-term solutions (CP-005-05) Mangrove restoration and protection in low-lying coastal areas to enhance natural buffers against coastal hazards. • Promote sustainable management of coastal areas to reduce vulnerability and enhance natural defences.		
	Feasibility Studies for Key Projects: • Conduct thorough feasibility studies for high-priority relocation and reclamation activities. • Address critical aspects such as material sourcing, cost analysis, due diligence, and safeguard requirements to ensure successful project implementation.		
CP-002-02	Develop and implement a nationwide consultation process that will support the development of the National Reclamation and Relocation Strategy (also known as the Tuvalu Survival Pathway). Include targeted communication around national law and policies as they relate to land reclamation activities and ownership.	2026	Climate Change Department
CP-003-03	Continue with the next phases of the TCAP++. Continue with foreshore and coastal hazard monitoring program for whole area and take note of lessons learned and opportunities to improve future projects. Continue the scholarships for disciplines related to infrastructure and coastal development.	Ongoing	Climate Change Department Lands and Survey Department
CP-004-04	Continued support for the implementation of community-led initiatives on coastal management across all Tuvalu.	Ongoing	Climate Change Department Lands and Survey Department Tuvalu Climate Action Network
CP-005-05	Investigate options for and implement a restoration plan for marine ecosystems that have been impacted by reclamation works.	2027	Climate Change Department

OBJECTIVE			
Tuvalu's critical coastal environments are protected from rising sea levels and the impacts of climate change.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
CP-006-06	Initiate a comprehensive review, design and establishment of a National Coastal Agency that will be the centralized body to coordinate and implement national reclamation and urban development activities associated with the long-term survival pathways for Tuvalu. This Agency will be tasked with overseeing the design, implementation, and management of projects including coastal reclamation and development, associated infrastructure, and community and stakeholder engagement.	2027-2028	Climate Change Department
CP-007-07	Review and modernise (as required) domestic public policies to allow for large-scale development in relation to land reclamation and coastal protection, replace outdated policies, improve government responsiveness and ability to manage and effectively deliver projects.	As needed	Climate Change Department
CP-008-08	Assess feasibility of design and implementation of targeted NbS, and EbA projects (identified in CP-001-01) for outer islands that require short-term coastal protection and would contribute to long-term ecosystem conservation (links to F-BIO-001-02).	2028	Climate Change Department

12. Critical infrastructure

WHY WE NEED TO TAKE ACTION
Nearly all of our critical infrastructure – including roads, telecommunication, health care facilities, homes, energy and waste facilities – lie less than one kilometre away from the shoreline, with high exposure to coastal and natural hazards. Strengthening the resilience of our critical infrastructure is essential to keep our people safe, connected and supported in a changing climate.

SECTOR	Critical infrastructure
SIGNIFICANT RISKS	Sea level rise and cyclone-induced storm surges resulting in coastal inundation and erosion
OTHER RISKS	Extreme temperatures and heavy rainfall

The actions in this chapter address the following risk rating identified in the national CIVRA report (Deloitte, 2024):

12.1. Introduction

The Climate, Impact, Risk and Vulnerability Assessment covers climate impacts within the following subsectors – i) transport and supply chains, ii) telecommunications, iii) building and structures, iv) energy security and v) waste management. The adaptation assessment for Water infrastructure is covered in the Water Security chapter.

Transport and supply chains

We rely heavily on-air freight, maritime transport and local vehicles. The Funafuti International Airport provides critical access to global networks, specialised healthcare, and broader opportunities. Shipping via the Port of Funafuti ensures the delivery of essential goods, including food and construction materials, while inter-island vessels are the primary mode of transport between outer islands. On Funafuti, motorbikes and cars dominate local mobility.

Communications and internet

We depend on satellite systems for international connectivity, with fixed-line and broadband services supported by an underground copper network managed by the Tuvalu Telecommunications Corporation. We recently had our first submarine fibre-optic connection land successfully in December 2024 through the Tuvalu Vaka Cable project as part of the wider Central Pacific Connect initiative. The fibre-optic connection is expected to improve internet speed, reliability and connectivity across our islands and is intended to eventually replace current satellite services.

Buildings and structures

Buildings support our people's livelihoods, with villages typically centred around Protestant churches, meeting halls, and schools, alongside critical facilities such as fishing shacks, supermarkets, government offices, and evacuation shelters. Industrial infrastructure, such as the power station, maritime port, and hospital, supports both the economy and disaster resilience. Most homes are constructed from wood or concrete masonry, while schools, generally built in the past 20 years, are reinforced and well-maintained.

Energy security

The energy network is essential for delivering critical services, supporting 98% of our nation's population with electricity. In Funafuti, power is largely derived from diesel generators, supplemented by solar arrays, although the system often experiences stress and outages. Outer islands rely on diesel generation, except for Niulakita, which uses small-scale solar systems with backup generators. Upgrades are required to improve grid capacity and reliability of these systems.

Waste management

Waste disposal remains a significant challenge in Tuvalu due to limited land and increased use of imported products. Existing systems include septic waste, landfill, e-waste, and plastics disposal, with composting efforts at the local level. Outer islands have incinerators, and each island has a designated dumpsite. Septic tanks are the primary human waste management system, though pit latrines are more common in remote areas. Low lying land with shallow groundwater exacerbates the issues relating to contaminants derived from waste.

Our infrastructure is highly susceptible to the impacts of climate change due to its low-lying topography and the location of critical structures near the coast. Rising sea levels, coastal erosion, and extreme weather events pose significant threats to essential infrastructure, which could lead to the loss of coastal communities and development, disruptions in communication, and damage to vital facilities like roads and runways.

Adaptation actions for the coastal management sector are listed in Section 12.4.

12.2. Policy linkages

The integration of climate change adaptation, mitigation, and social inclusion within Tuvalu's infrastructure sector is mandated by the Tuvalu National Energy Policy (2009–2020), the Tuvalu Electricity Corporation Corporate Plan (2021–2023), and the Tuvalu Integrated Waste Policy (2015–2026).

The Tuvalu National Energy Policy (2009–2020) outlines a vision for achieving a prosperous standard of living by 2020, guided by the principles of "Te Kakeega II" and the "Malefatunga Declaration." The policy emphasises the development of energy systems that are socially, financially, economically, technically, politically, and environmentally sustainable. This vision is framed within the context of Tuvalu's Initial National Communication under the United Nations Framework Convention on Climate Change (October 1999), highlighting the importance of aligning energy development with climate change commitments.

The Tuvalu Electricity Corporation Corporate Plan (2021–2023) supports climate change mitigation through its objective to invest in research and development programs for renewable energy and energy efficiency in order to reduce dependency on imported fossil fuel. This objective aims to reduce Tuvalu's dependency on imported fossil fuels, thereby enhancing energy security and contributing to emissions reduction.

The Tuvalu Integrated Waste Policy (2015–2026) addresses climate resilience through Strategic Action 12, which calls the sector to develop an asset management programme ensuring that waste facilities and equipment are properly designed based on climate proofing measures to increase resilience to climate change events and operated within reasonable standard for effective and efficient waste services.

These policy instruments collectively reinforce Tuvalu's commitment to integrating climate resilience and sustainability into its infrastructure planning and development.

These policy linkages are delineated in Figure 29.

Figure 29. Relevant policy linkages for the critical infrastructure sector

12.3. Addressing climate change impacts

12.3.1. Risks to our local, regional and global connectivity

The Funafuti International Airport runway is at risk of inundation due to rising sea levels and cyclone-induced storm surges, jeopardising our connectivity to the region and the world. Similarly, damage to the international seaport and maritime access infrastructure threatens food, fuel, and material supply chains to outer islands, including the diesel supply critical for power generation. Flooding and damage to road infrastructure could restrict access to essential services, disrupting daily life and emergency response efforts.

12.3.2. Damage to critical infrastructure

Heavy rainfall, cyclones, coastal flooding, and saltwater intrusion pose risks to telecommunication towers and the underground copper wire network, compromising regional and international communications. Tropical cyclones and rising sea levels could also destroy private, government, commercial, educational, and industrial buildings, disrupting key services such as healthcare, education, and economic activities.

Tuvalu's power station infrastructure, including underground copper cables, is vulnerable to salt build-up from sea spray, coastal inundation and cyclone-induced winds and storm surges, which can result in frequent outages. Additionally, rising temperatures and an increase in hot days will elevate energy demand, straining the system further.

12.3.3. Threats to our landfill site and sewerage systems

Coastal inundation and cyclone-induced winds and storm surges threaten our already constrained waste management facilities and landfill site on Funafuti. The major challenges faced by our waste management sector are limited land area to store solid waste and improper waste disposal practices, such as the use of dumpsites in the outer islands. Increased severity of coastal floods threatens to inundate the landfill site, causing waste to disperse into the environment and contaminate our soil and lagoons. These impacts exacerbate pollution and public health risks.

Septic tanks are vulnerable to sea level rise and coastal flooding, which can lead to contamination of our groundwater sources, making groundwater an unsafe resource to use. Flooding can damage septic infrastructure leading to leaks or system failure resulting in overflow of wastewater from septic systems into the lagoon, exacerbating environmental and public health risks.

12.4. Adaptation actions

The Government has identified three long-term objectives and 16 overarching actions to help the infrastructure sector become resilient to changing climate.

Table 9. Adaptation actions for the infrastructure sector (Sub-sectors: BS = Building and Structures, ES = Energy Security, TI = Telecommunications and Internet, T = Transport and Supply Chains and WM = Waste Management)

OBJECTIVES			
• All Tuvaluans have access to safe, reliable and climate-resilient transportation services. • Increased access to affordable, reliable power supply from climate-resilient renewable energy systems. • Environmental and health risks are effectively mitigated through integrated and climate-resilient waste management systems.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
CI-BS-001-01	Develop and implement a detailed and costed national masterplan for climate proofing buildings and houses. Align with longer adaptation priorities and relocation strategy: • Conduct a buildings survey/assessment to evaluate the current state of buildings, the materials used, extent of damage and level of work required to climate-proof the buildings. Include assessment that investigates HH characteristics with mental and physical health outcomes (links to Health and internal migration). • Undertake a feasibility study to identify red flags and potential barriers, including source of material, construction challenges, workforce capacity. Include a cost-benefit analysis. • Identify high-priority buildings that need to be climate-proofed based on function/importance, capacity, level of work required, feasibility, etc. • Proposal development to secure funding for implementation of priority works.	2025 – 2030	Climate Change Department Public Work Department
CI-BS-002-02	Enhance the capacity of the Building Code Assessment Unit (BCAU) at the Public Works Department to effectively enforce the Building Regulations and Building Code, ensuring compliance and promoting safe and sustainable building practices.	Ongoing	Public Work Department Lands and Survey Department Department of Environment Department of Energy
CI-T-001-03	Develop and implement a climate-resilient road infrastructure upgrade plan: • Asset mapping and condition assessment across all islands. • Stakeholder consultations to inform upgrade plans. • Proposal development to secure funding for upgrade works. • Climate resilient upgrades/design – constructability challenges – a design report, including constructability, roads.	2026	Public Work Department Lands and Survey Department
CI-WM-001-04	Conduct a feasibility study for Outer Island waste management programs to assess and address the condition of dumps and waste collection sites, with the objective of improving waste management practices and ensuring environmentally sustainable solutions.	Ongoing	Department of Waste Management

OBJECTIVES			
• All Tuvaluans have access to safe, reliable and climate-resilient transportation services. • Increased access to affordable, reliable power supply from climate-resilient renewable energy systems. • Environmental and health risks are effectively mitigated through integrated and climate-resilient waste management systems.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
CI-WM-002-05	• Establish and maintain locally appropriate recycling programs to collect and export recyclable materials, aiming to reduce waste, promote sustainability, and support environmental conservation efforts. • Strengthen pollution control through community waste segregation, composting, and zero-waste public policies. • Promote organic community composting systems to reduce waste and build climate-resilient soils.	Ongoing	Department of Waste Management
CI-ES-001-06	Develop and implement an energy sector masterplan to meet national targets and reduce future climate vulnerabilities of the sector: • Planning and stakeholder consultations to inform masterplan concept. • Proposal development to secure funding for master planning and implementation of priority works. • Undertake an energy sector assessment, including a condition assessment of existing infrastructure (power stations, renewable energy systems, underground cablings) and an energy demands outlook to identify priority activities.	2026 – 2027	Department of Energy Tuvalu Electricity Corporation
CI-TI-001-07	Continue with current tele-communication projects with additional consideration within the designs for projected climate conditions, inundation modelling at the sites and suitably climate-resilient materials.	2025 – 2027	Tuvalu Electricity Corporation Ministry of Transport, Energy, Communication and Innovation
CI-WM-003-08	As part of National Asset Management system (CI-BS-003-12), Tuvalu Waste Department develop an asset management programme ensuring that waste facilities and equipment are properly designed based on climate proofing measures to increase resilience to climate change events, across all Tuvalu.	2025-2026	Department of Waste Management Ministry of Finance Kaupule
CI-TI-002-09	Climate-proof existing telecommunications infrastructure, including underground cabling and other-land based infrastructure against cyclones, salt build up and salt intrusion: • Asset mapping and conditions assessment, including an infrastructure risk assessment. • Develop an asset management plan for critical telecommunications infrastructure, including maintenance requirements for protection against salt-build up from sea spray and saltwater intrusion.	2025 -2027	Tuvalu Telecommunications Corporation

OBJECTIVES			
• All Tuvaluans have access to safe, reliable and climate-resilient transportation services. • Increased access to affordable, reliable power supply from climate-resilient renewable energy systems. • Environmental and health risks are effectively mitigated through integrated and climate-resilient waste management systems.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
CI-T-002-10	Prepare Funafuti Port Master Plan for expansion and reclamation works: • Conduct a strategic needs and trade outlook assessment to identify and evaluate future supply chain requirements, including projected growth in vessel and shipment volumes to and from Tuvalu. • Undertake pre-feasibility study to identify and highlight red flags, including impact of tidal influences, material source, marine construction challenges, etc. • Planning and stakeholder consultation to support activity. • Proposal development for funding • Undertake feasibility study. • Detailed design of reclamation works • Complete ESIA.	2026 – 2028	Ministry of Transport, Energy, Communication and Innovation Marine and Port Services
CI-T-003-11	Review of transportation options for Tuvalu in consideration of reduction of heavy fuel reliance, changes to EV availability, associated infrastructure requirements and health implications, emergency services to outer islands: Review of domestic sea and air connectivity options to outer islands for improved access to market and improved emergency services. Prepare a comprehensive fleet optimisation study for land, sea and air transportation options, with consideration for vehicle import restriction.	2026 -2028	Department of Energy Tuvalu Electricity Corporation Marine and Port Services
CI-BS-003-12	Develop, acquire, and implement a national infrastructure asset management system to ensure efficient tracking, maintenance, and optimisation of resources at a national level.	2025 – 2026	Ministry of Finance Central Procurement Unit Public Work Department
CI-ES-002-13	Design, finance, and deploy a comprehensive capacity-building program tailored to the energy sector. This program will identify redundancy requirements and succession plans for key technical roles.	2026 – 2028	Department of Energy Tuvalu Electricity Corporation
CI-T-004-14	Monitor Outer Islands Maritime Infrastructure Project and take note of lessons learned and opportunities to improve future projects.	2025 – 2026	Marine and Port Services Department of Home Affairs Department of Energy Public Work Department Kaupule
CI-BS-004-15	Monitor the ongoing work for the building code to ensure it adequately address the current and future climate hazards.	Ongoing	Public Work Department

OBJECTIVES			
• All Tuvaluans have access to safe, reliable and climate-resilient transportation services. • Increased access to affordable, reliable power supply from climate-resilient renewable energy systems. • Environmental and health risks are effectively mitigated through integrated and climate-resilient waste management systems.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
CI-T-005-16	Prepare International Airport on Funafuti Master Plan for relocation to long-term safe location: Undertake pre-feasibility study to identify and highlight red flags, including considerations for cross winds and tidal influences, material source, marine construction challenges, etc. Undertake detailed feasibility studies, including site investigations for geotechnical works, operational safety considerations, environmental & social impact screening, sustainability of activities and infrastructure, ensuring existing challenges and climates risks do not persist. Conduct a cost-benefit analysis to evaluate economic and financial feasibility of project. Planning and stakeholder consultation to support activity. Proposal development for funding. Detailed design of reclamation and relocation works. Complete environmental and social impact assessment (ESIA) and acquire required approvals.	2026 – 2028	Ministry of Transport, Energy, Communication and Innovation Department of Energy Ministry of Transport, Energy and Tourism Department of Environment Public Work Department Department of Lands and Survey

13. Disaster risk reduction and management

WHY WE NEED TO TAKE ACTION
Our islands are highly vulnerable to storm surges and coastal flooding from tropical cyclones and king tides. With almost all of our people living near the coast and limited access to resilient housing, safe evacuation centres and water during emergencies, it is important we strengthen our disaster preparedness and response systems to protect lives and livelihoods as climate risks intensify.

The actions in this chapter address the following risks identified in the national Climate Impact, Risk and Vulnerability Assessment 2024:

SECTOR	Disaster risk reduction and management.
SIGNIFICANT RISKS	Sea level rise increasing risks of coastal inundation and erosion. Cyclone-induced storm surges and winds can damage housing and critical infrastructure.
OTHER RISKS	Increased temperatures over long periods can lead to droughts.

13.1. Introduction

Our islands are highly susceptible to experiencing natural hazards such as cyclones, flooding, storm surges, drought, and extreme waves. The severity of these disasters is expected to increase with climate change. The majority of our people live within coastal areas and are exposed to these natural hazards. The Tuvalu National Strategic Action Plan for Climate Change and Disaster Risk Management (2012-2016) has identified extreme risks for climate change impacts and related disasters including intense storms and tropical cyclones, droughts, extreme rainfall and subsequent flooding, and coastal inundation.

The National Disaster Management Office (NDMO) works to coordinate Tuvalu's disaster mitigation, preparedness, response, and recovery activities. The National Disaster Committee (NDC) is the multiagency advisory and coordination body established to advise disaster management authorities.

Our early warning systems are limited to cyclones, tsunamis and droughts only, while communities are notified of heatwaves and king tides through daily weather bulletins. Communication before, during and after, between the NDMO and outer islands is through VHF radios or Chatty Beetles, emails to key personnel and posts on Facebook pages.

We have 48 designated evacuation centres that provide refuge and resources during cyclone, flooding and inundation events. A variety of communal buildings are used as evacuation centres including schools, government buildings, community halls and purpose-built evacuation shelters. However, accessibility to these centres has been noted as a challenge for people with disabilities and the elderly due to lack of ramps and air conditioning systems.

13.2. Policy linkages

Climate adaptation in Tuvalu's disaster risk reduction and management sector is primarily guided by the National Disaster Management Act (2008) and the National Disaster Risk Management Arrangements (NDRMA) 2011. These foundational documents establish the institutional and operational framework for disaster preparedness, response, and recovery.

In addition to these, two other key documents provide specific mandates for integrating climate change adaptation and social inclusion into disaster risk management: the Tuvalu National Gender Equity Policy (2024) and the Climate Change Resilience Act (2019).

