Te Vaka Fenua o Tuvalu
National Climate Change Policy
2021-2030

Image Source: Climate Change Department

Acknowledgements

This National Climate Change Policy, like a traditional vaka that our ancestors built, was crafted by many hands and minds. The policy serves as a canoe for staying afloat in rising seas and by advancing our national priorities, and regional and international commitments on climate change, we paddle together towards a strong and resilient Tuvalu.

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- The European Union through the Intra-ACP GCCA+ Pacific Adaptation to Climate Change and Resilience Building (PACRES) with support from the Secretariat of the Pacific Regional Environment Programme.

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Government of Tuvalu
Climate Change Department
Vaiaku, Funafuti
Tuvalu
Telephone: (688) 20517

Cover image: Government of Tuvalu

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Image Source: Sean Gallagher.

ACRONYMS

AOSIS	Alliance of Small Island States
CANCC	Coalition of Atoll Nations on Climate Change
CCD	Climate Change Department
COP	Conference of Parties
EKT	Ekalesia Kelisiano Tuvalu
ENSO	El Niño Southern Oscillation
FRDP	Framework for Resilient Development in the Pacific
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel on Climate Change
KPI	Key Performance Indicators
NACCC	National Advisory Council on Climate Change
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NDMO	National Disaster Management Office
RCP	Representative Concentration Pathways
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
SPC	Pacific Community
TANGO	Tuvalu Association of Non-Governmental Organisations
TC	Tropical Cyclone
TIVA	Tuvalu Integrated Vulnerability Assessment
TNCW	Tuvalu National Council of Women
TNPSO	Tuvalu National Private Sector Organisation
TRCS	Tuvalu Red Cross Society
TSF	Tuvalu Climate Change and Disaster Survival Fund
UNFCCC	United Nations Framework Convention on Climate Change

FOREWORD

Tuvalu is a Small Island Developing State (SIDS) with a total land mass of 26 square kilometres, surrounded by more than one million square kilometres of ocean. Our geographical, geological and socioeconomic conditions make our islands extremely vulnerable to the adverse effects of climate change and disasters.

Our people are already experiencing the impacts of the changing climate. Several recent and severe climate-related events, such as Tropical Cyclones Pam (2015) and Tino (2020) and the recurrence of reduced rainfall and water shortages, have threatened our lives, property, crops, livestock and livelihoods, and worst of all, our very existence. The recent Intergovernmental Panel on Climate Change (IPCC) special report states clearly that if no ambitious actions are taken to reduce global greenhouse gas emissions, we will find ourselves in a dangerously warmer world, with global temperatures reaching 1.5 °C above pre-industrial levels as soon as 2030.

The climate crisis – a term accepted by Pacific Islands Forum leaders in Funafuti last year – is a reality for all of us who call Tuvalu home. Another crisis marked 2020: the COVID-19 pandemic, which exposed the vulnerability of Tuvalu and other SIDS to multiple and concurrent risks. With our health systems under-resourced and poorly equipped, Tuvalu would not have been able to cope with an outbreak of the scale as seen in other, developed countries such as Australia and New Zealand. We acted quickly, declared a State of Emergency and enforced strict social restrictions, including suspending entry to our island home. This decisive action saved lives.

What became evident from the COVID-19 response is how deeply we are connected with the rest of the world - the actions of one country can and did have a huge life-saving impact on another. Similarly, the same can be said for how we should address the problem of climate change. This is a slow and devastating global crisis, affecting many millions of people, claiming the lives of many thousands each year and leaving us in a constant state of uncertainty. More than ever, countries need to listen to the science and act boldly and swiftly to curb their greenhouse gas emissions for the greater good of all people, society and the environment worldwide.

The Government of Tuvalu remains firmly committed to the United Nations Framework Convention on Climate Change and its related processes, as well as the Sustainable Development Goals. This policy represents our ongoing commitment and efforts to end the global climate crisis. Climate change is the greatest priority articulated in our National Strategy for Sustainable Development 2021-2030 *Te Kete* and work is already underway to prepare Tuvalu's updated Nationally Determined Contribution and the National Adaptation Plan.

I sincerely thank the team from the Climate Change Department for facilitating the development of this policy and the diverse stakeholders for contributing to this important policy document.

Honourable Seve Paeniu
Minister for Finance

1. INTRODUCTION

The islands of Tuvalu are extremely vulnerable to the impacts of climate change, some of which include rising sea levels, extreme weather events, king tides, inundation and coral bleaching. Our climate change plight has not been invisible nor unheard: we have provided a strong voice on climate action. A voice that has echoed clearly and decisively across the world for many years. Climate change is impacting our livelihood - our communities have to endure the changes that come with additional challenges to everyday living. It is in response to this very threat that the government is dedicating its efforts and resources to enhance the capacity of our people and natural ecosystems to adapt to climate change impacts and in turn, build the long-term resilience of our islands.

A participatory appraisal of 14 communities across nine islands of Tuvalu was conducted between 2017 and 2020 to identify vulnerabilities in human security and livelihood sectors. The Tuvalu Integrated Vulnerability Assessment found that the top vulnerability issues for the island communities are ecosystems health, security of place, water security, food security and income security.

This National Climate Change Policy 2020-2030, *Te Vaka Fenua o Tuvalu*, has been developed to respond to the needs of our people. The policy advances our national priorities set out in the National Strategy for Sustainable Development 2021-2030 Te Kete, some of which contribute towards addressing regional and international commitments on climate change. The policy draws on evidence and findings from numerous assessments, including the review of the previous climate change policy and its strategic plan of action in 2016 and the nation-wide consultations on the initial framework for this policy in 2018. The National Advisory Council on Climate Change (NACCC) played an important role in both processes by providing strategic guidance and technical advice to the Climate Change Department (CCD). Island leaders and communities, including the Falekaupule, Kaupule, women, youth and people with disabilities, made valuable contributions and recommendations. This policy is an articulation of the voices, aspirations and actions of the people of Tuvalu.