The Tuvalu National Gender Equity Policy (2024), under Policy Outcome 1, includes key actions that support gender-responsive approaches to climate and disaster resilience. It mandates the following:

- Monitor the implementation of commitments to gender equality and women's empowerment in the National Strategic Action Plan for Climate Change and Disaster Risk Management.
- Ensure women's equitable access to capacity building initiatives in disaster risk management and adaptation to climate change and natural resources management. Support equitable participation of women, together with men, in decision-making in relation to disaster risk management, climate change adaptation and natural resources management at the community and national levels.

The Climate Change Resilience Act (2019) reinforces the scientific and knowledge-based foundations of climate adaptation. Under Part II, Section 8(h), the Act mandates Tuvalu to promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies.

Additionally, Section 8(i) of the same Act requires Tuvalu to promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies.

These policy linkages are delineated in Figure 30.

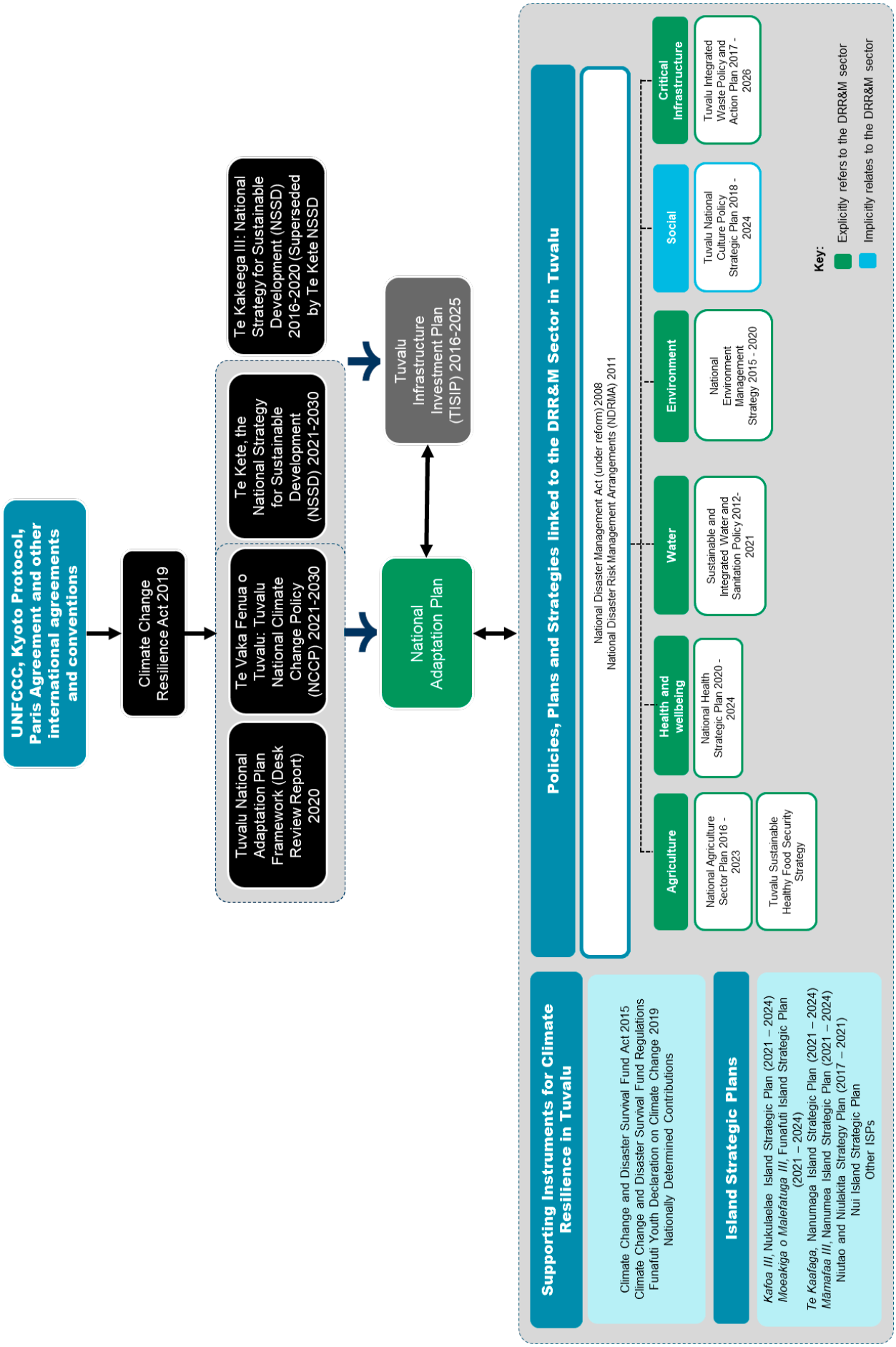


Figure 30. Relevant policy linkages for the disaster risk reduction and management sector

13.3. Addressing climate change impacts

13.3.1. Demand for emergency services and more evacuation centres

As the climate changes, Tuvalu is anticipated to experience more frequent and intense hazards such as coastal flooding, cyclones, droughts, and heatwaves. These events put our homes, health, and wellbeing at risk and increase the need for strong emergency services, safe and accessible evacuation centres, and timely early warnings. These natural disasters can also negatively impact our community's physical and mental health, as well as their psycho-social wellbeing (see Chapter 15).

To protect lives and support recovery, we need to upgrade infrastructure to climate-resilient standards and ensure our systems are ready to respond when disaster strikes. We must retrofit and upgrade existing buildings, and ensure all new infrastructure is designed to meet climate-resilient standards.

13.4. Adaptation actions

The Government has identified one long-term objective and seven overarching actions to help the disaster risk reduction and management sector become more resilient to a changing climate.

Table 10. Adaptation actions for the disaster risk reduction and management sector (Sub-sectors: ES = Emergency Services, EC = Evaluation Centres, ALL = all sub-sectors)

OBJECTIVE			
Tuvalu's disaster preparedness, response and recovery systems are strengthened to minimise impacts to human lives and livelihoods from climate-related disasters.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
DRR-ES-001-01	Development of drought management plans for Nui, Nukufetau, Nukulaelae and Vaitupu.	2026-2027	Climate Change Department, PWD, NDMO, Public Health Department
DRR-EC-001-02	Develop and implement a comprehensive Evacuation Centre Management and Maintenance Plan to enhance the safety, functionality, and preparedness of facilities during disaster events. This national policy will aim to safeguard the well-being of affected communities by ensuring that evacuation centres are well-maintained and readily available for use when needed. Key actions include: • Formalizing Collaborative Governance: Partner with the Island Disaster Committee to establish a Memorandum of Understanding (MoU) that outlines shared responsibilities and fosters a long-term, collective commitment to the upkeep of evacuation facilities for the benefit of all communities. • Constructing Multi-Purpose Shelters: Design and construct up to eight multi-purpose evacuation shelters across islands, incorporating critical infrastructure such as water catchment and storage systems, as well as solar photovoltaic technology to ensure self-sufficiency and resilience in the event of extended power failure. • Retrofitting Existing Public Facilities: Explore viable options to retrofit schools and other public buildings in Tuvalu, converting them into cyclone-resistant evacuation centres. Where feasible, integrate water catchment and storage systems along with solar photovoltaic solutions to enhance their functionality during emergencies.	2026-2030	NDMO, PWD

OBJECTIVE			
Tuvalu's disaster preparedness, response and recovery systems are strengthened to minimise impacts to human lives and livelihoods from climate-related disasters.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
DRR-ALL-001-03	Develop and launch a comprehensive Public Communication Program focused on disaster and climate risk early warning systems. This program will emphasize equitable access to information, inclusive preparedness measures, and community empowerment, fostering heightened public awareness and enabling effective responses to disaster risks and climate challenges. Key actions include: • Ensuring Inclusive Communication: Develop and disseminate early warning system information in multiple formats, including translations into local languages, sign language interpretation, and materials in Braille, to ensure accessibility for individuals with disabilities and diverse linguistic needs. • Conducting Nationwide Public Awareness Campaigns: Develop and implement a comprehensive public education initiative to raise awareness of climate hazards and risks, focusing on building community resilience and promoting proactive preparedness measures.	2026 – ongoing	Tuvalu Met Services and NDMO, Climate Change Department
DRR-ES-002-04	Design and deploy an integrated system for Disaster Preparedness that enhances climate resilience and disaster preparedness by strengthening monitoring and forecasting capabilities, ensuring rapid mobilization of resources, and improving emergency response systems to mitigate the impact of climate shocks and disasters. Key actions include: • Capacity Building for Monitoring and Forecasting Systems: Invest in the enhancement of equipment, infrastructure, and technical support to strengthen monitoring, ocean and climate modelling, and impact-based forecasting. This will ensure accurate and timely data to inform decision-making. • Development of Multi-Hazard Early Warning Systems: Establish and implement robust multi-hazard early warning systems, incorporating impact-based forecasting to effectively communicate risks and facilitate preventative measures. • Forecast-Based Financing Mechanism: Establish a forecast-based finance (FbF) system to enable the rapid mobilization of funds and implementation of pre-planned, anticipatory actions ahead of climate shocks, minimizing potential losses and damages.	2026 – 2028	Tuvalu Met Services and NDMO, Climate Change Department
DRR-ES-003-05	Investigate options for effective mix of communication equipment in support of strengthened communication between islands during disaster and State of Emergency.	2026 – 2027	NDMO
DRR-ALL-002-06	Expand the cohort of trained and certified National Emergency Response personnel.	2026 – 2027	NDMO

OBJECTIVE			
Tuvalu's disaster preparedness, response and recovery systems are strengthened to minimise impacts to human lives and livelihoods from climate-related disasters.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
DRR-ALL-003-07	Conduct a comprehensive review and modernization of the Emergency Response Management regulatory and operational framework, with the goal of enhancing acute response capabilities and ensuring the safety and resilience of all communities. Initial actions include: \ Enhancing Governance and Responsibilities: Review and update the Disaster Risk Reduction and Management (DRR/M) Governance Response Framework to clarify and strengthen roles and responsibilities across all levels of government. • Streamlining State of Emergency Declarations: Reassess and amend the State of Emergency declaration process to facilitate the swift and efficient mobilization of international resources during crises. • Strengthening the National Disaster Management Office (NDMO): Redefine and reinforce the NDMO's responsibilities to ensure effective coordination of whole-of-government disaster preparedness, response efforts, and real-time monitoring. • Implementing Emergency Inventory Management: Develop and deploy a centralized emergency inventory management system to optimize the availability and distribution of critical resources. • Establishing a Dedicated Disaster Coordination Group: Enhance disaster preparedness and response capabilities by reinforcing a specialized disaster coordination group, equipped with clear mandates and dedicated resources. • Formalizing a National Assessment and Response Team: Secure approval from the Cabinet and the National Disaster Committee (NDC) to institutionalize the formation of a National Assessment and Response Team. This team will ensure a coordinated, well-trained, and comprehensive approach to addressing disaster risks and safeguarding communities.	2026 – 2027	NDMO, Public Health Department

14. Food security

14.1. Agriculture

WHY WE NEED TO TAKE ACTION
Climate change is threatening our crops, livestock and overall food security through saltwater intrusion, drought and extreme heat. If we do not adapt now, we risk losing local food production and increasing our reliance on expensive imports. A predominantly processed foods diet will directly affect the wellbeing and health of our families and communities.

The actions in this chapter address the following risk rating identified in the national Climate, Impact, Risk and Vulnerability Assessment 2024:

SECTOR	Agriculture
SIGNIFICANT RISKS	Saltwater intrusion from sea level rise (crops) and increasing temperatures (livestock).
OTHER RISKS	Reduced rainfall and prolonged droughts, impacting water availability. Tropical cyclones, king storm surges damaging plantations. Reduced water availability due to reduced rainfall and prolonged droughts, reducing productivity.

14.1.1. Introduction

The land-based agriculture sector is the 4th largest economic sector in Tuvalu and accounts for 8.8% of the national GDP (USD 42M) in 2018. The crop sub-sector was valued at USD2.1 million and the livestock sub-sector at USD1.6 million.

Our land-based agriculture sector consists of practised across all islands. We have two demonstration gardens, the Friendship Garden in Funafuti, Hope Garden in Vaitupu and Wonderful Garden in Funafala, where locally produced fruits and vegetables can be purchased.

Our agricultural sector faces significant challenges due to unfavourable environmental conditions, poor soil quality, and limited land space – will the latter particularly relevant for Funafuti. Limited freshwater availability and poor water holding capacity of soils create additional challenges for plant growth. Rising sea levels, water scarcity and increasing air temperatures are further impacting our crops and livestock.

Adaptation actions for the agricultural sector are listed in Section 14.1.

14.1.2. Policy linkages

The key sectoral strategic document driving activities in the agricultural sector is the National Agricultural Sector Plan 2016 – 2023. Developed as a priority activity of the Te Kakeega III (superseded by Te Kete), the overarching goals of the Agricultural Sectoral Plan are as follows:

- **Goal 1:** Strengthened enabling environment for the agriculture sector.
- **Goal 2:** A strengthened and well-functioning Department of Agriculture.
- **Goal 3:** Farmers have adopted more resilient, productive and environmentally sustainable farming practices and techniques.
- **Goal 4:** Demand for domestic agriculture products encouraged to grow.
- **Goal 5:** Agriculture workforce increased, inclusive of landowners, women and youth.
- **Goal 6:** Access to safe, affordable and nutritious food enhanced.

Other key strategies and plans related to the agriculture sector include the:

- **Agriculture Sector Marketing Plan 2016 – 2025**, which envisions reviving the marketing of local food and other local produce to increase the resilience of Tuvalu towards climate change
- **Tuvalu Sustainable Healthy Food Security Strategy** seeking to promote healthy local food and healthy diets by increasing local food production, enhance food safety, and promote nutritious and healthy diets to be accessible and affordable to all Tuvaluans.

The agriculture sectoral policies and plans are guided

by national-level policies, including the Te Kete, Te Vaka Fenua o Tuvalu and the NAP, while also shaping them in return. Similarly, there are horizontal influences and interlinks, both explicit and implicit, between the agriculture sector policies and those of the other related sectors. Understanding these influences and interactions is critical to supporting an integrated 'whole of government' approach in climate adaptation planning and resilient development.

These policy linkages are delineated in Figure 31.

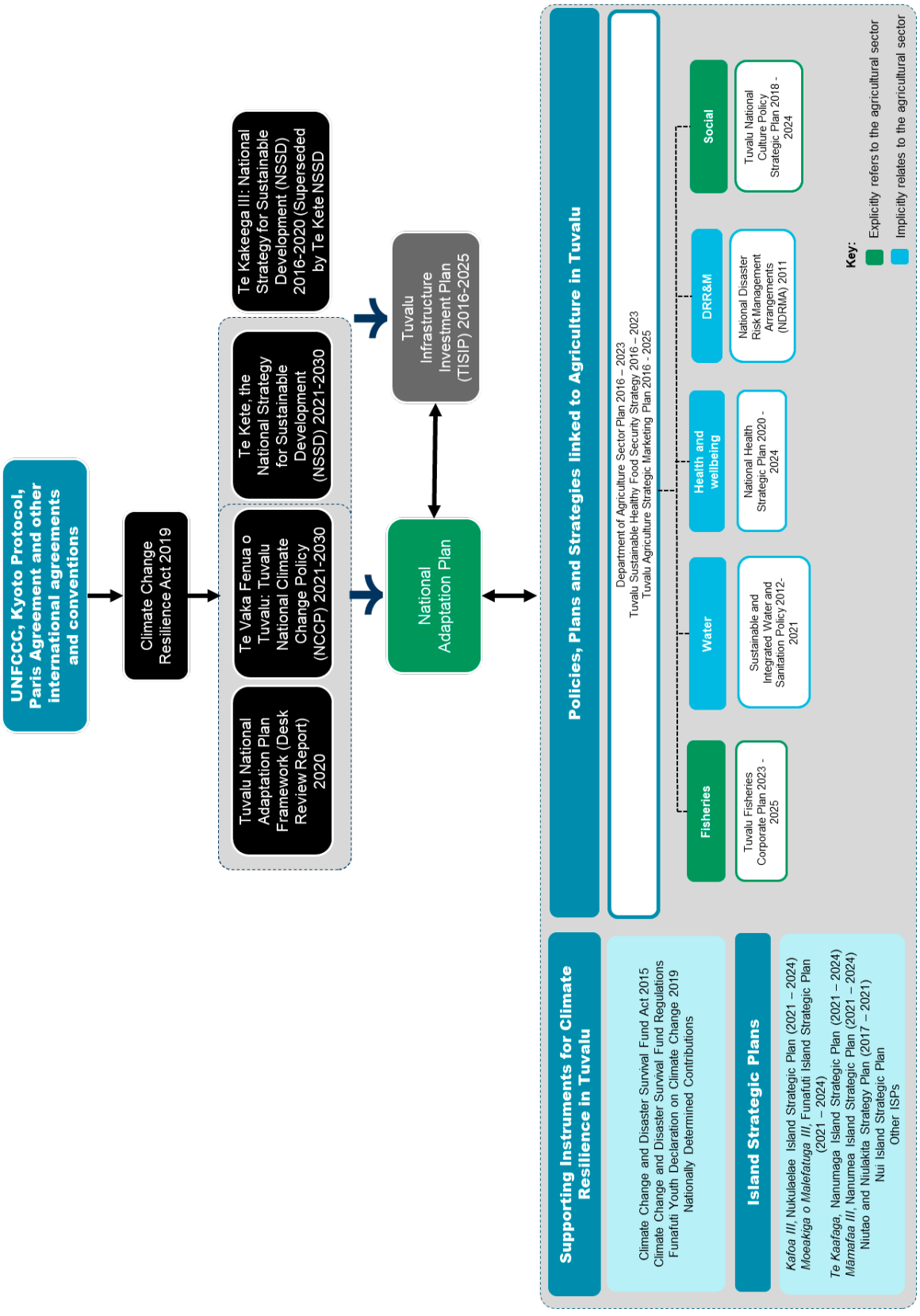


Figure 31. Relevant policy linkages for the agricultural sector

14.1.3. Addressing climate change impacts

14.1.3.1. Threat to food security

Saltwater intrusion from rising sea levels, prolonged drought-induced water scarcity, and storm surge-driven coastal erosion and flooding threaten our essential food sources, including pulaka taro, bananas, breadfruit, and coconut trees. These staple crops are vital to our nutrition and food security. At the same time, extreme temperatures are affecting livestock welfare, placing additional strain on chickens, pigs, and other animals that support our livelihoods. As local food production declines, our reliance on costly, processed imports will grow, impacting both our health and financial stability.

14.1.3.2. Loss of income and impact to economy

Land-based agriculture is also source of income for our community. It is the fourth largest sector of our economy. However, reduced crop productivity and impacts to livestock from climate change is impacting households that are reliant on cash crops for their source of livelihood.

14.1.4. Adaptation actions

The Government has identified one long-term objective and 12 overarching actions in the agricultural sector.

Table 11. Adaptation actions for the agriculture sector (Sub-sectors: CP = Crop productivity, L = Livestock)

OBJECTIVE			
Tuvalu's household food security is enhanced through climate-resilient agricultural practices.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
A-CP-001-01	Develop and execute a comprehensive action plan to rejuvenate the Elisefou Agriculture Station on Vaitupu, fostering agricultural innovation and supporting sustainable food production for the local community. Initial actions include: • Review mandate of the Elisefou Agriculture Station to strengthen research in climate change adaptation and mitigation in agriculture and agroforestry activities. • Restore operational capacity, resourcing and infrastructure at the Elisefou Agriculture Station to promote agricultural development on Vaitupu and to share with other islands. • Establish the station as a centre for research, education, and community engagement in agriculture and sustainability, linking with organisations (SPC, SPREP, FAO, FDP and others) for regional programs and research opportunities. • Investigate the potential for alternative horticulture systems including centralised hydroponics/aquaponics and establish trial system/s for ability to enhance food security. • Evaluate and trial organic fertilisers for use in both conventional and alternative growing systems. e.g. seaweed tea, worm tea, animal biosolids. • Develop methods of demonstrating proven concepts from Elisefou to the broader population including for inhabitants of Funafuti.	2026 – 2030	Department of Agriculture Ministry of Home Affairs and Agriculture

OBJECTIVE			
Tuvalu's household food security is enhanced through climate-resilient agricultural practices.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
A-CP-002-02	Establish a program that transforms locally sourced produce into high-quality products for commercial sale. Initial actions include: Undertake study to identify options for types of produce available locally and their potential for transformation and analysis of market demand for value-added products. Stakeholder engagement to inform design of program. Develop business model, and design supply chain. Design and deliver a Basics of Business training for the producers or Micro, Small Enterprises to support their success.	2026 – 2029	Department of Agriculture Department of Business
A-L-001-03	Implement a national agricultural disaster risk management programme, including the establishment of an early warning system to facilitate the safeguarding of crops and livestock.	2026 – 2028	Department of Agriculture National Disaster Management Office Tuvalu Meteorological Service Tuvalu Telecommunications Corporation
A-L-002-04	Integrate Agriculture Department's plan to establish a sector-specific early warning system and a disaster risk management program into the GCF-funded climate information project.	2026 - 2028	Department of Agriculture National Disaster Management Office Tuvalu Meteorological Service Tuvalu Telecommunications Corporation
A-CP-003-05	Establish a program that focuses on Revitalizing Home Gardening & Resilient Agriculture to improve self-reliance and Resilience of Communities. Initial actions include: • Design and installation of demonstration sites for climate-resilient home gardening food systems, and the development of supporting toolkits. • Establish new or revise existing policies to integrate ecosystem-based approaches and climate-resilient methods into agricultural frameworks. • Design and deploy a targeted program of roof-catchment drip irrigation systems and rainwater tanks to collect water for pulaka pits and home gardens. • Develop, approve and prepare whole Island Agro-ecosystem Action Plans (IAEAP) in the context of Islands Strategic Plans (ISP) for each island. • Upgrade and/or installation of nurseries in the outer islands to diversify crop production, including use of Elisefou Agriculture Station on Vaitapu (refer A-CP-001-01).	2026 – 2028	Department of Agriculture Ministry of Home Affairs and Agriculture

OBJECTIVE			
Tuvalu's household food security is enhanced through climate-resilient agricultural practices.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
A-CP-004-06	Revive the Funafuti Produce Market for communities to sell their surplus fruits and vegetables and to incentivise home gardening and localisation of food supply. Initial actions include: • Conduct an assessment to identify current gaps and opportunities for the produce market, optimal location and operation. • Collaborate with community leaders to establish trust and promote inclusivity in the market operations. • Identify and secure funding or partnerships with relevant stakeholders. • Repair or upgrade market facilities, including stalls, storage spaces, and waste disposal systems, to ensure they are safe, functional, and resilient.	2026 - 2030	Department of Agriculture Ministry of Home Affairs and Agriculture
A-CP-005-07	In partnership with appropriate partners (SPREP, SPC etc) design and establish research programs for the following: Trial and assessment of climate-resilient crops that may be suitable for Tuvalu's conditions (e.g. salt tolerant pulaka). Trial and assessment of appropriate pest management approaches and control of invasive species. Support community-led invasive species control and ecosystem rehabilitation to restore ecological resilience.	2026 - 2040	Department of Agriculture Ministry of Home Affairs and Agriculture Department of Environment
A-CP-006-08	Establish an integrated agriculture revitalisation program to enhance agricultural resilience across islands by leveraging traditional knowledge, modern technologies, and ecosystem-based solutions. Initial actions include: Rehabilitation of 30 ha of pulaka pits across 8 islands using traditional knowledge, modern technologies, and ecosystem-based solutions. Targeted program to rehabilitate coconut plantations at selected sites. This will include investigation into success/ lessons learned from previous plantations to enhance rehabilitation efforts.	2026 – 2030	Department of Agriculture Department of Culture
A-L-003-09	Improve biosecurity measures to safeguard livestock and crops from invasive species by establishing locally appropriate scale bio-security centres at outer islands that follow sustainable agriculture practices.	2026 – 2030	Department of Agriculture Department of Health
A-CP-007-10	Development of the National Food Systems and Nutrition Policy to promote integrated approaches to food security considering climate change impacts and resilience.	2026 – 2030	Department of Agriculture Ministry of Home Affairs and Agriculture

OBJECTIVE			
Tuvalu's household food security is enhanced through climate-resilient agricultural practices.			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
A-L-004-11	• Evaluate the technical, economic, and environmental feasibility of the Saugavaka Piggery Project. • Approve and implement the Saugavaka Piggery Project to advance climate-resilient agricultural practices through the construction of a communal piggery with safe and resilient housing for pigs. Incorporate biogas and compost production digesters alongside large roof areas for solar energy and rainwater harvesting. • Conduct detailed site assessments to determine the optimal location for the communal piggery (in Funafuti or as part of the Elisefou development on Vaitupu). Elisifou option has advantages for the use of residual biosolids for agricultural production and isolating odour from main population centres. • Collaborate with local stakeholders, including community leaders and environmental experts, to integrate traditional knowledge and modern practices into the design. • Prepare a comprehensive funding proposal.	2026 – 2028	Department of Agriculture Climate Change Department Ministry of Home Affairs and Agriculture Department of Lands and Survey
A-CP-008-12	Development of the National Land Degradation Neutrality (LDN) Strategy and implementation of associated capacity strengthening programmes to assess and manage health of agroecosystems.	2026 - 2040	Department of Agriculture Ministry of Home Affairs and Agriculture

14.2. Fisheries

WHY WE NEED TO TAKE ACTION
Our economy, food security and livelihoods are heavily reliant on our coastal and ocean resources. However, climate change is threatening fish stocks, reef ecosystems and our primary source of domestic revenue, which is income from fishing licences. Without urgent adaptation, we risk reduced availability of fish, food shortages and major losses to our economy and people's wellbeing.

SECTOR	Fisheries
SIGNIFICANT RISKS	Rising temperatures and marine heatwaves impact fish migration patterns and lead to ocean acidification and coral bleaching, damaging marine habitats and biodiversity loss.
OTHER RISKS	Extreme heat impacting fish storage and processing conditions. Tropical cyclones destroying coastal ecosystems, reducing fish habitat.

The actions in this chapter address the following risk rating identified in the national Climate, Impact, Risk and Vulnerability Assessment 2024:

14.2.1. Introduction

Tuvalu's economy is heavily reliant on our fisheries industry. In 2017, the revenue from fishing licenses was the largest source of domestic income, highlighting our dependence on our marine resources. Subsistence fishing is a common practice across the islands, with most of the catch comprising pelagic fish (87%), including species like skipjack, yellowfin, bigeye and South Pacific tuna, and the remaining comprising reef fish.

Oceanic and coastal fisheries within our Exclusive Economic Zone (EEZ) are facing escalating risks due to chronic and acute climate hazards. Ocean warming, marine heatwaves, and ocean acidification are already affecting the productivity and economic

value of deepwater pelagic fisheries, particularly tuna species. These wide-scale environmental factors mean productivity of Tuvalu's oceanic fisheries may be driven by natural forces from well beyond Tuvalu's surrounding ocean.

Coastal fisheries are similarly threatened by increasing climate hazards, including more frequent marine heatwaves, tropical cyclones, and ongoing ocean acidification. These factors contribute to coral reef damage and bleaching, undermining the sustainability of coastal fisheries. Coupled with the pressure of overfishing, the ability of our coastal fisheries stocks to withstand climate hazards may be considerably reduced.

In the Funafuti lagoon, the situation is exacerbated by nutrient-rich runoff from stormwater and wastewater, leading to poorer water quality and the spread of species like the seaweed Sargassum spp.

14.2.2. Policy linkages

The key strategic document driving activities in the fisheries sector is the Department of Fisheries Corporate Plan 2023–2025. The vision for both the Department and the Plan is drawn from Te Kete, which emphasises maintaining and strengthening sustainable small-scale fisheries operations pertinent to income generation, food security and healthier diets nationwide and optimising revenue generated from ocean fisheries.

The fisheries sectoral policies are guided by national-level policies, including the Te Kete, Te Vaka Fenua o Tuvalu and the NAP, while also shaping them in return. Similarly, there are horizontal influences and interlinks, both explicit and implicit, between the fisheries sectoral strategies and those of the other related sectors. Understanding these influences and interactions is critical to supporting an integrated 'whole of government' approach in climate adaptation planning and resilient development.

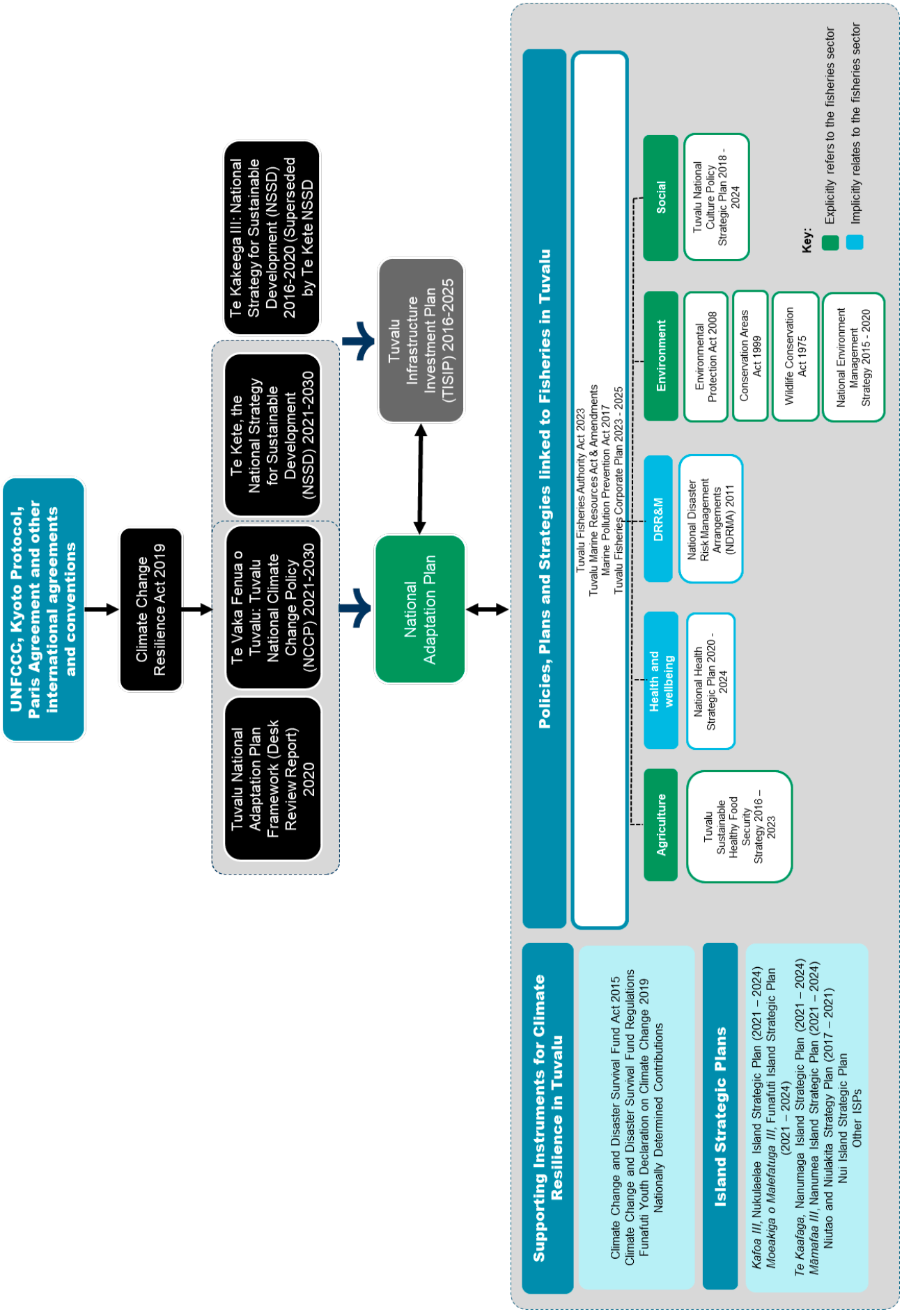


Figure 32. Relevant policy linkages for the fisheries sector

14.2.3. Addressing climate change impacts

14.2.3.1. Threat to our source of income

With ocean warming, marine heatwaves and ocean acidification, the productivity and economic value of our deepwater and ocean fisheries are being impacted, particularly tuna. The variability of the El Niño Southern Oscillation, which is being altered by climate change, plays a significant role in the annual distribution and abundance of these valuable tuna resources. The future value of our oceanic tuna heavily depends on global climate action in the coming decades – if global emissions remain high, Tuvalu could experience major losses. A substantial and prolonged decrease in quota value would have far-reaching effects on our government revenue and all of our economic sectors.

14.2.3.2. Risks to our livelihoods

The loss of aquatic biodiversity will affect the food chain and ecosystem health around coral reefs and lagoons, which in turn will impact coastal fishing. This could lead to a reduction in the economic output of coastal fisheries, affecting our people's food security and increasing reliance on alternative food sources. The resulting adverse health outcomes and loss of livelihoods for our workforce and community are significant concerns.

14.2.4. Adaptation actions

The Government has identified one long-term objective and 14 overarching actions to help the fisheries sector become more resilient to a changing climate.

Table 12. Adaptation actions for the fisheries sector (Sub-sectors: ALL = cross sectoral, INF = Infrastructure, BIO = Biodiversity, OF = Oceanic fisheries, CF = Coastal fisheries)

OBJECTIVE			
Tuvalu's marine biodiversity is protected and ocean resources sustainably managed			
CODE	**ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
F-INF-001-01	Develop an advocacy and communication plan for oceanic fisheries and the protection of Tuvalu's interests as fisheries shift east.	2026	Tuvalu Fisheries Authority
F-BIO-001-02	To safeguard marine ecosystems, enhance environmental resilience, and mitigate the impacts of climate change on coral reefs. Deliver a national Coral Reef Protection & Resilience approach. Initial actions include: • Policy Integration and Enhancement: Update national policies and the fisheries sectoral plan to incorporate a clear and actionable objective to reduce climate risk and mitigate impacts on coral reef degradation. • Nationwide Coral Reef Protection Initiative: Design and launch a nationwide project to implement coral reef protection measures, prioritizing critical and vulnerable areas such as the island of Niutao. • Comprehensive Coral Bleaching Monitoring Program: Establish and operationalize a robust coral bleaching monitoring program to track and analyse the health of coral ecosystems. • Utilise data from the monitoring program to inform adaptive management strategies, identify early warning signs of bleaching events, and take preventive or restorative measures.	2026 - 2030	Tuvalu Fisheries Authority Department of Environment Fuligafou

OBJECTIVE			
Tuvalu's marine biodiversity is protected and ocean resources sustainably managed			
CODE	**ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
F-INF-002-03	Upgrade facilities for fish processing and storage in outer islands, including solar power where practical.	2028-2033	Tuvalu Fisheries Authority Department of Home Affairs Public Work Department
F-ALL-001-04	Establish a program dedicated to preserving and documenting traditional fishing techniques, farming practices and food preservation techniques. This program will provide skill-building opportunities, access to resources, and financial support to enhance women's participation and leadership in the fisheries and farming sector. By systematically capturing and recording traditional practices, the initiative will safeguard cultural heritage, foster knowledge sharing across generations, and promote sustainable fishing practices.	2026 – 2028	Department of Culture Tuvalu Fisheries Authority Tuvalu National Council for Women
F-CF-001-05	Develop a national locally managed marine areas (LMMA) strategy to scale-up and optimise the delivery of services to the communities sustainably.	2026 – 2028	Tuvalu Fisheries Authority Department of Home Affairs Kaupule
F-CF-002-06	TFD continue work with Kaupule, fishers' associations, and other stakeholders to develop and implement coastal fishery management plans and by-laws to optimise resources and regulate harvesting of key species in each of the outer islands.	2028 – 2032	Tuvalu Fisheries Authority Kaupule Department of Home Affairs
F-CF-003-07	Increased use of SPC-FAME data management systems for coastal fisheries, and improved evaluation and communication of the analytics it provides.	2026 – 2027	Tuvalu Fisheries Authority
F-CF-004-08	Continue fisheries related research and monitoring of the environment (toxicity, fish stocktake, coastal management and LMMAs).	Ongoing	Tuvalu Fisheries Authority
F-OF-001-09	Upgrade existing database to capture data on the status of inshore/ coastal and offshore marine resources (including regeneration and harvesting levels) for planning and informed decision making and improve accessibility to all fisheries stakeholders.	2026 – 2027	Tuvalu Fisheries Authority
F-INF-003-10	Develop new fisheries buildings: hatchery, training centre, store, boatshed, with renewable energy supply where possible.	2028 - 2032	Tuvalu Fisheries Authority Public Work Department Department of Environment Department of Energy
F-OF-002-11	Monitor the progress of GCF-Conservation International Project and take note of any valuable lessons learned.	Ongoing	Tuvalu Fisheries Authority

OBJECTIVE			
Tuvalu's marine biodiversity is protected and ocean resources sustainably managed			
CODE	**ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
F-CF-005-12	Monitor implementation of Pacific Islands Regional Oceanscape Program - Second Phase for Economic Resilience (PROPER) Project and take note of lessons learned and opportunities to improve future projects.	Ongoing	Tuvalu Fisheries Authority
F-OF-003-13	Continue to monitor trends of high value species, such as South Pacific tuna	Ongoing	Tuvalu Fisheries Authority
F-CF-006-14	Continue active use of TUFMAN2 and OnBoard app for Tuna fisheries and longline vessel activity.	Ongoing	Tuvalu Fisheries Authority

15. Human health and wellbeing

WHY WE NEED TO TAKE ACTION
Our people's health is at risk from the indirect and direct impacts of climate change across all sectors – from the increased spread of disease, food and water insecurity, to disrupted access to vital healthcare during climate-related disasters. Without urgent action, the wellbeing of our most vulnerable communities, our healthcare systems and continued growth of our nation could be severely compromised.

The actions in this chapter address the following risk rating identified in the national Climate Impact, Risk and Vulnerability Assessment 2024:

SECTOR	Health
SIGNIFICANT RISKS	Impacts to physical health (injuries, food/vector/water-borne diseases, decline in diet) during cyclones, droughts, storms and heatwaves. Natural disasters increasing stress-related health problems. Tropical cyclones and coastal inundation from rising sea levels leaving critical health infrastructure and services vulnerable to damage and disruptions.
OTHER RISKS	Chronic and acute climate hazards resulting in damage and loss of cultural heritage sites and artefacts. Psychosocial stress associated with the uncertainty surrounding the potential loss of one's home and social identity.