Tuvalu's Climate Future 2030

The next ten years (2020-2030) is a critical window for Tuvalu to prepare for and adapt to the impacts of climate change (see information in Annex 1). Unless steps are taken globally to significantly curb GHG emissions, Tuvalu's future climate, based on global climate models, is projected to:

- **Increase in mean annual temperature (very high confidence).** Under all RCP used by the IPCC, global climate models project a warming of surface air temperature by up to 1 °C for Tuvalu by 2030, relative to the 1995 reference period. A very high emissions scenario (RCP8.5) will see annual mean temperatures in Tuvalu increase by up to 1.9 °C by 2050 (refer to Table 1).

- **Increase in extremely high temperatures (very high confidence).** The temperature of extremely hot days (1-in-20 year occurrence) is projected to increase by approximately 0.5 °C by 2030 under a very low emissions scenario (RCP2.6) and 0.7 °C under a very high emissions scenario (RCP8.5). The frequency of extremely hot days is also likely to increase.

- **Continued rise in mean sea level (very high confidence).** Sea levels are projected to rise by approximately 7-18 cm by 2030 (Table 2). Global climate model projections vary in range as there is uncertainty surrounding the contribution of the Antarctic ice-melt to sea level rise. Recent IPCC research indicates that ice sheet loss from Antarctica is accelerating. This has implications on Tuvalu as the rise in sea levels for 2050 and 2090, particularly under the very high emissions scenario (RCP8.5), is much higher than previously projected (as shown in Tables 2 and 3).

- **Increase in the risk of coral bleaching (very high confidence).** Under a long-term mean increase in sea surface temperature (SST) of 1 °C relative to 1982-1999 period, the average severe bleaching risk event will last for 10.5 weeks and the average interval between two such events will be 1.3 years, which limits the ability for corals to recover. The likelihood is elevated with an increase in SST of 1.5 °C: the average severe bleaching risk event will last 5.8 months and reoccur 6.8 months later.

- **Increase in the frequency and intensity of extreme rainfall (high confidence).** Under a very high emissions scenario (RCP8.5), the current 1-in-20 year daily rainfall amount is projected to increase by 5 mm by 2030. No change is expected in the 1-in-20 year daily rainfall amount under the very low emissions scenario (RCP2.6) for the same period. However, it is unclear whether there will be any changes to the average annual rainfall and frequency of drought due to low confidence in the magnitude of rainfall projections.

- **No apparent change in the number of tropical cyclones (TC) forming within a 200-500 km radius of Tuvalu.** However, TC occurrence is projected to become more frequent during future El Niño periods and less frequent during future La Niña and neutral periods, due to global warming (relative to present El Niño and La Niña events). TC-induced impacts over Tuvalu are likely to be elevated during future El Niño events where TC numbers, as well as intensity, are projected to increase.

- **Decline in aragonite saturation state (very high confidence).** Under a very high emissions scenario (RCP8.5), the aragonite saturation state decreases to borderline conditions (3.5) around 2030 then it sharply declines to stressful conditions (<3.0). Organisms with calcium carbonate structures, such as corals, are likely to survive and reproduce when the aragonite saturation state is greater than 3.0. Ocean acidification will continue in parallel with the rising CO2 concentrations in the atmosphere.

2. Policy Framework

The responsibility of this policy rests with the CCD. The Department will work with other ministries, departments, Falekaupule, Kaupule, non-governmental organisations and the community to apply and implement this policy in a coherent manner. Additionally, risk-informed decision making based on scientific, traditional and local sources of knowledge is integral to effective responses and actions on climate change. The Department will work in collaboration with key stakeholders to ensure the ongoing implementation of this policy is informed by best available science and information relevant to the Tuvalu context.

2.1 Policy Vision

A strong and resilient Tuvalu that protects the identity, culture and existence of our people and meets our commitment to environmental sustainability.

2.2 Policy 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 by 2030.

2.3 Policy Outcomes

There are three priority outcomes of the policy:

- **Policy Outcome 1:** Strengthened access to climate finance and strategic partnerships (2 objectives and 7 priority actions).
- **Policy Outcome 2:** Reduced vulnerability to climate change impacts through enhanced resilience (8 objectives and 26 priority actions); and
- **Policy Outcome 3:** Managed human mobility and protection of national sovereignty (2 objectives and 7 priority actions).

The policy has a total of 12 objectives and 40 priority actions.

2.4 Policy Guiding Principles

The following principles will guide the implementation of this policy:

1. Promoting and respecting the fundamental rights and freedoms of the people of Tuvalu, and our inseparable connection to our ancestral lands and ocean territories;

2. Adhering to the principle of precautionary approach in which the absence of full scientific certainty about the adverse effects of climate change is not used as a reason for not acting to prevent or minimise the potential adverse effects or risks to our natural environment, health and wellbeing;

3. Empowering communities, stakeholders and leaders to make informed, educated and locally-driven decisions through the delivery of consistent, reliable and timely information that draws on both scientific and traditional knowledge;

4. Advancing gender equality and social inclusion through climate actions that remove social inequalities and address the different vulnerabilities, capacities and contributions of men, women, youth, children and marginalised groups;

5. Appreciating the importance of accountability, transparency and strong partnerships at all levels (international, regional, national, island and community) and across all ministries and sectors to achieve the vision and goal of this policy;

6. Recognising the need for enhancing human, financial, technical and organisational capacity to identify and manage climate and disaster risks at national, island and community levels;

7. Encouraging the transfer of appropriate, proven, affordable and cost-effective technology that can be owned, operated and maintained by our people; and

8. Acknowledging our international obligations under the UNFCCC and related agreements on climate change and the environment.