15.1. Introduction

Tuvalu is facing escalating risks to public health and health infrastructure due to a combination of chronic and acute climate hazards. Heatwaves, floods, and rising sea levels are expected to increase the incidence of heat-related illnesses, food, vector, and water-borne diseases within our communities, and threatens our physical safety and mental health. Climate change also puts strain on our agricultural and fisheries productivity, impacting our local food sources and increasing reliance on imported food, which can have adverse effects on our diet and health.

15.2. Policy linkages

The key strategic document driving activities in the health sector is the National Health Strategic Plan 2020 – 2024. There is a National Health Adaptation Plan in development with the World Health Organisation.

The health sectoral policies are guided by national-level policies, including the Te Kete, Te Vaka Fenua o Tuvalu and the NAP, while also shaping them in return. Similarly, there are horizontal influences and interlinks, both explicit and implicit, between the health sectoral strategies and those of the other related sectors.

Understanding these influences and interactions is critical to supporting an integrated 'whole of government' approach in climate adaptation planning and resilient development.

These policy linkages are delineated in Figure 33.

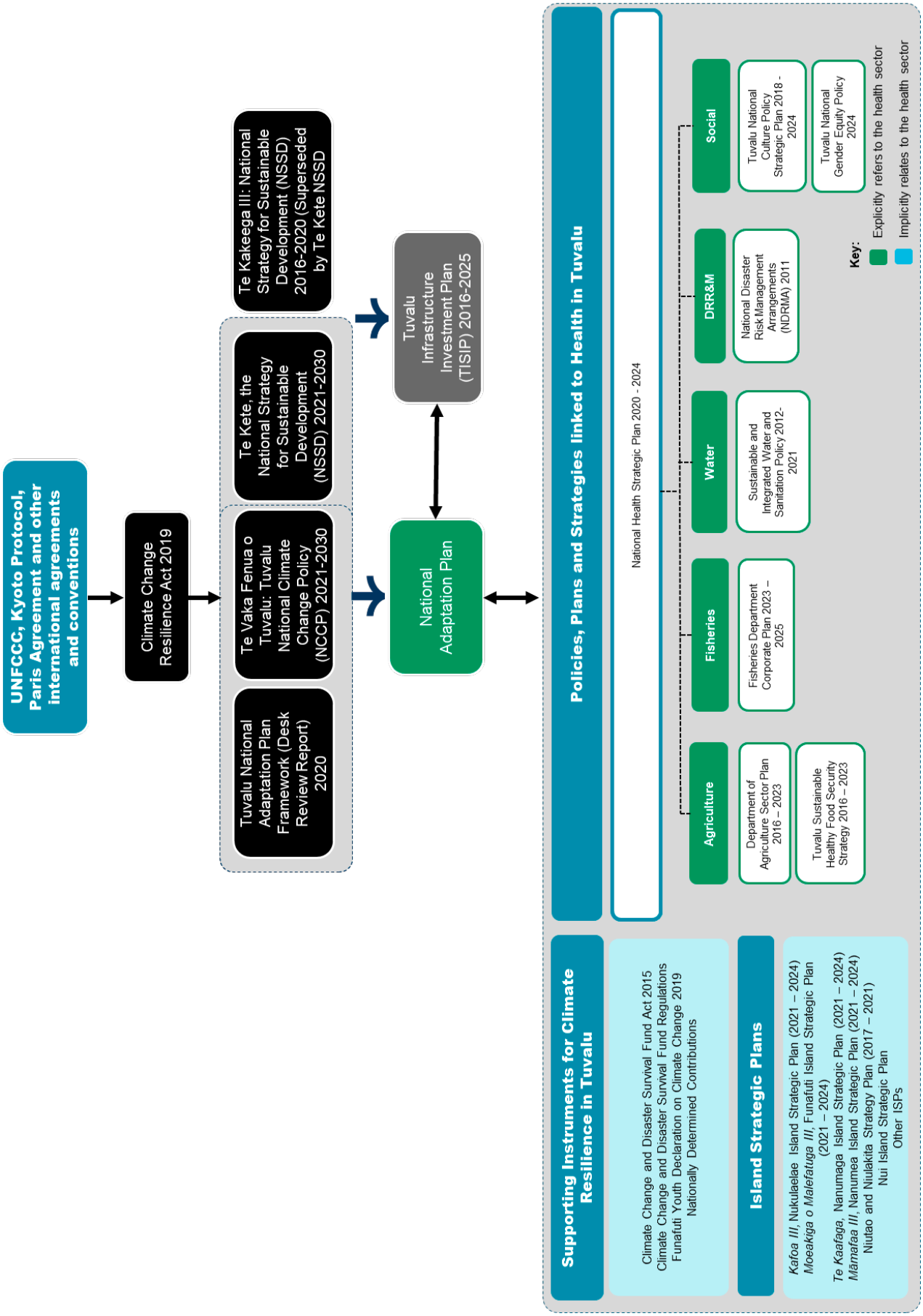


Figure 33. Relevant policy linkages for the health sector

15.3. Addressing climate change impacts

15.3.1. Impacts on public health

Climate change poses serious risks to the safety and wellbeing of our communities. Hazards such as heatwaves, tropical cyclones, storm surges, and coastal inundation threaten lives and can result in injuries. Declining water quality and reduced availability of fresh food due to climate hazards further increase illnesses and disease outbreaks.

15.3.2. Risks to our mental and social wellbeing

Climate change affects more than just our environment – it can take a toll on our mental health, social wellbeing and the resilience of vulnerable people in our communities.

Our community is vulnerable to heightened stress and emotional distress during periods of droughts as well as cyclones that damage homes, livelihoods and incomes. Women, children, the elderly, and people with disabilities often face greater challenges due to limited resources and social roles that can reduce their access to early warnings and emergency relief. Increased instances of gender-based violence during these periods is also possible as disasters generate increased stressors, disruption of support systems, damage to health and social services, and exacerbation of existing inequalities (UN Women, 2022). While quantitative data for Tuvalu is limited, Pacific studies show women, children, the elderly, and people with disabilities face higher risks due to lower incomes and limited access to resources. For example, women and children often miss early warnings because communication is typically managed by men .

Chronic climate hazards like rising sea levels and the gradual inundation of land can also create a growing sense of uncertainty, impacting our psychosocial wellbeing and challenging our sense of place and social identity. The emotional strain of family and friends relocating overseas can also create additional burden.

15.3.3. Damage to health infrastructure

The Princess Margaret Hospital on Funafuti, along with health centres across the outer islands, forms the backbone of Tuvalu's healthcare system, safeguarding the health and wellbeing of our communities. However, the location of the facilities on low-lying coastal land leaves them vulnerable to inundation from rising sea levels, king tides, and storm surges. These facilities are also at risk of structural damage during tropical cyclones.

Disruptions to medical supply chains, transport, and telecommunications during extreme weather events can delay the delivery of critical health services, particularly to outer island communities. As chronic and acute climate hazards intensify, the capacity of our healthcare system to deliver essential services will be increasingly strained, widening the health inequalities between Funafuti and the outer islands, as well as between socio-economic groups.

15.4. Adaptation actions

The Government has identified one long-term objective and 17 overarching actions to help the health and wellbeing sector become more resilient to a changing climate.

Table 13. Adaptation actions for the health and wellbeing sector (Sub-sectors: INF = Health Infrastructure, PH = Physical Health, MH = Mental Health, NCD = Non-communicable Disease, SOC = Social Cohesion and Cultural Heritage)

OBJECTIVES			
Existing health sector planning and response to climate-induced health risks are enhanced			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
H-INF-001-01	Prepare a climate and natural disaster preparedness, response and recovery plan for Princess Margaret Hospital and health centres in outer islands.	2026 – 2027	Ministry of Health, Social Welfare and Gender Affairs National Disaster Management Office Live & Learn
H-PH-001-02	Upgrade WASH facilities and capacity to respond to health risks at all outer island health clinics.	2026 - 2028	Ministry of Health, Social Welfare and Gender Affairs Department of Home Affairs National Disaster Management Office Live & Learn Public Work Department
H-INF-002-03	Conduct a vulnerability assessment at Princess Margaret Hospital and selected outer islands health centre assets.	2026 – 2028	Ministry of Health, Social Welfare and Gender Affairs Climate Change Division

OBJECTIVES			
Existing health sector planning and response to climate-induced health risks are enhanced			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
H-MH-001-04	Develop and implement a National Mental Health Resilience and Support Initiative to enhance mental health resilience and well-being in Tuvalu, addressing the psychological impacts of climate change and relocation, by integrating comprehensive strategies into the national health framework. Initial actions include: • Updating the National Health Strategy: Revise the national health strategy to include targeted action points for addressing mental health challenges related to climate change, disasters, and relocation activities. This strategic update will provide a clear roadmap for intervention and resource allocation. • Research on Community Perceptions and Needs: Conduct detailed research to understand community perceptions, barriers, and needs regarding mental health issues. This includes analysing gender differences in mental health outcomes and access to services, enabling tailored and equitable interventions. • Establishing Trauma-Informed Psychological Interventions: Build on the success of the SOLAR project (2021) to develop and implement a national trauma-informed psychological intervention program, including a targeted communication & advocacy campaign. This program will focus on fostering resilience, promoting mental well-being, and supporting recovery from climate-related adversity. • Enhancing Mental Health Workforce: Increase the availability of trained mental health professionals to address conditions associated with climate change and disasters. This includes establishing a national well-being department/unit within the Ministry of Health (MoH), hiring dedicated counsellors, and conducting training programs for health professionals. • Community-Based Mental Health Support: Train church leaders, community leaders, and health professionals to manage mental health challenges and provide informal counselling services. This ensures culturally sensitive and community-driven support for affected individuals.	2026 – 2032	Ministry of Health, Social Welfare and Gender Affairs
H-NCD-001-05	Review and update the NCD Strategic Plan for the next 5-years of the NAP and include climate induced risks, explicitly identifying the impact of climate change on health and measures to reduce these risks. Include research into progress made on the overall reduction of climate-related NCD status.	2027 – 2028	Ministry of Health, Social Welfare and Gender Affairs

OBJECTIVES			
Existing health sector planning and response to climate-induced health risks are enhanced			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
H-PH-002-06	Develop and implement an Integrated Water Quality Laboratory and Monitoring Initiative (also WS-WQ-001-02) to establish a sustainable and collaborative water quality monitoring framework by designing, funding, and operationalizing an integrated Water Quality Laboratory that bridges Public Health and the Public Works Department (PWD), supported by a robust HR strategy to ensure its effective functioning. Initial actions include: Design and Funding of Integrated Water Quality Laboratory: Develop and secure funding for an integrated Water Quality Laboratory equipped with advanced technologies to monitor, analyse, and respond to water quality issues efficiently. The design will prioritize synergy between Public Health and PWD to ensure cross-functional collaboration. Procurement and Installation of Infrastructure and Equipment: Procure and supply cutting-edge laboratory equipment and infrastructure to support water quality testing and analysis. This includes facilities for microbiological, chemical, and physical testing to address diverse monitoring needs. Establishment of HR Strategy for Sustainable Operations: Implement a comprehensive HR strategy to recruit, train, and retain skilled professionals across Public Health and PWD. This includes establishing clear roles and responsibilities, providing targeted training programs, and fostering inter-agency collaboration. Capacity Building for Continuous Monitoring: Invest in ongoing staff development and capacity building to ensure the laboratory functions effectively and maintains high-quality monitoring standards over time. This includes the establishment of protocols for shared data management and analysis between agencies.	2027 – 2031	Ministry of Health, Social Welfare and Gender Affairs Climate Change Department Public Work Department Department of Health Department of Environment Department of Lands and Survey
H-ALL-001-07	Strengthen surveillance and monitoring of climate sensitive health risks from the outer islands. Support healthcare facilities to be more climate resilient, incorporating effective prevention and clinical case management of climate-sensitive health risks and DRM-health.	2026 – 2028	Ministry of Health, Social Welfare and Gender Affairs Climate Change Department
H-SOC-001-08	Update the cultural policy with objectives to manage internal migration. (Link to Coastal Protection CP-001-01).	2026 – 2027	Department of Culture Department of Home Affairs Climate Change Department

OBJECTIVES			
Existing health sector planning and response to climate-induced health risks are enhanced			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
H-MH-002-09	Revise and enhance the National Gender Equity Policy (2024) to integrate the recognition and mitigation of climate and natural hazard-induced gender-based violence (GBV) risks affecting women and children. This update will prioritise the inclusion of preventive measures, response frameworks, and capacity-building initiatives to strengthen resilience and safeguard vulnerable populations against the compounded impacts of environmental challenges and GBV.	2026 - 2028	Ministry of Health, Social Welfare and Gender Affairs Tuvalu Police Force Fatu Lei (Tuvalu Women for Change Association) Tuvalu Family Health Association Tuvalu National Council for Women
H-SOC-002-10	Comprehensively include Cultural Heritage into Loss & Damage policies, and as required develop a distinct Preserving Cultural Heritage Plan.	2028 – 2030	Department of Culture Climate Change Department
H-PH-003-11	Undertake syndromic surveillance, spraying of households and community education activities.	2026 – 2027	Ministry of Health, Social Welfare and Gender Affairs
H-INF-003-12	Strengthen the healthcare capacity and emergency response capabilities in Funafuti by investing in innovative and adaptable health infrastructure solutions to address current and future challenges. Initial actions include: Land Assessment and Development for Backup Healthcare Facilities: Investigate and secure suitable land on Funafuti for establishing a backup hospital or mini-health centre. This facility will serve as an essential resource for maintaining healthcare services during emergencies or disruptions. Exploration of Mobile Clinics for Emergency Response: Evaluate options for deploying mobile clinics equipped for rapid emergency response in remote or underserved areas, ensuring immediate access to critical healthcare services. Feasibility Study of Portable Health Clinics and Hospital Ships: Assess the practicality and effectiveness of portable health clinics and hospital ships as innovative solutions to expand healthcare coverage and provide flexible support during disaster scenarios.	2026 - 2028	Ministry of Health, Social Welfare and Gender Affairs Tuvalu Meteorological Service National Disaster Management Office
H-ALL-002-13	Strengthen the capacity of health workers and coordination capacity of the MoH and other ministries to manage climate-sensitive health risks and disaster risk management in health.	Ongoing	Ministry of Health, Social Welfare and Gender Affairs National Disaster Management Office

OBJECTIVES			
Existing health sector planning and response to climate-induced health risks are enhanced			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
H-PH-004-14	Integrate meteorological and climate early warning information into health information systems (HIS). This work links with the detailed activities in DRR-ES-002-04.	2027 – 2029	Ministry of Health, Social Welfare and Gender Affairs Tuvalu Meteorological Service Department of Home Affairs
H-PH-005-15	Undertake a short survey to obtain more recent data on islands with mosquito breeding issues and prepare a corrective action plan.	2026 - 2027	Ministry of Health, Social Welfare and Gender Affairs Department of Home Affairs
H-SOC-003-16	Develop national systems and a heritage register for Tangible Cultural Heritage (TCH) protection (link to F-ALL-001-04).	2027 -2029	Department of Culture Department of Lands and Survey National Library and Archives
H-SOC-004-17	Support community-based heritage initiatives and establish a National Culture Centre and museum (links to F-ALL-001-04).	2027 - 2031	Department of Culture Public Work Department Department of Environment Department of Lands and Survey National Library and Archives

16. Water security

WHY WE NEED TO TAKE ACTION
Our water resources are already limited on our islands and highly vulnerable to acute and chronic climate change events due to Tuvalu's topography, geological composition, geographical location, and the presence of dispersed and remote communities.

The actions in this chapter address the following risks identified in the national Climate Impact, Risk and Vulnerability Assessment 2024:

SECTOR	Water
SIGNIFICANT RISKS	Reduced rainfall and water availability leading to prolonged droughts. Rising sea levels leading to coastal inundation and flooding. Rising sea levels and increased intensity of tropical cyclones increasing coastal inundation and flooding, while strong winds and cyclones can induce storm surges.
OTHER RISKS	Increased temperatures and heat wave events increases the number of hot days experienced on the island.

16.1. Introduction

Our people mainly rely on rainwater for water supply since there is no fresh surface water available due to our land's geology and limited groundwater. Rainwater collected for domestic and public consumption is generally harvested using rooftop catchments and stored in either surface rainwater tanks or underground reservoirs (for some public buildings). Groundwater is available on some islands but is often brackish and generally considered unsuitable for human consumption.

Each of our islands has a desalination unit that supplies emergency water to the community during droughts. During normal conditions, households can purchase desalinated water if required.

There is currently no centralised wastewater treatment facility in Tuvalu. Septic tanks and pit latrines are the primary sources of sewage disposal for our communities. There have been previous reports of septic overflows from aging systems into neighbouring properties, groundwater lenses, and lagoons across several islands. The ongoing Funafuti Water and Sanitation Project is supporting to build a centralised septage handling and treatment facility in Funafuti.

Our nation has 98% water coverage, considerably higher than the average in other Pacific Island Countries, while 83% of the population has access to improved sanitation.

16.2. Policy linkages

The key document driving adaptation in the water sector is the Sustainable and Integrated Water and Sanitation Policy (WSP) 2012-2021. This policy aligns with Tuvalu's primary planning document, Te Kakeega II (National Strategy for Sustainable Development. As part of its guiding principles, the WSP recognises that "managing the water related impacts of climate variability and climate change requires a risk-based approach, and adaptation to these impacts requires integration of effective risk reduction strategies across all sectors" (Guiding Principle 4). Additionally, "there is an urgent need to improve our capacity to deal with today's serious water challenges, in order to improve our ability to adapt to the challenges cause by climate variability and climate change" (Guiding Principle 5).

In addition to the WSP, two overarching national documents mandate the integration of climate change adaptation, mitigation, and social inclusion within the water sector: the Te Vaka Fenua o Tuvalu: National Climate Change Policy (2021–2030) and the Climate Change Resilience Act (2019).

The Te Vaka Fenua o Tuvalu: National Climate Change Policy (2021–2030), under Policy Objective 2.4, calls to strengthen local community participation in water and sanitation management. This objective emphasises the importance of inclusive, community-driven approaches to water governance in the face of climate change.

The Climate Change Resilience Act (2019) provides a legal mandate for comprehensive adaptation planning. Under Part II, Section 8(f), the Act requires Tuvalu to cooperate in preparing for adaptation to the impacts of climate change and develop and elaborate appropriate and integrated plans for coastal zone management,

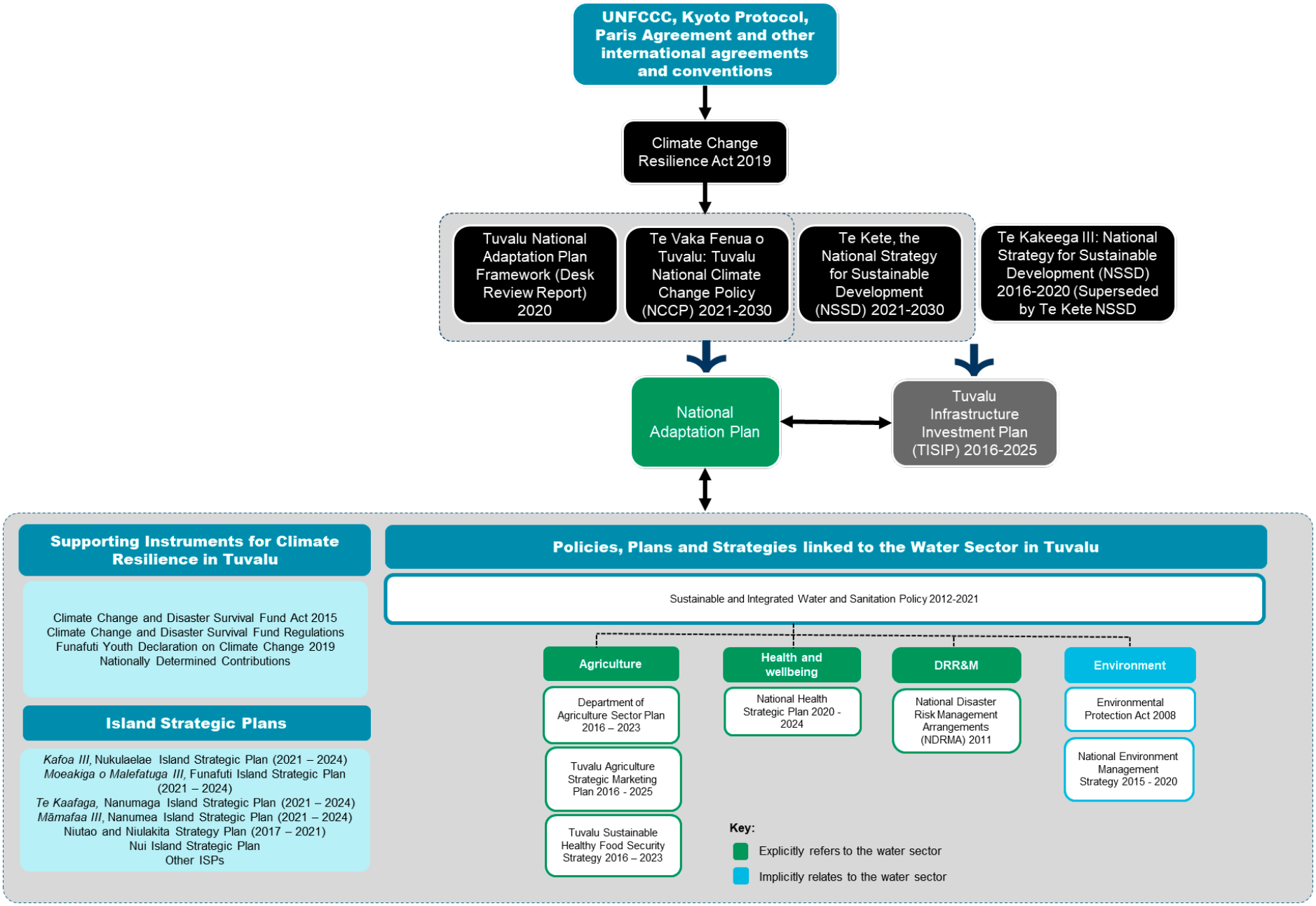
water resources and agriculture, and for the protection and rehabilitation of areas affected by drought and desertification, as well as sea level rise and floods.

Further, Part V, Section 22(1)(d) of the Act mandates the Climate Change Department to develop strategies and plans that address the effects of climate change within Tuvalu on its water resources, coastal areas, lands and land usage, food security, biodiversity, fisheries, economic welfare, public infrastructure and its vulnerability to disasters. Complementing this, Section 22(1)(e) directs the Department to implement programs and facilitate projects to protect its water resources, coastal areas, mangroves, lands, biodiversity, fisheries and public infrastructure, and to contribute to the health, well-being and livelihoods of Tuvaluan's.

These policies and legislative instruments form a robust framework for integrating climate resilience into water sector planning and management in Tuvalu.

These policy linkages are delineated in Figure 34.

Figure 34. Relevant policy linkages for the water sector



16.3. Addressing climate change impacts

16.3.1. Water availability, demand and quality

Increasing temperatures and prolonged dry days can cause drought-induced water scarcity, limiting the amount of water available for both domestic consumption and agricultural use in the country, such as stock watering and crop irrigation. Increase in water demand due to extreme heat can also exert additional pressures on our country's limited water supply. Droughts can cause significant mental stress and anxiety within affected communities, including WASH-related issues, who do not have sufficient water storage capacity to withstand prolonged droughts.

Groundwater recharge will become limited, thinning the freshwater lens of groundwater catchments and reducing the yield of swamp taro (pulaka) which is planted in excavated pulaka pits to access the water table.

Water quality is reduced during droughts which can impact human health and productivity by increasing infection rates and disease issues, including water-borne bacteria and suspected water-borne typhoid.

16.3.2. Contamination of water resources

Sea level rise and coastal inundation events will increase saltwater intrusion into our land, contaminating groundwater and thinning freshwater lenses on the island.

During extreme rainfall events and tropical cyclones, our surface and marine water quality can become impacted by land-based pollution and septic overflows, increasing public health risks.

16.3.3. Damage to water and wastewater infrastructure

Increasing climate hazards such as heatwaves, coastal flooding, and intense cyclones in our country will directly impact potable water infrastructure (e.g., household and public reservoir tanks, desalination units and pipes) and indirectly through power supply disruptions. Wastewater systems can also be affected, particularly by groundwater intrusion, leading to untreated effluent runoff and localised flooding. This can reduce water supply and quality across our islands, increase maintenance costs, and impact community health. Additionally, rising temperatures will strain the electricity grid, further risking water infrastructure reliability.

16.4. Adaptation actions

The Government has identified one long-term objective and 16 overarching actions to help the water sector become more resilient to a changing climate.

Table 14. Adaptation actions for the water sector (Sub-sectors: WA = Water Availability, WQ = Water Quality, WI = Water Infrastructure, WD = Water Demand)

OBJECTIVE			
All Tuvaluans have access to safe, clean and undisrupted water supply from climate-resilient water sources			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
WS-WA-001-01	Additional program to target building storage water capacity nationwide including improved guttering and catchment.	2026 – 2029	Climate Change Department Department of Home Affairs Department of Home Affairs Public Work Department

OBJECTIVE			
All Tuvaluans have access to safe, clean and undisrupted water supply from climate-resilient water sources			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
WS-WQ-001-02	Develop and implement an Integrated Water Quality Laboratory and Monitoring Initiative (also H-PH-002-06) to establish a sustainable and collaborative water quality monitoring framework by designing, funding, and operationalizing an integrated Water Quality Laboratory that bridges Public Health and the Public Works Department (PWD), supported by a robust HR strategy to ensure its effective functioning. Initial actions include: • Design and Funding of Integrated Water Quality Laboratory: Develop and secure funding for an integrated Water Quality Laboratory equipped with advanced technologies to monitor, analyse, and respond to water quality issues efficiently. The design will prioritize synergy between Public Health and PWD to ensure cross-functional collaboration. • Procurement and Installation of Infrastructure and Equipment: Procure and supply cutting-edge laboratory equipment and infrastructure to support water quality testing and analysis. This includes facilities for microbiological, chemical, and physical testing to address diverse monitoring needs. • Establishment of HR Strategy for Sustainable Operations: Implement a comprehensive HR strategy to recruit, train, and retain skilled professionals across Public Health and PWD. This includes establishing clear roles and responsibilities, providing targeted training programs, and fostering inter-agency collaboration. • Capacity Building for Continuous Monitoring: Invest in ongoing staff development and capacity building to ensure the laboratory functions effectively and maintains high-quality monitoring standards over time. This includes the establishment of protocols for shared data management and analysis between agencies.	2026 – 2030	Climate Change Department Public Work Department Department of Health Department of Environment Department of Lands and Survey

OBJECTIVE			
All Tuvaluans have access to safe, clean and undisrupted water supply from climate-resilient water sources			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
WS-WA-002-03	Continue to develop a sustainable and adaptive water and sanitation system for Funafuti (and Tuvalu) by integrating climate resilience and water security within the delivery of the Funafuti Water and Sanitation Project. Actions include: • Engagement in Strategic Planning: Actively participate in the design and development of the Funafuti Water & Sanitation 20-Year Strategic Plan. Ensure the incorporation of the latest climate modelling and forecasting data to guide infrastructure solutions and resilience-building measures, closely aligned with the vision articulated in CP-001-01. • Advancing the Masterplan and Policy Update: Continue developing the Funafuti Water Supply and Sanitation masterplan, and the Tuvalu National Water and Sanitation Policy to reflect longer-term climate adaptation needs, reclamation goals, and priorities identified in the NAP. • Community Water Refill Stations: Within the scope of the Asian Development Bank (ADB) Funafuti Water and Sanitation project, plan for and incorporate Community Water Refill Stations. These stations will provide free UV-treated water at various locations, promoting equitable access to clean drinking water for the community. • Infrastructure Innovation: Prioritise forward-thinking infrastructure solutions that integrate water efficiency systems and adaptive technologies, fostering sustainability and resilience across all project activities.	2026 – 2030	Public Work Department Climate Change Department Department of Home Affairs Department of Environment Department of Lands and Survey
WS-WI-001-04	Design and deliver a targeted capacity building program to enhance knowledge and skills in water asset management for stakeholders across Tuvalu. The program will include tailored initiatives to empower micro and small enterprises (MSEs), enabling them to participate in water-related value chains and leverage new business opportunities. The initiative aims to strengthen water management practices while fostering the development and resilience of local MSEs.	2026 – 2030	Climate Change Department National Disaster Management Office Public Work Department
WS-WI-002-05	Initiate a study into the feasibility, structure, and operational framework of establishing a central agency for water management in Tuvalu. This investigation will explore various models of governance, funding mechanisms, legal mandates, and stakeholder integration.	2026 – 2027	Climate Change Department National Disaster Management Office Public Work Department
WS-WI-003-06	Develop and implement Sustainable Water Integration in Climate-Resilient Buildings Initiative to enhance water sustainability and resilience by incorporating water efficiency measures and integrated water supply infrastructure into the Climate-Proofing Buildings and Structures project. This initiative will support resource conservation and climate adaptation goals.	2027 – 2030	Climate Change Department Public Work Department
WS-WQ-002-07	Continue to develop water resources and sanitation plans for the outer islands that align with national reclamation plan once that is developed.	Ongoing	Climate Change Department Department of Health

OBJECTIVE			
All Tuvaluans have access to safe, clean and undisrupted water supply from climate-resilient water sources			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
WS-WA-003-08	Undertake a feasibility study to assess the viability, benefits, and challenges of additional types of water storage that are suitable for Funafuti in relation to ongoing land reclamation and emerging design options. Findings from this will help to inform CP-003. Including but not limited to: • Potential for suitable types of water retention from the proposed relocation of Int Airport and runway to SW of Funafuti atoll. • Potential for coastal reservoir. • Investigate the options for grey water systems.	2026 – 2027	Climate Change Department Public Work Department Department of Lands and Survey
WS-WA-004-09	Develop water and sanitation masterplan for the outer islands that reduces the climate vulnerabilities associated with high emission scenario.	2026 – 2028	Climate Change Department Department of Health Public Work Department Department of Home Affairs
WS-WD-001-10	Conduct a water demand assessment to analyse current and projected water usage in all of Tuvalu. This study will identify consumption patterns, evaluate the sufficiency of existing water supply systems, and forecast future water requirements based on population growth, economic development, and climate projections. The findings will guide development of CP-001-01 and other Water Security activities.	2026 – 2027	Climate Change Department Tuvalu Meteorological Service Public Work Department
WS-WD-002-11	During design of CP-001-01, prioritise the incorporation of indigenous species and carefully selected introduced plantings, with a focus on hardwood trees to enhance shade provision and cooling effects, particularly in reclaimed land areas. This will foster climate resilience, support biodiversity, and improve urban liveability, potentially leading to reduction in water demand.	2026 – 2030	Department of Environment Department of Agriculture Climate Change Department Department of Lands and Survey
WS-WD-003-12	Continue awareness programmes to drive behavioural change related to water conservation.	Ongoing	Climate Change Department Public Work Department Department of Health
WS-WI-004-13	Linked to CP-001-01: Align the planned reticulation network works within the ADB Funafuti Water and Sanitation Project within the Reclamation Framework to ensure compatibility with future land developments, to maximise opportunity for water storage and supply.	2026 – 2030	Public Work Department Climate Change Department
WS-WA-005-14	Continue construction of groundwater infiltration galleries where a usable freshwater lens exists. Support continued technical and social monitoring of these, and support financing for future investment as needed.	Ongoing	Public Work Department Climate Change Department Department of Home Affairs

OBJECTIVE			
All Tuvaluans have access to safe, clean and undisrupted water supply from climate-resilient water sources			
CODE	**ADAPTATION ACTION**	**TIMEFRAME**	**RESPONSIBLE AGENCY**
WS-WQ-003-15	Continue support for development and implementation of planned aquifer management plans and, aquifer and coastal monitoring programs.	Ongoing	Climate Change Department
WS-WQ-004-16	Monitor the designs of the coastal protection measures for the septage treatment design to assess if it may be addressing the 2050 climate risks associated with inundation and coastal erosion.	Ongoing	Climate Change Department

Part Six:
Implementing the Plan

17. Introduction

The supplementary documents supporting our NAP provide critical frameworks for inclusive implementation, sustainable financing, and adaptive learning. These are summarised in the sections below and include:

- NAP Financing Strategy
- NAP Monitoring and Evaluation Framework
- NAP Gender Equality, Disability, and Social Inclusion Action Plan
- NAP Communication and Engagement Strategy.

17.1. NAP Financing Strategy

The Finance Strategy outlines Tuvalu's approach to securing sustainable and scalable funding for the implementation of its NAP. Recognising Tuvalu's limited domestic financial capacity and high vulnerability to climate change, the strategy maps out potential sources of climate finance across bilateral, multilateral, philanthropic, and private sector channels. It provides a detailed analysis of existing financial relationships, including with the Green Climate Fund (GCF), Global Environment Facility (GEF), World Bank, Asian Development Bank (ADB), and key bilateral partners such as Australia, New Zealand, Japan, and Taiwan.

The strategy aligns sectoral adaptation priorities with appropriate funding mechanisms, offering a clear pathway to mobilise resources for critical projects in coastal protection, infrastructure, agriculture, fisheries, health, and water security. It also identifies barriers to accessing finance such as accreditation gaps and limited institutional capacity and proposes actions to overcome them. By linking adaptation activities with funder interests and global climate finance trends, the Finance Strategy serves as a vital tool for Tuvalu to attract investment, build donor confidence, and ensure the long-term viability of its climate resilience efforts.

The top 20 priority measures have been costed and are presented in the Financing Strategy.

Additionally, the Tuvalu Survival Fund is a sovereign financing mechanism designed to support long-term adaptation and resilience. It enables Tuvalu to invest in transformative actions such as land reclamation, managed relocation, and cultural preservation. The Fund strengthens national ownership of adaptation planning and ensures Tuvalu can respond decisively to escalating climate risks, even in worst-case scenarios.

The Fund is envisioned as a multi-source instrument, drawing from domestic allocations, bilateral partnerships, and international climate finance, including contributions from philanthropic and diaspora communities.

The Fund serves three core purposes:

1. Ensuring Tuvalu retains agency over its adaptation decisions, even in scenarios of extreme climate impact.
2. Supporting large-scale, long-term projects that go beyond incremental adaptation, such as the National Reclamation and Relocation Strategy.
3. Funding initiatives that protect Tuvaluan heritage, language, and social cohesion, especially in the context of displacement and migration.

17.2. NAP Monitoring and Evaluation Framework

The MEL Framework establishes a structured system for tracking progress, evaluating effectiveness, and fostering continuous learning throughout the implementation of Tuvalu's NAP. It defines clear objectives, roles, and responsibilities for monitoring and evaluation, and integrates adaptive management principles to ensure responsiveness to evolving climate risks and stakeholder needs. The framework includes a traffic-light progress capture tool, sector-specific indicators, and a reporting cycle that supports biannual reviews, annual reports, and mid- and end-term evaluations.

Strategically, the MEL Framework is designed to harmonise with Tuvalu's existing reporting obligations and align with supporting strategies such as the Communications & Engagement Strategy and the GEDSI Action Plan. It promotes transparency, accountability,

and evidence-based decision-making, while also facilitating knowledge sharing and stakeholder engagement. By embedding learning into the NAP process, the MEL Framework ensures that adaptation efforts are continuously refined and improved, enabling Tuvalu to build a resilient, inclusive, and adaptive climate future.

17.3. NAP Gender Equality, Disability, and Social Inclusion Action Plan

Gender equality, disability inclusion, and social inclusion (GEDSI) are not treated as standalone components within the NAP. Instead, they are embedded across all aspects of the NAP through a dedicated supplementary document: the NAP Gender Equality, Disability and Social Inclusion (GEDSI) Action Plan.

The GEDSI Action Plan provides a comprehensive framework to ensure that Tuvalu's NAP is inclusive, equitable, and responsive to the needs of all community members, particularly marginalised groups. It outlines the socio-cultural, economic, and institutional barriers that limit participation and access to resources for women, people with disabilities, the elderly, and youth. Through sector-specific analyses and a detailed mainstreaming strategy, the plan identifies key entry points for GEDSI integration across priority sectors such as agriculture, fisheries, water, health, infrastructure, and disaster risk reduction.

The Action Plan includes a robust GEDSI Mainstreaming Framework with measurable indicators, roles and responsibilities, and a suite of targeted actions to promote inclusive decision-making, equitable access to services, and gender-responsive programming. It also emphasises the importance of traditional knowledge, community engagement, and capacity building, proposing mechanisms such as sectoral GEDSI champions, tailored training modules, and inclusive communication strategies. The plan's strategic importance lies in its ability to embed GEDSI principles into the core of NAP implementation, ensuring that adaptation efforts do not perpetuate existing inequalities but instead foster resilience for all Tuvaluans.

17.4. NAP Communications and Engagement Strategy

The Communications and Engagement Strategy (C&E Strategy) is a foundational component of Tuvalu's NAP, designed to ensure inclusive, transparent, and culturally appropriate stakeholder engagement throughout the NAP implementation process. Recognising Tuvalu's unique governance structure and socio-cultural context, the strategy outlines a multi-level approach to communication spanning national, island, and community levels and integrates international best practices, notably the IAP2 engagement spectrum. It aims to foster a shared understanding of climate risks, adaptation priorities, and the role of the NAP among diverse stakeholder groups, including government agencies, civil society, development partners, and vulnerable populations.

The strategy identifies key engagement principles such as transparency, inclusivity, trust-building, and responsiveness, and provides detailed guidance on messaging, engagement formats, and stakeholder mapping. It includes tailored action plans for both NAP-level and cross-sectoral engagement activities, supported by tools like briefing notes, media releases, workshops, and digital platforms. Special emphasis is placed on reaching marginalised groups women, youth, people with disabilities, and outer island communities through culturally sensitive and linguistically accessible methods. The strategy also establishes a Grievance Redress Mechanism (GRM) to ensure community concerns are heard and addressed promptly.

Governance and implementation responsibilities are clearly defined, with the CCD leading coordination and monitoring efforts. The strategy is closely aligned with the MEL Framework, enabling regular evaluation of engagement effectiveness and adaptive management.

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Appendices

Appendix A
Technical foundations and methodology for the Tuvalu NAP

Outline of the NAP development process

This section provides an overview of the methodology used in identifying evidence-based adaptation options for inclusion in this NAP. The methodology applies the broad methodology presented the Pacific National Adaptation Plan Guidelines (SPREP, 2022) and the UNFCCC NAP Technical Guidelines (Least Developed Countries Expert Group, 2012). Additional methods and frameworks were referenced for certain elements of assessment. Details of the full methodology and results of the assessment, consultations and prioritisation process is provided in the Evidence Based Adaptation Options Report (GHD, 2024).