2.5 Linkage to National Legal and Policy Frameworks

Tuvalu's National Strategy for Sustainable Development 2021-2030 *Te Kete* identifies climate change and disaster resilience as a matter of national priority. Under Strategic Priority Area 1: Enabling Environment, Outcome 4 underscores the importance of climate change adaptation, disaster risk management and access to finance in increasing Tuvalu's long-term resilience. This policy is aligned with the national vision and strategic outcomes of *Te Kete*.

The United Nations Framework Convention on Climate Change (UNFCCC) commitments are enacted into domestic law through the Climate Change Resilience Act 2019. The Act provides the legal basis for Tuvalu's climate change response and transition to a climate resilient and lower carbon future.

- The Tuvalu Climate Change and Disaster Survival Fund Act 2015 and Regulations 2017;
- The Energy Efficiency Ac and Regulations 2015;
- The Environmental Protection Act 2008 and the Environmental Protection (Environmental Impact Assessment) Amendment Regulations 2017;
- The National Disaster Management Act 2008;
- The Falekaupule Act 2008;
- The National Energy Policy 2009-2023;
- The Master Plan for Renewable Electricity and Energy Efficiency 2012-2020;
- The Integrated Water and Sanitation Policy 2012 – 2021
- Implementation Plan for Water and Sanitation
- The Island Strategic Plans; and
- The Intended Nationally Determined Contribution (NDC) 2015. Tuvalu is currently reviewing its NDC timeframe beyond 2025.

This policy is developed in accordance with Section 21 of the Tuvalu Climate Change Resilience Act 2019 and it replaces all prior government policies on climate change. A National Adaptation Plan (NAP) and a road map for the NDC will be prepared to support the implementation of climate change adaptation and mitigation goals of this policy.

Image Source: Deep Illusion

> **This is a slow and devastating global crisis, affecting many millions of people, claiming the lives of many thousands each year**

Image Source: Climate Change Department

3. Policy Outcomes and Objectives

This section presents the policy's three priority outcomes and objectives.

Priority Outcome 1: Strengthened access to climate finance and build strategic partnerships

Policy Statement:

Tuvalu's adaptation efforts require global, regional and local partnerships and financing mechanisms based on flexibility and transparency. We will continue to foster and deepen alliances with nations and territories committed to climate action and keeping global temperature rise to 1.5 0C above pre-industrial levels.

Climate Finance

We are one of the first countries to sign the Financing Framework Agreement to access funds from the Green Climate Fund for coastal protection. We are also one of the few countries to have a national fund dedicated to climate change. The Tuvalu Climate Change and Disaster Survival Fund (TSF) was established by the government in 2015 to finance initiatives that assist our people to adapt, recover and rehabilitate from climate change and disaster impacts. Tuvalu obtained streamline accreditation to the Adaptation Fund in 2019. However, greater levels of financing and technical support are needed to directly access finance for combating climate change.

Policy Objective

1.1 To enhance government, private sector and civil society access to climate finance

Priority Actions

1.1.1 Enable Kaupule and civil society organisations to access climate finance through improved capacity in strategic planning, financial management and project implementation

1.1.2 Develop robust and transparent systems for accessing, managing and monitoring climate finance, including improved institutional procedures for project management, risk assessment, environmental and social safeguards, gender and social inclusion

1.1.3 Attain Direct Access Entity accreditation to the Green Climate Fund and full National Implementing Entity accreditation to the Adaptation Fund

1.1.4 Achieve continued and diversified investment in and the growth of the Tuvalu Survival Fund

Strategic Partnerships

We have strong alliances with other island countries and territories, our development partners, multilateral institutions, regional organisations, the private sector and academia to advance our adaptation and resilience building efforts and to hold countries accountable to their Paris Agreement commitments. We will continue to foster and deepen collaborative partnerships, forge new strategic alliances and play an active role at regional and international forums on climate change.

Policy Objective

1.2 To lead and galvanise global and regional partnerships on climate action

Priority Actions

1.2.1 Mobilise and secure bilateral and multilateral support and investment towards scientific research and resilience building in Tuvalu

1.2.2 Enhance donor assistance and commitment towards technology and skills transfer in the areas of climate modelling, multi-hazard mapping, coastal inundation modelling, sector-specific emission estimation and coral reef monitoring

1.2.3 Strengthen existing alliances and continue to be an influencing member of the Alliance of Small Island States (AOSIS), the Least Developed Countries (LDC), the Pacific Islands Forum, the Polynesian Leaders Group (PLG) and the Coalition of Atoll Nations on Climate Change (CANCC) to advance our national priorities on climate change

Image Source: Sean Gallagher.

Priority Outcome 2: Reduced vulnerability to climate change impacts through enhanced resilience

Policy Statement:

Climate change poses direct threats to our people and our livelihoods. Enhancing resilience, adaptive capacity and scaling up adaptation activities in vulnerable sectors including agriculture, fisheries, water, health, coastal areas, settlements, natural environment and infrastructure are a must for the survival of our people.

Adaptation Planning

Scientific evidence, local knowledge and contributions from stakeholders in key sectors, Falekaupule, Kaupule and communities are critical to inform adaptation decisions that will address our immediate needs and inform planning for the medium- and long-term. What adaptation options we have now and in the future, relies on robust assessments, timely information and management and knowledge sharing. In addition, systematically reducing our vulnerability to climate change requires participatory and collaborative processes to increase national ownership of adaptation interventions. Factors independent of climate change, such as social inequity and poverty, which influence community vulnerability and are multipliers of climate risks must be considered to increase the adaptive capacity of women, youth, people with disabilities and other vulnerable groups.