A summary of the NAP development process adopted for Tuvalu is presented in Figure A.1 below.

Phase 0: NAP Framework

Development of Tuvalu's NAP framework began in 2020, recognising the need for a coordinated, long-term approach to address the impacts of climate change. The process was initiated by the Climate Change Department through a desktop review. This work was essential to help understand Tuvalu's climate planning progress, and to identify the foundational elements needed to guide our national adaptation efforts over coming decades. The result of this early work was the "Tuvalu National Adaptation Plan Framework – Desk Review Report," which served as the guiding document for developing and implementing this NAP.

The purpose of the NAP framework was to provide strategic direction for our NAP process. It outlined the scope, objectives, and core components required to build resilience across sectors and communities. It also defined the institutional arrangements, planning stages, and coordination mechanisms needed to ensure that climate adaptation is integrated across all levels of governance. A key objective of this framework was to strengthen the enabling environment for adaptation in government and across the priority sectors, and to ensure that Tuvalu's responses to climate change are effective, inclusive, and sustainable.

Overview of the NAP Development Process

The development of Tuvalu's NAP commenced in April 2022 and concluded in June 2025. The process followed a structured, four-phase approach designed to assess climate risks and identify priority adaptation actions.

Phase 1: Climate Impact, Risk and Vulnerability Assessment

This phase focused on identifying current and projected climate impacts, risks, and vulnerabilities. The CIVRA provided the foundational evidence for this analysis.

Phase 2: Assessment of current and planned adaptation

An assessment was conducted to review existing and planned adaptation actions. This "Stocktake" evaluated the relevance, effectiveness, and urgency of these measures in addressing identified climate risks.

Phase 3: Urgency screening of adaptation actions

This phase involved several rounds of focus group meetings, workshops and key informant interviews to identify future adaptation actions beyond what is currently planned.

Phase 4: Identifying adaptation options (to include in the final NAP document)

A collaborative process was undertaken to validate and

prioritise a final list of adaptation options. This involved engagement with key stakeholders at national, island, and community levels.

The methodology was grounded in climate risk principles, incorporating key concepts such as hazard, exposure, sensitivity, adaptive capacity, and vulnerability. The process was informed by evidence from the CIVRA and other technical assessments, ensuring that adaptation planning is both proactive and relevant.

This approach supports long-term resilience by enabling early action and efficient resource allocation. While mitigation addresses the root causes of climate change, the NAP focuses on adaptation—managing its consequences and reducing vulnerability.

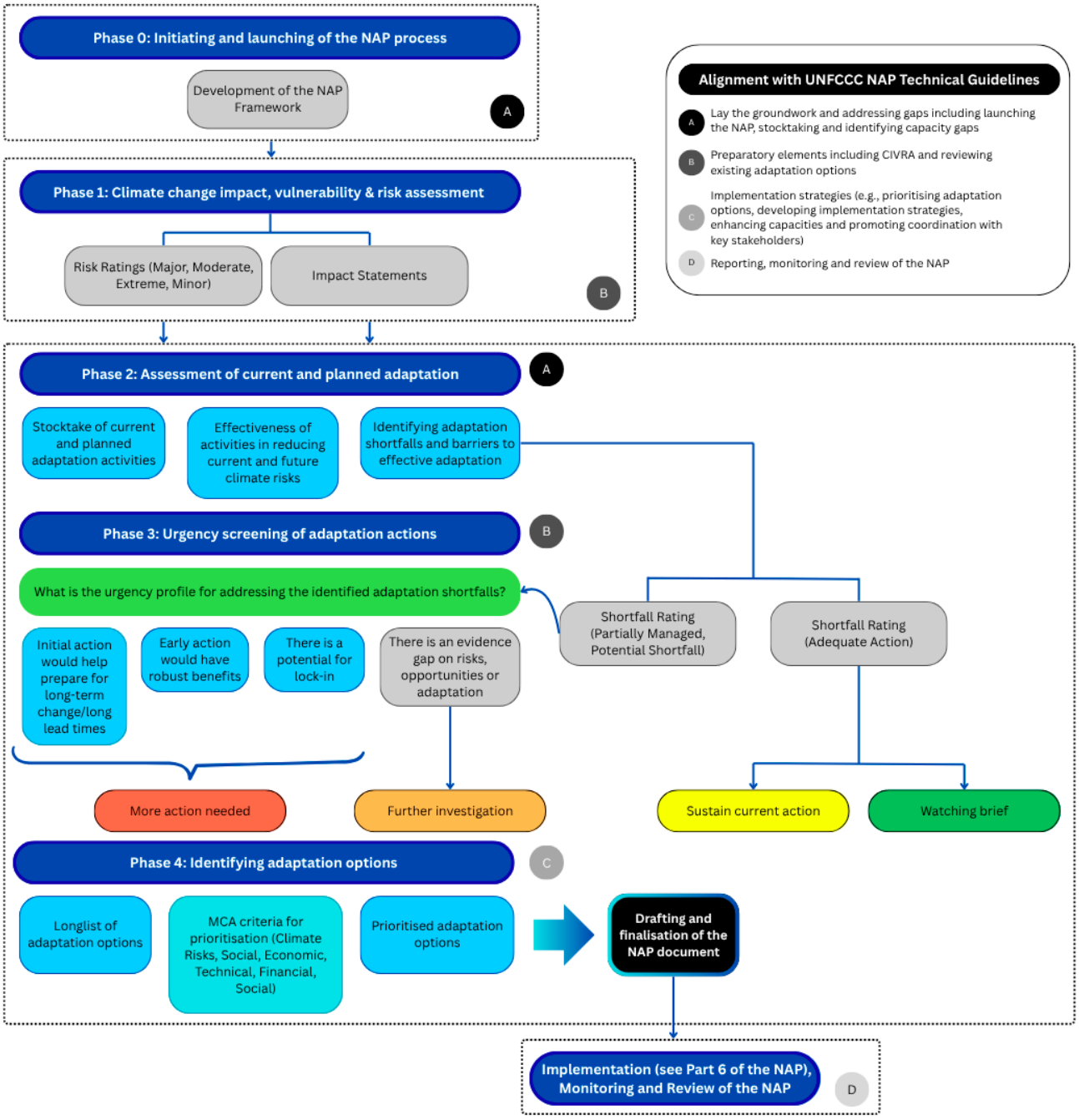

Figure A1. NAP development process for Tuvalu

Collaborating with stakeholders

Stakeholder engagement played an important role in ensuring that the NAP reflects the practical needs and priorities of Tuvalu. To support an inclusive and context-specific planning process, multiple rounds of consultation were conducted with a diverse group of stakeholders, including representatives from

government, the private sector, non-governmental organisations, and development partners. The consultations undertaken for the NAP's development is outlined in Figure A.2.

The NAP builds on existing adaptation efforts that have been underway across various sectors. It draws on the knowledge and lived experiences of those who have been working directly with communities, implementing programmes, and responding to climate challenges. By listening to their insights – what has worked, what hasn't, and what matters most – this NAP is grounded in local knowledge and tailored to Tuvalu's unique context.

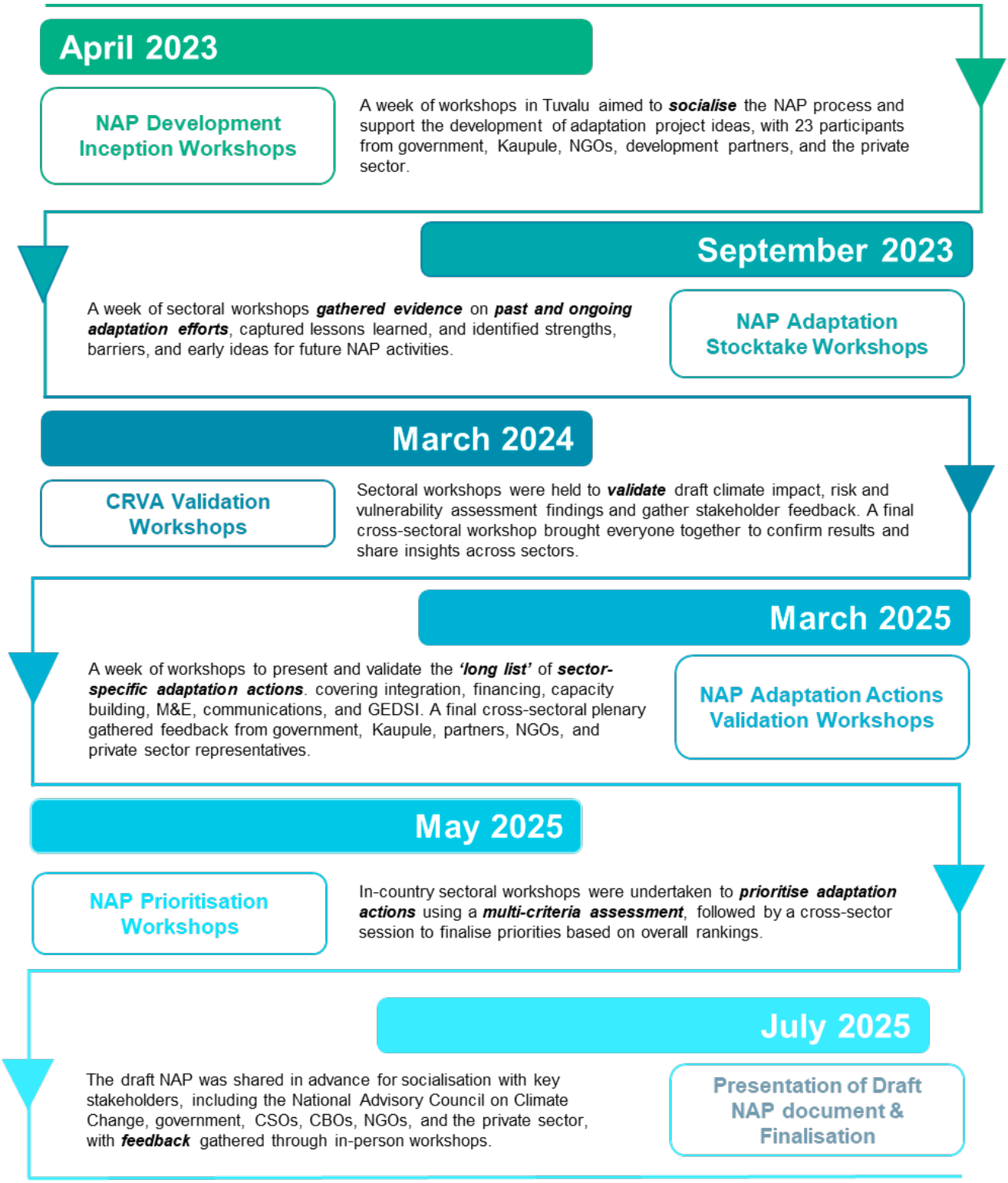

Figure A2. NAP consultation process

Phase 1: Climate Impact, Vulnerability and Risk Assessment

The CIVRA represented the initial phase of Tuvalu's NAP development process. Conducted in 2024, the assessment involved collaboration between CSIRO, Federation University, and Climate Comms for the hazard analysis, with Deloitte leading the risk and vulnerability components.

The CIVRA built upon the foundation of the NAP Framework developed in 2020, which established a structured, inclusive approach to long-term climate adaptation planning. A central objective of the framework was to ensure that decision-making was grounded in robust evidence. The CIVRA contributed to this goal by evaluating climate risks across six priority sectors: critical infrastructure. water, food security (agriculture and fisheries), health, disaster management, and coastal protection.

Importantly, CIVRA integrated findings from two major national assessments:

- The Tuvalu Coastal Adaptation Project (TCAP) (UNDP, GCF, 2025), which provided detailed scientific data on coastal hazards, sea-level rise, and infrastructure vulnerability.
- The Tuvalu Integrated Vulnerability Assessment (TIVA) (Government of Tuvalu, 2020), which offered community-level insights into social, economic, and environmental vulnerabilities across all islands.

The assessment integrated scientific analysis with stakeholder input, including insights gathered through in-country workshops held in Funafuti. These sessions facilitated validation of findings and identification of the most pressing hazards and risks. The CIVRA produced sector-specific impact statements and risk ratings, offering a clearer understanding of Tuvalu's vulnerabilities and the likelihood of major or extreme risks emerging by mid-century (2050).

The results of the CIVRA, along with critical scientific work from TCAP, TIVA and other researchers, have informed the strategic direction of the NAP, guided the prioritisation of adaptation measures and supported efforts to enhance resilience across all sectors.

Phase 2: Assessment of current and planned adaptation

101 climate adaptation activities were identified across Tuvalu's priority sectors – 66 already underway and 35 still in the pipeline. Assessment of these activities regarding the risks highlighted in the CIVRA found:

- 31 activities are clearly aligned with Tuvalu's climate context
- 54 activities only partially address Tuvalu's climate context risks
- 15 activities were inadequate due to unclear objectives or were not aligned with Tuvalu's climate context

The Stocktake also revealed critical gaps. Some risks were not covered at all either by the current or planned adaptation activities. For example, saltwater intrusion affecting underground energy systems and freshwater lenses, or extreme heat impacting livestock and psychosocial health. There were also unaddressed challenges around solid waste management, water security, and food safety.

In addition to sector-specific efforts, 22 enabling activities were identified. These were focused on strengthening systems and institutions, building capacity, improving information sharing, and promoting gender equality, disability inclusion, and social inclusion in climate action. These key insights are captured in "Whole of government" (Chapter 7) and "Whole of society" (Chapter 8) approaches.

Phase 3: Urgency screening of adaptation actions

This phase identified adaptation options to address major or extreme climate risks where current adaptation was categorised to have a "Potential shortfall" or where "Urgent action" is needed.

Potential strategies identified at high level included changes to management, infrastructure, policies and capacity building. Potential adaptation actions identified ranged from modifying existing development initiatives to entirely new approaches requiring significant land-use changes and investment. Through sector-specific consultations, additional options were discussed and agreed upon where current actions were deemed insufficient.

A long list of adaptation actions was developed as a result of this process. Refer to Section 4 in the Evidence Based Adaptation Options Report (GHD, 2024).

Phase 4: Identifying adaptation actions

The objective of this phase was to prioritise adaptation actions aligned with national goals, employing a Multi-Criteria Analysis (MCA) with key stakeholders

in Tuvalu. This MCA evaluated urgent and extreme risks and their associated options against a set of criteria and weightings (Refer to Appendix B in the Evidence Based Adaptation Options Report (GHD, 2024)). The prioritisation process involved initial scoring, stakeholder review, and final ratification by the National Adaptation Planning Committee (NACC) Technical Working Group.

Multi-Criteria Analysis (MCA)

This qualitative assessment ranked the longlist of adaptation options developed in Phase 3, based on their importance, urgency, and other characteristics, as assessed by specialists and national practitioners. The MCA used a two-part system:

- Urgency Evaluation: Assessed the importance of options in addressing climate impacts
- Technical Feasibility: Identified institutional and social complexities

Cost-benefit analysis was not included due to insufficient data. The criteria were developed by GHD (GHD, 2024) and agreed upon by the Technical Working Group and stakeholders in workshops.

Sectoral prioritisation workshops were held from 30 April 2025 to 2 May 2025. Participants reviewed and scored projects across all headline criteria for their respective sectors. Each project received an urgency score, a technical feasibility score and a total score (the average of the two). High-scoring options addressing 'extreme' risks were carried forward to the National Adaptation Plan and associated strategy documents. The final MCA scores are presented in Section 5 of the Evidence Based Adaptation Options Report (GHD, 2024).

Drafting the National Adaptation Plan

Following the completion of Phases 1 to 4, all results were compiled and the NAP document drafted, which included a suggested Adaptation Pathway for Tuvalu. This pathway was formulated based on identified extreme climate risks and associated adaptation actions, while also considering loss and damage and what this would mean for Tuvalu.

The draft NAP was initially circulated to the Climate Change Department for review before being presented to the sectors for final feedback prior to its finalisation.

Next steps: Implementation, Monitoring and Review

The next step for the NAP is its implementation. Part 6 of the NAP outlines the Implementation Plan, along with the supporting strategies, plans and frameworks that will guide the delivery of adaptation actions, monitor progress and enable ongoing review for continuous improvement

Appendix B
Summary of Participatory Engagement

Summary of Participatory Engagement

Participatory engagement for the Tuvalu National Adaptation Plan (NAP) was guided by the Stakeholder Engagement Plan (SEP), developed by GHD in collaboration with SPREP and the Government of Tuvalu. The SEP provided a culturally sensitive and context-appropriate framework to ensure inclusive, meaningful, and effective engagement throughout the NAP development process.

The SEP aimed to:

- Identify and map stakeholders across sectors and communities.
- Facilitate robust consultation to elicit knowledge, concerns, and ideas.
- Ensure country ownership and foster productive relationships.
- Inform the Communication and Engagement Strategy for the final NAP Framework.

The engagement approach was grounded in principles of empathy, inclusivity, curiosity, and innovation. It drew on lessons learned from previous adaptation projects in Tuvalu, emphasizing the importance of using Tuvaluan language, providing clear agendas, and ensuring timely communication.

Stakeholders were identified through a mapping exercise during the inception workshop, using a four-quadrant matrix to assess influence and impact. Each group was assessed for their level of interest, influence, and potential impact on the NAP process. Groups included:

- Government departments (e.g., Climate Change, Fisheries, Health, Education, Disaster Management)
- NGOs and civil society (e.g., TANGO, TNCW, TuFHA, Red Cross)
- Community groups (e.g., youth, students, faith-based organisations)
- Development projects (e.g., TCAP, M-CAP, IWRM)
- Private sector and media

Engagement Activities

A diverse set of activities were implemented, including:

- Inception workshops
- Digital and paper-based surveys
- Sectoral focus groups and consensus workshops
- Individual interviews
- Cross-sectoral forums
- Review periods with the NAP Technical Working Group and the NACCC

These activities were designed to be flexible and responsive to stakeholder availability, language needs, and accessibility considerations.

The following pages provide a detailed list of individuals and organisations who participated in the NAP development process.