Policy Objective

2.1 To fully coordinate and integrate climate and disaster risks and adaptation actions into legislation, policies and decision-making processes at all levels

Priority Actions

2.1.1 Develop and implement a National Adaptation Plan (NAP) that articulates actionable and costed plans for addressing long-term adaptation needs

2.1.2 Mainstream climate change and disaster risks, and adaptation actions into national and sectoral policies and budgets

2.1.3 Strengthen the capacity of government and island Kaupule to collect, analyse, manage, store and apply climate and technical data, traditional and local knowledge, and information on women, youths, people with disabilities and vulnerable groups

2.1.4 Develop and implement multi-hazard early warning systems

2.1.5 Produce and disseminate customised and timely meteorological and climate change information to decision makers, development sectors and communities

2.1.6 Strengthen Tuvalu-specific research and scientific evidence on the impacts of climate change on human and natural ecosystems

Agriculture

Subsistence agriculture is the mainstay of food security and livelihoods for our people. Poor soil fertility, lack of land and limited water resources already make agricultural production extremely challenging. Climate change impacts such as saltwater intrusion, coastal flooding and erosion, extreme heat, prolonged dry spell and agricultural disease are likely to exacerbate this situation. The decline in traditional crops like *pulaka* (swamp taro), coconuts, banana, pandanus and breadfruit has adverse impacts on our health and cultural wellbeing.

Policy Objective

2.2 To enhance household food security and climate-resilient agricultural practices

Priority Actions

2.2.1 Invest and support innovative farming practices and planting of climate-resilient crop varieties that are appropriate for Tuvalu's conditions

2.2.2 Promote traditional and new methods of food storage, cooking and preservation for households

2.2.3 Develop a national strategy for improving domestic agriculture and food value chains

2.2.4 Implement a national coconut tree afforestation and reforestation scheme

Fisheries

The health of the oceans is paramount to the existence of Tuvalu and our people. Commercial fisheries accounts for nearly half of our Gross Domestic Product. Marine ecosystems in Tuvalu are already susceptible to coral bleaching, overfishing, pollution and biodiversity loss. The increase in sea temperature and climate extremes will place these ecosystems in greater danger. Adaptation efforts in the fisheries sector need to strike a sustainable balance between meeting social and economic needs and enhancing the health and biodiversity of our oceans.

Policy Objective

2.3 To protect marine biodiversity and to sustainably manage ocean resources

Priority Actions

2.3.1 Legislate and expand marine conservation areas in all islands of Tuvalu

2.3.2 Strengthen monitoring, surveillance and regulation of oceanic and coastal fisheries in accordance with the Marine Resources Act and amendments, Conservation Areas Act, Maritime Zones Act and other relevant legislation and regulations

2.3.3 Improve the management of inshore fisheries and marine resources on each island

Water

Rainwater is the only source of fresh drinking water in Tuvalu. Prolonged dry spells and rainfall variation can have high social and economic costs especially for people in Funafuti due to high population density, scarcity of land and contaminated underground water. Poor maintenance of guttering on buildings, limited water harvesting and storage capacities, low quality building materials and a shortage of qualified tradespeople compromise effective water management in Tuvalu. There is also a lack of clear legislative and operational framework for water and sanitation, including the management and disposal of human and animal waste.

Policy Objective

2.4 To strengthen local community participation in water and sanitation management

Priority Actions

2.4.1 Develop water resource management and sanitation plans for all islands

2.4.2 Improve and expand capture, storage and management of household and communal water supply for all islands through community education and training on water conservation, water quality and installation and maintenance of guttering, cisterns, tanks, desalination plants and other water infrastructure

Health

Our people are at risk of climate-sensitive diseases such as dengue fever, diarrheal illnesses, skin infections, heart disease, malnutrition and diabetes. The impacts of climate extremes and disaster events can have serious consequences on our health and wellbeing due to increased exposure to vector- and water-borne diseases, infections, food and nutrition security and non-communicable diseases. Climate change impacts can also have adverse effects on mental health, physical injuries and deaths from climate extremes and disaster events. Our health systems need to be strengthened to better prepare for and respond to climate-related risks and to protect the most vulnerable including children, adolescents, women, the elderly, people with disabilities and those with underlying health complications.

Policy Objective

2.5 To strengthen and improve existing health sector planning and response to climate-induced health risks

Priority Actions

2.5.1 Integrate climate and disaster risks into health sector planning, budgeting, asset management and service delivery

2.5.2 Strengthen surveillance, monitoring to health risks associated with climate extremes and develop health sector response plans to climate- and disaster-related events

Coastal Management

Almost our entire population lives within few metres of the coast, exposing our homes to strong winds and flooding. Sections of the coastline are lost each year due to erosion and rising sea levels. Coastal protection measures, whether they be ecosystem- or engineering-based, need to be designed and constructed to suit the specific conditions and needs of our islands, whilst preserving environmental integrity and our local cultural values.

Policy Objective

2.6 To promote and protect coastal environments from rising sea levels and the impacts of climate change

Priority Actions

2.6.1 Identify appropriate, proven, cost-effective and site-specific coastal protection measures for all islands

2.6.2 Develop and implement community-led initiatives on coastal management

2.6.3 Implement a land rehabilitation and reclamation framework based on local knowledge systems and latest advances in climate change research

Settlements and Infrastructure

Our essential infrastructure, such as government offices, hospitals and health clinics, churches, schools, community halls, utility services, roads and shops, are highly vulnerable to sea level rise, coastal erosion, seawater inundation, wave overtopping and extreme weather events. As the islands are low-lying and land is scarce, options for location and development of settlements and infrastructure are extremely limited. Integrating climate and disaster risks into land use and infrastructure planning is critical to protect our communities and essential assets from the impacts of climate change.

Policy Objective

2.7 To embed climate and disaster risks into land use management and infrastructure planning

Priority Actions

2.7.1 Develop and implement a national programme to climate-proof buildings and housing against cyclones, storm surge, drought and inundation, and improve their water and energy efficiency

2.7.2 Strengthen institutional capacity of the island Kaupule to minimise and manage climate and disaster risks through improved planning, monitoring and control of land use and building development activities

2.7.3 Apply and enforce environmental and social safeguards to all development projects in Tuvalu

Energy Security

Sustainable energy and green growth are paramount to our resilient future. We will promote the use of renewable energy, and energy conservation and efficiency to improve energy security for all, and to deliver co-benefits for adaptation. We will strive to implement an equitable, accessible, affordable, secure and environmentally sustainable energy system for our communities.

Policy Objective

2.8 To strive for energy security from a sustainable mix of renewable energy sources

Priority Actions

2.8.1 Enhance solar electricity generation and battery storage for all islands

2.8.2 Develop local expertise in the installation, operation, management and maintenance of technically and economically proven technologies for electricity generation

2.8.3 Explore alternative sources of renewable energy for electricity generation

> **As the islands are low-lying and land is scarce, options for location and development of settlements and infrastructure are extremely limited.**

Image Source: Sean Gallagher

Priority Outcome 3: Managed human mobility and protection of national sovereignty

Policy Statement:

Protecting the security of our people and our way of life from the risks of climate change is a necessity not a choice. The rights of people displaced by climate change must be safeguarded, along with Tuvalu's perpetual ownership of and access to land and ocean territories.

Climate Insecurity

The multi-faceted challenges posed by climate change affects the ongoing security of our country. At the current rate, there is high confidence that average global temperatures are likely to increase by 1.5°C as early as 2030[2]. This underscores the imminent possibility of the islands in Tuvalu becoming inhabitable. Addressing the issue of climate insecurity requires a human rights based approach to climate-induced migration and displacement at all levels that provides for the safe movement of our people and their full and meaningful participation in new cultures and societies. Our people's right to make their own choices should also be respected and promoted.

Policy Objective

3.1 To protect the rights of Tuvaluan people and ensure their safe movement

Priority Actions

3.1.1 Increase and expand opportunities for Tuvaluans to participate in international labour mobility schemes

3.1.2 Expand scholarships for Tuvaluans to obtain vocational qualifications in construction trades, hospitality, child and aged care, and other industries experiencing labour shortages in other countries

3.1.3 Develop a national plan that provides durable options for people and communities affected by climate-induced displacement

3.1.4 Advocate and support the establishment of international legal frameworks on the rights of persons displaced by climate change

National Sovereignty

The identity and culture of our people are intimately connected to our land, ocean, skies and the environment. Even with widespread adaptation efforts, some impacts of climate change cannot be avoided. There is a need for innovative solutions and financing mechanisms to protect permanent and non-economic losses from adverse impacts of climate change.

Policy Objective

3.2 To safeguard Tuvalu's identity, cultural heritage and territorial sovereignty

Priority Actions

3.2.1 Advocate for the establishment and operationalization of regional financing instruments for managing climate risks, including the Pacific Islands Climate Change Insurance Facility

3.2.2 Identify loss and damage associated with climate change impacts in all adaptation projects and programs, and risk management processes of government

4. Policy Implementation

This policy is accompanied by an implementation plan. The plan identifies responsible agencies and key performance indicators for each priority action. Related existing initiatives and corresponding global and national targets (i.e. *Te Kete,* SDGs and UNFCCC Paris Agreement) are also identified.

The implementation plan provides broad guidance to the formulation of the NAP and the NDC Road Map. These documents will be separately developed to provide more detailed activities for achieving the outcomes of this policy. Relevant sector-specific policies and action plans also provide precise activities that link and contribute to achieving the objectives and outcomes of this policy.

The policy needs to be adequately resourced for it to be translated into action. Accordingly, the Ministry of Finance and CCD are tasked with the responsibility of allocating proper budgets and staffing, and building the organisational capability required for this policy through budget appropriation and aid financing mechanisms.

4.1 Institutional Arrangements

CCD has the overall responsibility for this policy. It will work with other ministries, departments, Falekaupule, Kaupule, non-governmental organisations and the community to support policy implementation.

The policy implementation will be coordinated through the NACCC. Comprising of senior and technical officers across government and non-governmental organisations, the NACCC is well placed to oversee the implementation of this policy and to ensure its goal, objectives and outcomes are incorporated into the operational plans and annual budgets of relevant departments and organisations. The functions of the NACCC are stipulated in Sections 19 and 20 of the Climate Change Resilience Act 2019.

As a national focal point for climate change and being the Secretariat for the NACCC, the CCD will provide guidance and support to relevant stakeholders in implementing this policy in accordance with Sections 15, 16, 21 and 22 of the Climate Change Resilience Act 2019.

All new climate change projects and funding opportunities at the national level, whether they are locally or externally driven, will be appraised by NACCC and CCD to ensure they align and contribute to the implementation of this policy.

Island Kaupule play a key role in implementing this policy within their areas of jurisdiction. The Island Strategic Plans contain specific island-level priorities and objectives on climate change, which are strongly linked to this policy. CCD staff will work closely with the Ministry of Local Government, Island Kaupule and communities to coordinate the implementation of this policy.

Civil society, including community groups and faith-based organisations, and businesses are also instrumental to policy implementation.