Table B1: Summary of agency participation in NAP Development

AGENCY OR DEPARTMENT	NAP DEVELOPMENT INCEPTION WORKSHOP	ADAPTATION STOCKTAKE WORKSHOPS	CRVA VALIDATION WORKSHOP	ADAPTATION ACTIONS VALIDATION WORKSHOPS	PRIORITISATION WORKSHOPS	CRVA TRAINING	PRESENTATION OF NAP AND FINALISATION
Climate Change Department	✔	✔	✔	✔	✔	✔	✔
National Disaster Management Office (NDMO)			✔	✔		✔	✔
Department of Environment		✔	✔	✔		✔	✔
Lands and Survey Department	✔	✔	✔	✔	✔	✔	✔
Tuvalu Meteorological Service (MET)	✔		✔		✔	✔	
Department of Agriculture (DoA)	✔	✔	✔	✔	✔		
Price Control				✔			
Fisheries Department		✔	✔		✔		
Department of Waste Management	✔				✔		
Department of Home Affairs	✔		✔	✔			
Public Health Department	✔	✔	✔		✔		
Ministry of Finance		✔		✔			✔
Gender Affairs Department	✔	✔	✔				
Department of Energy	✔			✔	✔		✔
Tourism Department	✔						
Social Welfare Department (SWD)	✔	✔	✔	✔	✔		
Tuvalu Central Statistics Division (CSD)				✔	✔		
Public Works Department (PWD)		✔		✔	✔		
Education Department	✔			✔			
Tuvalu Safe Resilient Aviation Project (TUSRAP)				✔		✔	✔
Local Climate Adaptive Living Initiative (LoCAL)				✔	✔		
Tuvalu Coastal Adaptation Project (TCAP/UNDP)	✔	✔	✔	✔	✔		✔
Funafuti Water Supply and Sanitation Project (FWSSP)				✔	✔		
Maritime Investment in Climate Resilient Operation II Project (MICRO II)				✔	✔	✔	✔
Tuvalu Telecommunication Corporation (TTC)			✔				
Tuvalu Maritime Training Institute (TMTI)	✔	✔					
Tuvalu Climate Action Network (TuCAN)	✔	✔	✔			✔	✔
Live and Learn Environmental Education Tuvalu (LLEE)				✔	✔	✔	✔
Tuvalu Overseas Seafarers' Union (TOSU)						✔	✔
Asian Development Bank (ADB)							✔
World Bank Country Management Unit				✔			
Funafuti Town Council (Kaupule)	✔						
Tuvalu National Council of Women (TNCW)	✔		✔	✔	✔		
Tuvalu Chamber of Commerce (TuCCI)		✔	✔	✔			

AGENCY OR DEPARTMENT	NAP DEVELOPMENT INCEPTION WORKSHOP	ADAPTATION STOCKTAKE WORKSHOPS	CRVA VALIDATION WORKSHOP	ADAPTATION ACTIONS VALIDATION WORKSHOPS	PRIORITISATION WORKSHOPS	CRVA TRAINING	PRESENTATION OF NAP AND FINALISATION
Tuvalu Broadcasting Corporation (TVBC)	✔			✔			
Climate Activist	✔			✔	✔		
Tuvalu Red Cross Society (TRCS)	✔	✔	✔	✔		✔	✔
Tuvalu National Private Sector Organisation (TNPSO)		✔	✔	✔	✔	✔	✔
Tuvalu Association of Non-Governmental Organisations (TANGO)	✔			✔	✔		
Fusi Alofa Association (FAA)	✔	✔		✔	✔		
Tuvalu Family Health Association (TuFHA)	✔		✔				
Ekalesia Kelisiano Tuvalu (EKT)	✔	✔	✔				

Appendix C
Prioritised list of Adaptation Activities

MCA RANK	SECTORAL IDS	SECTOR	ACTIVITY DESCRIPTION	MITIGATION	SUSTAINABLE DEVELOPMENT	ADAPTATION	DISASTER RISK REDUCTION	LOSS AND DAMAGE
1	CP-001-01	Coastal Protection	National Reclamation and Relocation Strategy: Tuvalu Survival Pathway Objective: To develop and implement an integrated framework for reclamation, relocation, and coastal protection to enhance environmental resilience, safeguard critical infrastructure, and promote sustainable urban development. Initial actions include: **Masterplan for Reclamation Actiities:** • Prepare a staged masterplan for large-scale reclamation projects, utilizing data from TCAP initiatives to identify suitable locations for reclamation activities. • Prioritise areas based on ecological, economic, and social factors to ensure effective and sustainable implementation. **Comprehensive Urban Design Plan for Funafuti:** • Develop an urban design plan aimed at creating a sustainable, functional, and aesthetically appealing urban environment in Funafuti. • Integrate key elements such as land use planning, transportation options, public spaces, and essential infrastructure while aligning with existing infrastructure plans to foster environmental sustainability and improve community well-being. **Risk-Informed Relocation Masterplan:** • Design a relocation masterplan for critical infrastructure, prioritizing necessary relocation activities, including CI-T-001 and CI-T-002 projects. • Incorporate risk assessments to ensure safe and effective relocation strategies. **Nationwide Consultation Process:** • Implement a robust consultation process (CP-001) to engage stakeholders and communities in the development of the strategy. • Ensure inclusivity and transparency in policy and strategy formulation to build consensus and local ownership. **Island-Specific Coastal Protection Plans:** • Develop tailored coastal protection plans for each island, focusing on ecosystem-based adaptation measures as near-term solutions (CP-005) Mangrove restoration and protection in low-lying coastal areas to enhance natural buffers against coastal hazards. • Promote sustainable management of coastal areas to reduce vulnerability and enhance natural defences. **Feasibility Studies for Key Projects:** • Conduct thorough feasibility studies for high-priority relocation and reclamation activities. • Address critical aspects such as material sourcing, cost analysis, due diligence, and safeguard requirements to ensure successful project implementation.	-	X	X	X	X

MCA RANK	SECTORAL IDS	SECTOR	ACTIVITY DESCRIPTION	MITIGATION	SUSTAINABLE DEVELOPMENT	ADAPTATION	DISASTER RISK REDUCTION	LOSS AND DAMAGE
2	CP-002-02	Coastal Protection	Develop and implement a nationwide consultation process that will support the development of the National Reclamation and Relocation Strategy (a.k.a Tuvalu Survival Pathway). Include targeted communication around national law and policies as they relate to land reclamation activities and ownership.	-	X	X	-	-
3	CP-003-03	Coastal Protection	Continue with the next phases of the TCAP++. Continue with foreshore and coastal hazard monitoring program for whole area and take note of lessons learned and opportunities to improve future projects. Continue the scholarships for disciplines related to infrastructure and coastal development.		X	X	X	X
3	WS-WA-001-01	Water Security	Additional program to target building storage water capacity nationwide including improved guttering and catchment - in particular in Nanumea, Niulakita, Nukulaelae, Nui, Nanumaga		X	X		
5	CI-BS-001-01	Critical Infrastructure	Develop and implement a detailed and costed national masterplan for climate proofing buildings and houses. Align with longer adaptation priorities and relocation strategy: • Conduct a buildings survey/assessment to evaluate the current state of buildings, the materials used, extent of damage and level of work required to climate-proof the buildings. Include assessmnet that investigates HH characterisitscs with mental and physical health outcomes. (links to Health and internal migration) • Undertake a feasibility study to identify red flags and potential barriers, including source of material, construction challenges, workforce capacity. Include a cost-benefit analysis. • Identify high-priority buildings that need to be climate-proofed based on function/importance, capacity, level of work required, feasibility, etc. • Proposal development to secure funding for implementation of priority works.		X	X		
6	F-INF-001-01	Fisheries	Develop an advocacy and communication plan for oceanic fisheries and the protection of Tuvalu's interests as fisheries shift east.					
7	CI-BS-002-02	Critical Infrastructure	Enhance the capacity of the Building Code Assessment Unit (BCAU) at the Public Works Department to effectively enforce the Building Regulations and Building Code, ensuring compliance and promoting safe and sustainable building practices.		X	X		
7	F-BIO-001-02	Fisheries	To safeguard marine ecosystems, enhance environmental resilience, and mitigate the impacts of climate change on coral reefs. Deliver a national Coral Reef Protection & Resilience approach. Initial actions include: • Policy Integration and Enhancement: Update national policies and the fisheries sectoral plan to incorporate a clear and actionable objective to reduce climate risk and mitigate impacts on coral reef degradation. • Nationwide Coral Reef Protection Initiative: Design and launch a nationwide project to implement coral reef protection measures, prioritizing critical and vulnerable areas such as the island of Niutao. • Comprehensive Coral Bleaching Monitoring Program: Establish and operationalize a robust coral bleaching monitoring program to track and analyze the health of coral ecosystems.Utilise data from the monitoring program to inform adaptive management strategies, identify early warning signs of bleaching events, and take preventive or restorative measures.		X	X		X

MCA RANK	SECTORAL IDS	SECTOR	ACTIVITY DESCRIPTION	MITIGATION	SUSTAINABLE DEVELOPMENT	ADAPTATION	DISASTER RISK REDUCTION	LOSS AND DAMAGE
9	A-CP-001-01	Agriculture	Develop and execute a comprehensive action plan to rejuvenate the Elisefou Agriculture Station on Vaitupu, fostering agricultural innovation and supporting sustainable food production for the local community. Initial actions include: • Review mandate of the Elisefou Agriculture Station to strengthen research in climate change adaptation and mitigation in agriculture and agroforestry activities. • Restore operational capacity, resourcing and infrastructure at the Elisefou Agriculture Station to promote agricultural development on Vaitupu and to share with other islands • Establish the station as a center for research, education, and community engagement in agriculture and sustainability, linking with organisations (SPC, SPREP, FAO, FDP and others) for regional programs and research opportunities • Investigate the potential for alternative horticulture systems including centralised hydroponics/aquaponics and establish trial system/s for ability to enhance food security. • - Evaluate and trial organic fertilisers for use in both conventional and alternative growing systems. e.g. seaweed a, worm tea, animal biosolids. • Develop methods of demonstrating proven concepts from Elisefou to the broader population including for inhabitants of Funafuti.		X	X		
10	CI-T-001-03	Critical Infrastructure	Develop and implement a climate-resilient road infrastructure upgrade plan: • Asset mapping and condition assessment across all islands • Stakeholder consultations to inform upgrade plans. • Proposal development to secure funding for upgrade works. • Climate resilient upgrades/design – constructability challenges – a design report, including constructability, roads		X	X		
10	CI-WM-001-04	Critical Infrastructure	Conduct a feasibility study for Outer Island waste management programs to assess and address the condition of dumps and waste collection sites, with the objective of improving waste management practices and ensuring environmentally sustainable solutions.		X	X		
12	CI-WM-002-05	Critical Infrastructure	Establish and maintain locally appropriate recycling programs to collect and export recyclable materials, aiming to reduce waste, promote sustainability, and support environmental conservation efforts. Strengthen pollution control through community waste segregation, composting, and zero-waste public policies .Promote organic community composting systems to reduce waste and build climate-resilient soils.		X	X		
13	H-INF-001-01	Health	Prepare a climate and natural disaster preparedness, response and recovery plan for Princess Margaret Hospital and health centers in outer islands			X	X	

MCA RANK	SECTORAL IDS	SECTOR	ACTIVITY DESCRIPTION	MITIGATION	SUSTAINABLE DEVELOPMENT	ADAPTATION	DISASTER RISK REDUCTION	LOSS AND DAMAGE
14	A-CP-002-02	Agriculture	Establish a program that transforms locally sourced produce into high-quality products for commercial sale. Initial actions include: • Study to identify options for types of produce available locally and their potential for transformation and analysis of market demand for value-added products. • Stakeholder engagement to inform design of program • Develop business model, and design supply chain • Design and deliver a Basics of Business training for the producers or Micro, Small Enterprises to support their success.		X	X		
14	WS-WQ-001-02	Water Security	Develop and implement an Integrated Water Quality Laboratory and Monitoring Initiative (also H-PH-001) to establish a sustainable and collaborative water quality monitoring framework by designing, funding, and operationalizing an integrated Water Quality Laboratory that bridges Public Health and the Public Works Department (PWD), supported by a robust HR strategy to ensure its effective functioning. Initial actions include: • Design and Funding of Integrated Water Quality Laboratory: Develop and secure funding for an integrated Water Quality Laboratory equipped with advanced technologies to monitor, analyze, and respond to water quality issues efficiently. The design will prioritize synergy between Public Health and PWD to ensure cross-functional collaboration. • Procurement and Installation of Infrastructure and Equipment: Procure and supply cutting-edge laboratory equipment and infrastructure to support water quality testing and analysis. This includes facilities for microbiological, chemical, and physical testing to address diverse monitoring needs. • Establishment of HR Strategy for Sustainable Operations: Implement a comprehensive HR strategy to recruit, train, and retain skilled professionals across Public Health and PWD. This includes establishing clear roles and responsibilities, providing targeted training programs, and fostering inter-agency collaboration. • Capacity Building for Continuous Monitoring: Invest in ongoing staff development and capacity building to ensure the laboratory functions effectively and maintains high-quality monitoring standards over time. This includes the establishment of protocols for shared data management and analysis between agencies.		X	X		
16	CP-004-04	Coastal Protection	Continued support for the implementation of community-led initiatives on coastal management across all Tuvalu.		X	X		
17	CI-ES-001-06	Critical Infrastructure	Develop and implement an energy sector masterplan to meet national targets and reduce future climate vulnerabilities of the sector: • Planning and stakeholder consultations to inform masterplan concept. • Proposal development to secure funding for master planning and implementation of priority works. • Undertake an energy sector assessment, including a condition assessment of existing infrastructure (power stations, renewable energy systems, underground cablings) and an energy demands outlook to identify priority activities.	X	X	X		
17	H-PH-001-02	Health	Upgrading WASH facilities and capacity to respond to health risks at all outer island health clinics		X	X		

MCA RANK	SECTORAL IDS	SECTOR	ACTIVITY DESCRIPTION	MITIGATION	SUSTAINABLE DEVELOPMENT	ADAPTATION	DISASTER RISK REDUCTION	LOSS AND DAMAGE
20	DRR-ES-001-01	Disaster Risk Reduction and Management	Development of drought Management plans for Nui, Nukufetau, Nukulaelae and Vaitupu.		X	X	X	
21	CI-TI-001-07	Critical Infrastructure	Continue with current tele-communication projects with additional condsideration within the designs for projected climate conditions, inundation modelling at the sites and suitably climate-resilient materials		X	X		
21	H-INF-002-03	Health	Conducting a vulnerability assessment at Princess Margaret Hospital and selected outer islands health centre assets		X	X	X	
21	H-MH-001-04	Health	Develop and implement a National Mental Health Resilience and Support Initiative to enhance mental health resilience and well-being in Tuvalu, addressing the psychological impacts of climate change and relocation, by integrating comprehensive strategies into the national health framework. Initial actions include: • Updating the National Health Strategy: Revise the national health strategy to include targeted action points for addressing mental health challenges related to climate change, disasters, and relocation activities. This strategic update will provide a clear roadmap for intervention and resource allocation. • Research on Community Perceptions and Needs: Conduct detailed research to understand community perceptions, barriers, and needs regarding mental health issues. This includes analysing gender differences in mental health outcomes and access to services, enabling tailored and equitable interventions. • Establishing Trauma-Informed Psychological Interventions: Build on the success of the SOLAR project (2021) to develop and implement a national trauma-informed psychological intervention program, including a targeted communication & advocacy campaign. This program will focus on fostering resilience, promoting mental well-being, and supporting recovery from climate-related adversity. • Enhancing Mental Health Workforce: Increase the availability of trained mental health professionals to address conditions associated with climate change and disasters. This includes establishing a national well-being department/unit within the Ministry of Health (MoH), hiring dedicated counsellors, and conducting training programs for health professionals. • Community-Based Mental Health Support: Train church leaders, community leaders, and health professionals to manage mental health challenges and provide informal counseling services. This ensures culturally sensitive and community-driven support for affected individuals.			X		X
24	CI-WM-003-08	Critical Infrastructure	As part of National Asset Management system (CI-BS-002), TWD (SWAT) develop an asset management programme ensuring that waste facilities and equipment are properly designed based on climate proofing measures to increase resilience to climate change events, across all Tuvalu		X	X		
24	F-INF-002-03	Fisheries	Upgrade facilities for fish processing and storage in outer islands, including solar power where practical.	X	X	X		
26	CI-TI-002-09	Critical Infrastructure	Climate-proof existing telecommunications infrastructure, including underground cabling and other-land based infrastructure against cyclones, salt build up and salt intrusion: • Asset mapping and conditions assessment, including an infrastructure risk assessment. • Develop an asset management plan for critical telecommunications infrastructure, including maintenance requirements for protection against salt-build up from sea spray and saltwater intrusion.		X	X		

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27	CI-T-002-10	Critical Infrastructure	Prepare Funafuti Port Master Plan for expansion and reclamation works: • onduct a strategic needs and trade outlook assessment to identify and evaluate future supply chain requirements, including projected growth in vessel and shipment volumes to and from Tuvalu. • Undertake pre-feasibility study to identify and highlight red flags, including impact of tidal influences, material source, marine construction challenges, etc. • Planning and stakeholder consultation to support activity. • Proposal development for funding • Undertake feasibility study. • Detailed design of reclamation works. • Complete ESIA.		X	X		X
28	CP-005-05	Coastal Protection	Investigate options for and implement a restoration plan for marine ecosystems that have been impacted by reclamation works.		X	X		
29	CI-T-003-11	Critical Infrastructure	Review of transportation options for Tuvalu in consideration of reduction of heavy fuel reliance, changes to EV availability, associated infrastructure requirements and health implications, emergency services to outer islands: • Review of domestic sea and air connectivity options to outer islands for improved access to market and improved emergency services: • Prepare a comprehensive fleet optimisation study for land, sea and air transportation options, with consideration for vehical import restriction	X	X	X		
30	WS-WI-001-04	Water Security	Design and deliver a targeted capacity building program to enhance knowledge and skills in water asset management for stakeholders across Tuvalu. The program will include tailored initiatives to empower micro and small enterprises (MSEs), enabling them to participate in water-related value chains and leverage new business opportunities. The initiative aims to strengthen water management practices while fostering the development and resilience of local MSEs.		X	X		
31	CI-BS-003-12	Critical Infrastructure	Develop, acquire, and implement a national infrastructure asset management system to ensure efficient tracking, maintenance, and optimisation of resources at a national level.		X	X		
32	WS-WI-002-05	Water Security	Initiate a study into the feasibility, structure, and operational framework of establishing a central agency for water management in Tuvalu. This investigation will explore various models of governance, funding mechanisms, legal mandates, and stakeholder integration.		X	X		
33	H-NCD-001-05	Health	Review and update the NCD Strategic Plan for the next 5-years of the NAP and include climate induced risks, explicitly identifying the impact of climate change on health and measures to reduce these risks. Incllude research into progress made on the overall reduciton of climate-related NCD status.		X	X		
33	WS-WI-003-06	Water Security	Develop and implement Sustainable Water Integration in Climate-Resilient Buildings Initiative to enhance water sustainability and resilience by incorporating water efficiency measures and integrated water supply infrastructure into the Climate-Proofing Buildings and Structures project. This initiative will support resource conservation and climate adaptation goals		X	X		

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35	H-PH-002-06	Health	Develop and implement an Integrated Water Quality Laboratory and Monitoring Initiative to establish a sustainable and collaborative water quality monitoring framework by designing, funding, and operationalizing an integrated Water Quality Laboratory that bridges Public Health and the Public Works Department (PWD), supported by a robust HR strategy to ensure its effective functioning. Initial actions include: • Design and Funding of Integrated Water Quality Laboratory: Develop and secure funding for an integrated Water Quality Laboratory equipped with advanced technologies to monitor, analyze, and respond to water quality issues efficiently. The design will prioritize synergy between Public Health and PWD to ensure cross-functional collaboration. • Procurement and Installation of Infrastructure and Equipment: Procure and supply cutting-edge laboratory equipment and infrastructure to support water quality testing and analysis. This includes facilities for microbiological, chemical, and physical testing to address diverse monitoring needs. • Establishment of HR Strategy for Sustainable Operations: Implement a comprehensive HR strategy to recruit, train, and retain skilled professionals across Public Health and PWD. This includes establishing clear roles and responsibilities, providing targeted training programs, and fostering inter-agency collaboration. • Capacity Building for Continuous Monitoring: Invest in ongoing staff development and capacity building to ensure the laboratory functions effectively and maintains high-quality monitoring standards over time. This includes the establishment of protocols for shared data management and analysis between agencies.		X	X		
36	A-L-001-03	Agriculture	Implement a national agricultural disaster risk management programme, including the establishment of an early warning system to facilitate the safeguarding of crops and livestock.		X	X	X	
36	A-L-002-04	Agriculture	Integrate Agriculture Department's plan to establish a sector-specific early warning system and a disaster risk management program into the GCF-funded climate information project.		X	X	X	
36	WS-WQ-002-07	Water Security	Continue to develop the water resources and sanitation plans for the outer islands that align with national reclamation plan once that is developed.		X	X		
39	H-ALL-001-07	Health	Strengthen surveillance and monitoring of climate sensitive health risks from the outer islands. Support healthcare facilities to be more climate resilient, incorporating effective prevention and clinical case management of climate-sensitive health risks and DRM-health		X	X	X	