The NACCC membership includes the Tuvalu Association of Non-Governmental Organisations (TANGO), Tuvalu Red Cross Society (TRCS), Ekalesia Kelisiano Tuvalu (EKT), Tuvalu National Council of Women (TNCW) and Tuvalu National Private Sector Organisation (TNPSO). Through NACCC and other arrangements, CCD is committed to collaborating with and supporting these organisations to implement climate change initiatives that align with the goal and outcomes of this policy.

Figure 1. Institutional arrangements and mechanisms for policy implementation

4.2 Monitoring, Reporting and Review

The CCD within the Ministry of Finance will be responsible for monitoring and review of this policy. It will develop a separate Monitoring and Evaluation Framework for the policy.

The targets and indicators contained in the policy's Monitoring and Evaluation Framework will be harmonised as much as possible with targets and indicators of *Te Kete*, Goals 13 and 14 of the SDGs and the relevant articles of the UNFCCC Paris Agreement.

The policy implementation will be monitored using existing governance and reporting mechanisms:

- National Strategy for Sustainable Development *Te Kete* (quarterly reporting);
- Annual Report for CCD (annual reporting); and
- NACCC (monthly meetings).

In addition to the above mechanisms, CCD will undertake a mid-term review of the policy at the end of 2024, the end timeframe for the initial phase of the policy's implementation plan. The outcomes of the mid-term review will result in the development of a revised implementation plan for the remaining policy period, 2025-2030. The final review of the policy will take place in 2030 in conjunction with the global and national review of the SDGs, and other relevant agreements.

Glossary

Adaptation
Human-driven adjustments in ecological, social or economic systems or policy processes, in response to actual or expected climate stimuli and their effects or impacts. Actions are intended to limit or adjust to the impacts of climate change.

Aragonite Saturation
Aragonite saturation is a measure of carbonate ion concentration in sea water, used to assess the state of ocean acidification. Aragonite, which is comprised of calcium carbonate, is an essential building block for the skeletons and shells of many marine organisms, including corals, sea slugs and clams.

Climate Change
A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere ad which is in addition to natural variability observed over comparable time periods.

Climate Finance
Local, national or transnational financing that seeks to support mitigation and adaptation actions that will address climate change. Financing can be drawn from public, private and alternative sources.

Falekaupule
A traditional assembly of elders which, subject to the Falekaupule Act, is composed in accordance with the local customs of each island.

Kaupule
Island level administration consisting of six elected members. There is a Kaupule for each of the eight islands. The Kaupule serves as the executive arm of the Falekaupule.

Loss and Damage

The adverse climate-related effects of climate change, including both sudden-onset events and slow-onset processes, which cannot be avoided or reduced by adaptation measures. Loss and damage can affect human and natural systems. There are two types of losses: economic (e.g. loss of assets, crops and fisheries) and non-economic losses (e.g. loss of biodiversity, cultural heritage and health).

Mitigation

An anthropogenic intervention to reduce the anthropogenic forcing of the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks.

Resilience

The capacity for an environmental and socio-ecological system to absorb stresses and maintain function in the face of external stresses imposed upon it by climate change and adapt, reorganise and move into more desirable and sustainable configurations that improve the sustainability of the system, and address the vulnerability that communities have with regards to consequences of climate change.

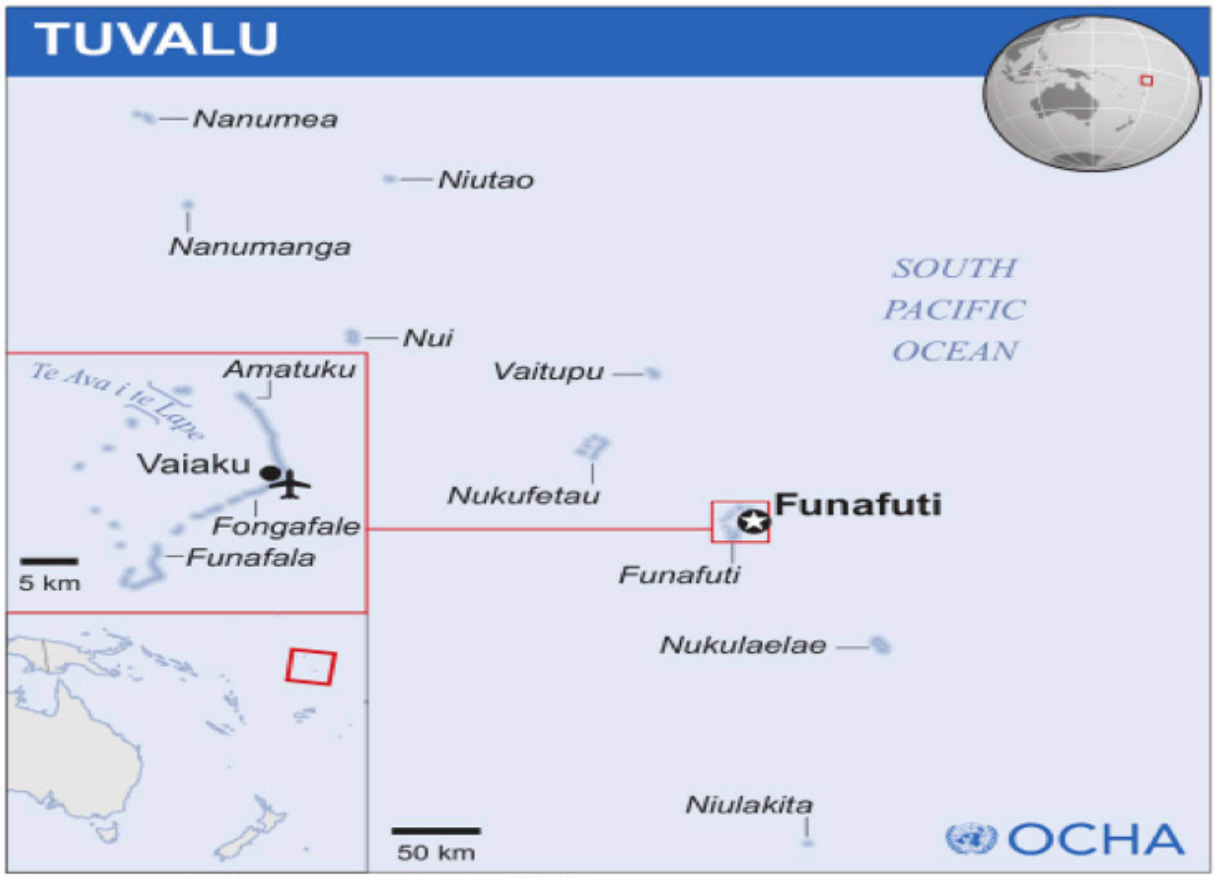
> **Our country has a narrow economic base due to the remoteness of the islands from international and regional markets**