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39	WS-WA-002-03	Water Security	Continue to develop a sustainable and adaptive water and sanitation system for Funafuti (and Tuvalu) by integrating climate resilience and water security within the delivery of the Funafuti Water and Sanitation Project. Actions include: • Engagement in Strategic Planning: Actively participate in the design and development of the Funafuti Water & Sanitation 20-Year Strategic Plan. Ensure the incorporation of the latest climate modeling and forecasting data to guide infrastructure solutions and resilience-building measures, closely aligned with the vision articulated in CP-003. • Advancing the Masterplan and Policy Update: Continue developing the Funafuti Water Supply and Sanitation masterplan, and the Tuvalu National Water and Sanitation Policy to reflect longer-term climate adaptation needs, reclamation goals, and priorities identified in the National Adaptation Plan (NAP). • Community Water Refill Stations: Within the scope of the Asian Development Bank (ADB) Funafuti Water and Sanitation project, plan for and incorporate Community Water Refill Stations. These stations will provide free UV-treated water at various locations, promoting equitable access to clean drinking water for the community. • Infrastructure Innovation: Prioritise forward-thinking infrastructure solutions that integrate water efficiency systems and adaptive technologies, fostering sustainability and resilience across all project activities.		X	X		
39	WS-WA-003-08	Water Security	Undertake a feasibility study to assess the viability, benefits, and challenges of additional types of water storage that are suitable for Funafuti in relation to ongoing land reclamation and emerging design options. Findings from this will help to inform CP-003. Including but not limited to: • Potential for suitable types of water retention from the proposed relocation of Int Airport and runway to SW of Funafuti atoll • Potential for coastal resevoir • Investigate the options for grey water systems		X	X		
41	CI-ES-002-13	Critical Infrastructure	Design, finance, and deploy a comprehensive capacity-building program tailored to the energy sector. This program will identify redundancy requirements and succession plans for key technical roles.		X	X		
41	F-ALL-001-04	Fisheries	Establish a program dedicated to preserving and documenting traditional fishing techniques, farming practices and food preservation techniques. This program will provide skill-building opportunities, access to resources, and financial support to enhance women's participation and leadership in the fisheries and farming sector. By systematically capturing and recording traditional practices, the initiative will safeguard cultural heritage, foster knowledge sharing across generations, and promote sustainable fishing practices.			X		
43	F-CF-001-05	Fisheries	Develop a national locally managed marine areas (LMMA) strategy to scale-up and optimise the delivery of services to the communities sustainably.		X	X		
43	F-CF-002-06	Fisheries	TFD continue work with Kaupule, fishers' associations, and other stakeholders to develop and implement coastal fishery management plans and by-laws to optimise resources and regulate harvesting of key species in each of the outer islands.		X	X		
43	H-SOC-001-08	Health	Update the cultural policy with objectives to manage internal migration. (Link to Coastal Protection CP-003)			X		X

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43	WS-WA-004-09	Water Security	Develop water and sanitation masterplan for the outer islands that reduces the climate vulnerabilities associated with high emission scenario.		X	X		X
47	A-CP-003-05	Agriculture	Establish a program that focuses on Revitalizing Home Gardening & Resilient Agriculture to improve self reliance and Resilience of Communities. Initial actions include: • Design and installation of demonstration sites for climate-resilient home gardening food systems, and the development of supporting toolkits. • Establish new policies or revise existing ones to integrate ecosystem-based approaches and climate-resilient methods into agricultural frameworks. • Design and deploy a targetted program of roof-catchment drip irrigation systems and rainwater tanks to collect water for pulaka pits and home gardens. • Development and approval of whole Island Agro-ecosystem Action Plans (IAEAP) prepared, in the context of Islands Strategic Plans (ISP) for each island. • Upgrade and/or installation of nurseries in the outer islands to diversify crop production, including use of Elisefou Agriculture Station on Vaitapu (refer A-CP-008 below).		X			
47	CI-T-004-14	Critical Infrastructure	Monitor Outer Islands Maritime Infrastructure Project and take note of lessons learned and opportunities to improve future projects			X		
49	A-CP-004-06	Agriculture	Revive the Funafuti Produce Market for communities to sell their surplus fruits and vegetables and to incentivise home gardening and localisation of food supply. Initial actions include: • Conduct an assessment to identify current gaps and opportunities for the produce market, optimal location and operation • Collaborate with community leaders to establish trust and promote inclusivity in the market operations • Identify and secure funding or partnerships with relevant stakeholders • Repair or upgrade market facilities, including stalls, storage spaces, and waste disposal systems, to ensure they are safe, functional, and resilient.		X	X		
49	CI-BS-004-15	Critical Infrastructure	Monitor the ongoing work for the building code to ensure it adequately address the current and future climate hazards.		X	X		
51	A-CP-005-07	Agriculture	In partnership with appropriate partners (SPREP, SPC etc) design and establish research programs for the following: • Trial and assessment of climate-resilient crops that may be suitable for Tuvalu's conditions (e.g. salt tolerant pulaka). • Trial and assessment of appopriate pest management approaches and control of invasive species. • Support community-led invasive species control and ecosystem rehabilitation to restore ecological resilience.		X	X		
52	WS-WD-001-10	Water Security	Conduct a water demand assessment to analyse current and projected water usage in all of Tuvalu. This study will identify consumption patterns, evaluate the sufficiency of existing water supply systems, and forecast future water requirements based on population growth, economic development, and climate projections. The findings will guide development of CP-003 and other Water Security activities.		X	X		

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53	CI-T-005-16	Critical Infrastructure	Prepare International Airport on Funafuti Master Plan for relocation to longterm safe location: • Undertake pre-feasibility study to identify and highlight red flags, including considerations for cross winds and tidal influences, material source, marine construction challenges, etc. • Undertake detailed feasibility studies, including site investigations for geotechnical works, operational safety considerations, environmental & social impact screening, sustainability of activities and infrastructure, ensuring existing challenges and climates risks do not persist. • Conduct a cost-benefit analysis to evaluate economic and financial feasibility of project. • Planning and stakeholder consultation to support activity. • Proposal development for funding • Detailed design of reclamation and relocation works, • Complete environmental and social impact assessment (ESIA) and acquire required approvals.		X	X		X
54	CP-006-06	Coastal Protection	Initiate a comprehensive review, design and establishment of a National Coastal Agency that will be the centralized body to coordinate, and implement national reclamation and urban development activities associated with the longterm survival pathways for Tuvalu. This Agency will be tasked with overseeing the design, implementation, and management of projects including coastal reclamation and development, associated infrastructure, and community and stakeholder engagement.			X	X	
55	CP-007-07	Coastal Protection	Review and modernise (as requried) domestic public policies to allow for large-scale development in relation to land reclamation and coastal protection, replace outdated policies, improve government responsiveness and ability to manage and effectively deliver projects.			X		
56	H-MH-002-09	Health	Revise and enhance the National Gender Equity Policy (2024) to integrate the recognition and mitigation of climate and natural hazard-induced gender-based violence (GBV) risks affecting women and children. This update will prioritise the inclusion of preventive measures, response frameworks, and capacity-building initiatives to strengthen resilience and safeguard vulnerable populations against the compounded impacts of environmental challenges and GBV.		X	X		X

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57	DRR-EC-001-02	Disaster Risk Reduction and Management	Develop and implement a comprehensive Evacuation Centre Management and Maintenance Plan to enhance the safety, functionality, and preparedness of facilities during disaster events. This national policy aims to safeguard the well-being of affected communities by ensuring that evacuation centres are well-maintained and readily available for use when needed. Key actions include: • Formalizing Collaborative Governance: Partner with the Island Disaster Committee to establish a Memorandum of Understanding (MoU) that outlines shared responsibilities and fosters a long-term, collective commitment to the upkeep of evacuation facilities for the benefit of all communities. • Constructing Multi-Purpose Shelters: Design and construct up to eight multi-purpose evacuation shelters across islands, incorporating critical infrastructure such as water catchment and storage systems, as well as solar photovoltaic technology to ensure self-sufficiency and resilience. • Retrofitting Existing Public Facilities: Explore viable options to retrofit schools and other public buildings in Tuvalu, converting them into cyclone-resistant evacuation centres. Where feasible, integrate water catchment and storage systems along with solar photovoltaic solutions to enhance their functionality during emergencies.		X	X	X	
58	DRR-ALL-001-03	Disaster Risk Reduction and Management	Develop and launch a comprehensive Public Communication Program focused on disaster and climate risk early warning systems. This program will emphasize equitable access to information, inclusive preparedness measures, and community empowerment, fostering heightened public awareness and enabling effective responses to disaster risks and climate challenges. Key actions include: • Ensuring Inclusive Communication: Develop and disseminate early warning system information in multiple formats, including translations into local languages, sign language interpretation, and materials in Braille, to ensure accessibility for individuals with disabilities and diverse linguistic needs. • Conducting Nationwide Public Awareness Campaigns: Develop and implement a comprehensive public education initiative to raise awareness of climate hazards and risks, focusing on building community resilience and promoting proactive preparedness measures.			X	X	
59	CP-008-08	Coastal Protection	Assess feasibility of, design and implementation of targetted NbS, and EbA projects (identified in CP-003) for outer islands that require short-term coastal protection and would contribute to long-term ecosystem conservation (links to F-Bio-002)		X	X		X
60	H-SOC-002-10	Health	Comprehensively include Cultural Heritage into Loss & Damage policies, and as required develop a distinct Preserving Cultural Heritage Plan			X		X

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61	DRR-ES-002-04	Disaster Risk Reduction and Management	Design and deploy an integrated system for Disaster Preparedness that enhances climate resilience and disaster preparedness by strengthening monitoring and forecasting capabilities, ensuring rapid mobilization of resources, and improving emergency response systems to mitigate the impact of climate shocks and disasters.Key actions include: • Capacity Building for Monitoring and Forecasting Systems: Invest in the enhancement of equipment, infrastructure, and technical support to strengthen monitoring, ocean and climate modeling, and impact-based forecasting. This will ensure accurate and timely data to inform decision-making. • -evelopment of Multi-Hazard Early Warning Systems: Establish and implement robust multi-hazard early warning systems, incorporating impact-based forecasting to effectively communicate risks and facilitate preventative measures. • Forecast-Based Financing Mechanism: Establish a forecast-based finance (FbF) system to enable the rapid mobilization of funds and implementation of pre-planned, anticipatory actions ahead of climate shocks, minimizing potential losses and damages.			X	X	
61	WS-WD-002-11	Water Security	In alignment with CP-003, urban design practices will prioritize the incorporation of indigenous species and carefully selected introduced plantings, with a focus on hardwood trees to enhance shade provision and cooling effects, particularly in reclaimed land areas. This approach will foster climate resilience, support biodiversity, and improve urban livability, potentially leading to reduction in water demand		X	X		
61	WS-WD-003-12	Water Security	Continue awareness programmes to drive behavioural change related to water conservation.			X		
61	WS-WI-004-13	Water Security	Linked to CP-003: Align the planned reticulation network works within the ADB Funafuti Water and Sanitation Project within the Reclamation Framework to ensure compatibility with future land developments, to maximise opportunity for water storage and supply.		X	X		
65	H-PH-003-11	Health	Undertaking syndromic surveillance, spraying of households and community education activities					
66	WS-WA-005-14	Water Security	Continue construction of groundwater infiltration galleries where a usable freshwater lens exists. Support continued technical and social monitoring of these, and support financing for future investment as needed .		X	X		
67	A-CP-006-08	Agriculture	Establish an integrated agriculture revitilisation program to enhance agricultural resilience across islands by leveraging traditional knowledge, modern technologies, and ecosystem-based solutions. Initial actions include: • Rehabilitation of 30 ha of pulaka pits across 8 islands using traditional knowledge, modern technologies, and ecosystem-based solutions • Targeted program to rehabilitate coconut plantations at selected sites. This will include investigation into success/ lessons learned from previous plantations to enhance rehabilitation efforts.		X	X		
67	WS-WQ-003-15	Water Security	Continue support for development and implementation of planned aquifer management plans and, aquifer and coastal monitoring programs		X	X		
69	A-L-003-09	Agriculture	Improve biosecurity measures to safeguard livestock and crops from invasive species by establishing locally appropriate scale bio-security centres at outer islands that follow sustainable agriculture practices.		X	X		

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70	DRR-ES-003-05	Disaster Risk Reduction and Management	Investigate options for effective mix of communication equipment in support of strengthened communication between islands during disaster and State of Emergency.			X	X	
70	H-INF-003-12	Health	strengthen the healthcare capacity and emergency response capabilities in Funafuti by investing in innovative and adaptable health infrastructure solutions to address current and future challenges. Initial actions include: • Land Assessment and Development for Backup Healthcare Facilities: Investigate and secure suitable land on Funafuti for establishing a backup hospital or mini-health center. This facility will serve as an essential resource for maintaining healthcare services during emergencies or disruptions. • Exploration of Mobile Clinics for Emergency Response: Evaluate options for deploying mobile clinics equipped for rapid emergency response in remote or underserved areas, ensuring immediate access to critical healthcare services. • Feasibility Study of Portable Health Clinics and Hospital Ships: Assess the practicality and effectiveness of portable health clinics and hospital ships as innovative solutions to expand healthcare coverage and provide flexible support during disaster scenarios.		X	X	X	
72	H-ALL-002-13	Health	Strengthen the capacity of health workers and coordination capacity of the MoH and other ministries to manage climate-sensitive health risks and disaster risk management in health			X	X	
73	A-CP-007-10	Agriculture	Development of the National Food Systems and Nutrition Policy to promote integrated approaches to food security taking into account climate change impacts and resilience.		X	X		
73	H-PH-004-14	Health	Integrate meteorological and climate early warning information into health information systems (HIS). This work links with the detailed activities in DRR-ES-001		X	X	X	
75	DRR-ALL-002-06	Disaster Risk Reduction and Management	Expand the cohort of National Emergency Response personnel that are trained and certified.			X	X	
76	WS-WQ-004-16	Water Security	Monitor the designs of the coastal protection measures for the septage treatment design to assess if it may be addressing the 2050 climate risks associated with inundation and coastal erosion.		X	X		

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77	DRR-ALL-003-07	Disaster Risk Reduction and Management	Conduct a comprehensive review and modernization of the Emergency Response Management regulatory and operational framework, with the goal of enhancing acute response capabilities and ensuring the safety and resilience of all communities. Initial actions include: • Enhancing Governance and Responsibilities: Review and update the Disaster Risk Reduction and Management (DRR/M) Governance Response Framework to clarify and strengthen roles and responsibilities across all levels of government. • Streamlining State of Emergency Declarations: Reassess and amend the State of Emergency declaration process to facilitate the swift and efficient mobilization of international resources during crises. • Strengthening the National Disaster Management Office (NDMO): Redefine and reinforce the NDMO's responsibilities to ensure effective coordination of whole-of-government disaster preparedness, response efforts, and real-time monitoring. • Implementing Emergency Inventory Management: Develop and deploy a centralized emergency inventory management system to optimize the availability and distribution of critical resources. • Establishing a Dedicated Disaster Coordination Group: Enhance disaster preparedness and response capabilities by reinforcing a specialized disaster coordination group, equipped with clear mandates and dedicated resources. • Formalizing a National Assessment and Response Team: Secure approval from the Cabinet and the National Disaster Committee (NDC) to institutionalize the formation of a National Assessment and Response Team. This team will ensure a coordinated, well-trained, and comprehensive approach to addressing disaster risks and safeguarding communities.			X	X	
78	F-CF-003-07	Fisheries	Increased use of SPC-FAME data management systems for coastal fisheries, and improved evaluation and communication of the analytics it provides.			X		
79	F-CF-004-08	Fisheries	Continue fisheries related research and monitoring of the environment (toxicity, fish stocktake, coastal management and LMMAs)		X	X		
80	F-OF-001-09	Fisheries	Upgrade existing database to capture data on the status of inshore/coastal and offshore marine resources (including regeneration and harvesting levels) for planning and informed decision making and improve accessibility to all fisheries stakeholders.			X		
80	H-PH-005-15	Health	Undertake a short survey to get more recent data on islands with mosquito breeding issues and prepare a corrective action plan.		X	X		
80	H-SOC-003-16	Health	Develop national systems and a heritage register for Tangible Cultural Heritage (TCH) protection (link to FS-ALL-001)			X		X
80	F-OF-001-09	Fisheries	Upgrade existing database to capture data on the status of inshore/coastal and offshore marine resources (including regeneration and harvesting levels) for planning and informed decision making and improve accessibility to all fisheries stakeholders.			X		

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83	A-L-004-11	Agriculture	• valuate the technical, economic, and environmental feasibility of the Saugavaka Piggery Project. • pprove and implement the Saugavaka Piggery Project to advance climate-resilient agricultural practices through the construction of a communal piggery with safe and resilient housing for pigs. Incorporate biogas and compost production digesters alongside large roof areas for solar energy and rainwater harvesting. • onduct detailed site assessments to determine the optimal location for the communal piggery (on Funafuti or as part of the Elisefou development on Vaitupu). Elisifou option has advantages for the use of residual biosolids for agricultural production and isolating odour from main population centres. • ollaborate with local stakeholders, including community leaders and environmental experts, to integrate traditional knowledge and modern practices into the design. • repare a comprehensive funding proposal	X	X	X		
84	F-INF-003-10	Fisheries	Develop new fisheries buildings: hatchery, training centre, store, boatshed, with renewable energy supply where possible.		X	X		
84	F-OF-002-11	Fisheries	Monitor the progress of GCF-Conservation International Project and take note of any valuable lessons learned.			X		
86	F-CF-005-12	Fisheries	Monitor implementation of Pacific Islands Regional Oceanscape Program - Second Phase for Economic Resilience (PROPER) Project and take note of lessons learned and opportunities to improve future projects.			X		
87	H-SOC-004-17	Health	Support community-based heritage initiatives and establish a National Culture Centre and museum (links to FS-ALL-001)			X		X
88	F-OF-003-13	Fisheries	Continue to monitor trends of high value species.			X		
89	F-CF-006-14	Fisheries	Continue active use of TUFMAN2 and OnBoard app for Tuna fisheries and longline vessel activity.			X		
90	A-CP-008-12	Agriculture	Development of the National Land Degradation Neutrality (LDN) Strategy and implementation of associated capacity strengthening programmes to assess and manage health of agroecosystems.		X	X		


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