Image Source: Imagine Artworks

Annex 1. The Implications of Current and Future Climate on Tuvalu

Tuvalu is a chain of atoll and coral islands situated in the South Pacific Ocean. It has a population of 10,645 people spread across the nine islands of Nanumea, Niutao, Nanumaga, Nui, Vaitupu, Nukufetau, Funafuti, Nukulaelae and Niulakita[3]. The islands have a combined land area of 26 km² with the average height above sea level of less than 3 metres[4].

Figure 2. Map of Tuvalu's islands



Map Sources: ESRI, Open Street map, UNCS.
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Map created in Aug 2013.

Tuvalu has a young demographic with a median age of 25 years[5]. More than half of our population resides in Funafuti, the capital. An increasing trend in migration from the outer islands, combined with limited availability of land, contributes to the high population density in Funafuti.

Our country has a narrow economic base due to the remoteness of the islands from international and regional markets, tiny land mass, a small and dispersed population and limited natural resources[6]. Off-shore fisheries accounts for nearly all of our exports. The public sector is the main employer of the waged labour force. Employment opportunities are very limited.

The outer island population is predominantly engaged in subsistence agriculture and fishing[7]. Coconut is widely produced for both household consumption and as a cash crop. Pulaka (swamp taro) has a high cultural value. Other household food crops include breadfruit, pandanus, banana and pawpaw. Recently introduced crops include tomato, cucumber, cabbage, sweet potato and pumpkin. All crops are grown organically using only rain irrigation. Most households also own pigs as livestock[8]. Common subsistence fishing methods include handline, gill netting, spear and trawling, and are used in our reefs, lagoons, slopes and nearby oceans. Fish consumption in Tuvalu is considered to be very high relative to the rest of the world[9].

Tuvalu has a tropical climate with two distinct seasons: a wet season from November to April; and a dry season from May to October. The seasons are influenced by the South Pacific Convergence Zone. The mean annual rainfall is 3,400 mm for the southern islands and 2,900 mm for the northern islands[10]. Tuvalu's rainfall varies considerably from year to year due to the influence of the El Niño Southern Oscillation (ENSO). Temperature ranges from 25 °C to 30°C all year around. Tropical cyclones typically occur during the wet season. Between the 1969/70 and 2010/11 cyclone seasons, a total of 35 tropical cyclones developed within or crossed our Exclusive Economic Zone, equivalent to an average of 8 cyclones per decade[11]. Tropical cyclones were most frequent in El Niño years (12 cyclones per decade) than in La Niña years (3 cyclones per decade).

Our islands are extremely vulnerable to cyclone-generated winds, storm surges and swells, king tides, flooding, inundation and rises in the sea level. Tuvalu is also susceptible to climate-induced impacts such as coastal erosion and loss of land, salt water intrusion, drought and water shortage, heat stress and disease outbreak, all of which have a direct and negative impact on the lives and wellbeing of our people. In March 2015, Tuvalu was hit by gale-force winds and sea swells generated by Category 5 Cyclone Pam, which directly affected 4,600 people and caused widespread damage to houses, buildings, food gardens and livestock[12].

Climate change also affects our cultural heritage, national identity, sovereignty and rightful access to land and sea territories. For example, Cyclone Pam upturned ancestral graves on Nui island and two islets in Funafuti completely disappeared[13]. Losses like these are immeasurable and irreversible. In addition, an increase in global temperature has adverse effects to the natural environment, including coral bleaching, ocean acidification, loss of biodiversity, insect infestation and long-term impacts to marine and terrestrial ecosystems.

Climate change projections for Tuvalu, including projections on temperature, sea level rise, rainfall and tropical cyclone occurrences, are presented below. These projections are based on the updated Coupled Model Inter-comparison Project Phase 5 (CMIP5) General Circulation Model, produced as part of the Australian Pacific Climate Partnership-funded NextGen Climate Change Projections for the Western Tropical Pacific (2020). The climate change projections consider recent findings from the IPCC Special Reports on Global Warming of 1.5°C (SR15) and Ocean and Cryosphere in a Changing Climate (SROCC).

When will the Paris Agreement targets be reached under the different Representative Concentration Pathways (RCP)[14]?

If and when the global temperature will reach 1.5°C or 2°C this century compared to the pre-industrial period will be different for each region. There is a range of possibilities for any location that can't be deduced to a single number due to the varying results produced by the climate models. The average (mean) crossing point of the different climate models indicate that under a very high emissions scenario (RCP8.5), global warming of 1.5°C above pre-industrial levels may be reached by 2030 and 2°C shortly after 2040. A very low emissions scenario (RCP2.6) may see the temperature reach 1.5°C above pre-industrial levels by 2040.

Table 1. Tuvalu annual average surface air temperature projections under IPCC RCP[15], 2030-2090

	2030 (°C)	2050 (°C)	2070 (°C)	2090 (°C)
Very low emissions scenario (RCP2.6)	0.5-0.9	0.5-1.2	0.5-1.2	0.4-1.3
Low emissions scenario (RCP4.5)	0.5-1.0	0.7-1.4	0.9-1.8	1.0-2.1
Medium emissions scenario (RCP6.0)	0.4-0.9	0.6-1.4	0.9-2.0	1.1-2.6
Very high emissions scenario (RCP8.5)	0.5-1.0	1.0-1.9	1.5-3.1	2.0-4.0

Note: values represent 90% of the range of the results from the global climate models and are relative to the reference period 1986-2005.

Table 2. Tuvalu sea level rise projections under RCP[16], 2030-2090

	2030 (cm)	2050 (cm)	2070 (cm)	2090 (cm)
Very low emissions scenario (RCP2.6)	7-17	13-30	19-44	23-59
Low emissions scenario (RCP4.5)	7-17	13-31	20-48	28-67
Medium emissions scenario (RCP6.0)	7-16	13-29	20-47	28-67
Very high emissions scenario (RCP8.5)	7-18	16-34	26-57	39-87

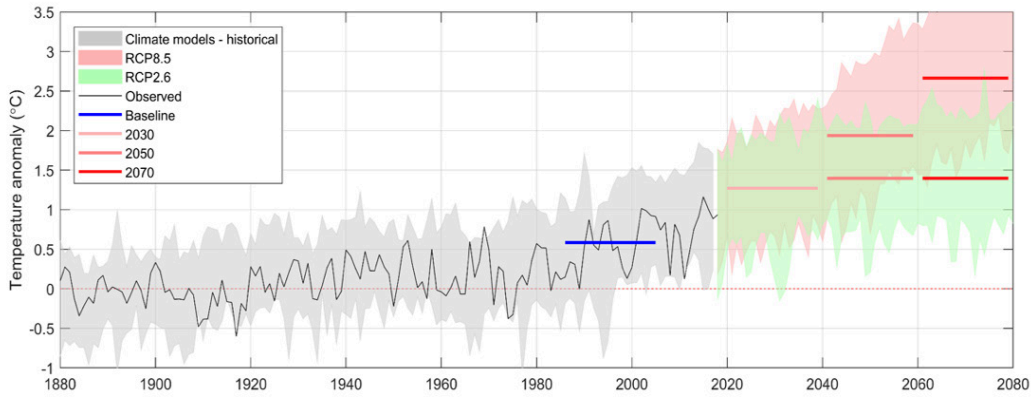
Note: values represent 90% of the range of the results from the global climate models and are relative to the reference period 1986-2005.

Table 3. Tuvalu sea level rise projections under selected RCP[17], updated based on the 2019 IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, 2050 and 2090

	2050 (cm)	2090 (cm)
Very low emissions scenario (RCP2.6)	14-34	27-61
Low emissions scenario (RCP4.5)	14-35	33-73
Very high emissions scenario (RCP8.5)	17-40	52-104

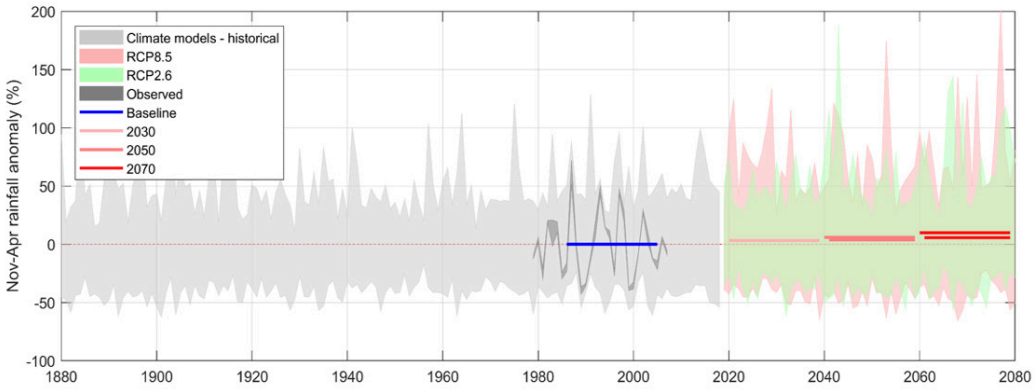
Note: values represent 90% of the range of the results from the global climate models and are relative to the reference period 1986-2005.

Figure 3. Tuvalu historical and projected temperature anomaly (°C) compared to pre-industrial period[18]



This graph shows the historical time-series (grey band) and future climate constructed using 36 climate models. The average of all the models for Tuvalu for the 1986-2005 baseline is shown as a blue line. The overall trend shows that the average annual temperature in the Tuvalu region is getting warmer. Compared to the average temperature of the pre-industrial period (1850-1900), there has been an increase of +0.6°C for the 1995-2014 period. The average temperature for 2020-2040 (light pink bar) will be warmer than the 1986-2005 baseline. Beyond 2040, the warming of Tuvalu's climate depends on the emissions pathway that the world follows. A very low emissions pathway (RCP2.6) is generally consistent with the Paris agreement of 2 °C (green band) compared to a very high emissions pathway (RCP8.5) (red band). The model average temperature anomalies measured for various baseline periods are indicated with blue and red bars. For example, temperatures may increase on average above 2.5 °C under RCP8.5, compared to less than 1.5 °C under RCP2.6 for the 2060-2080 period.

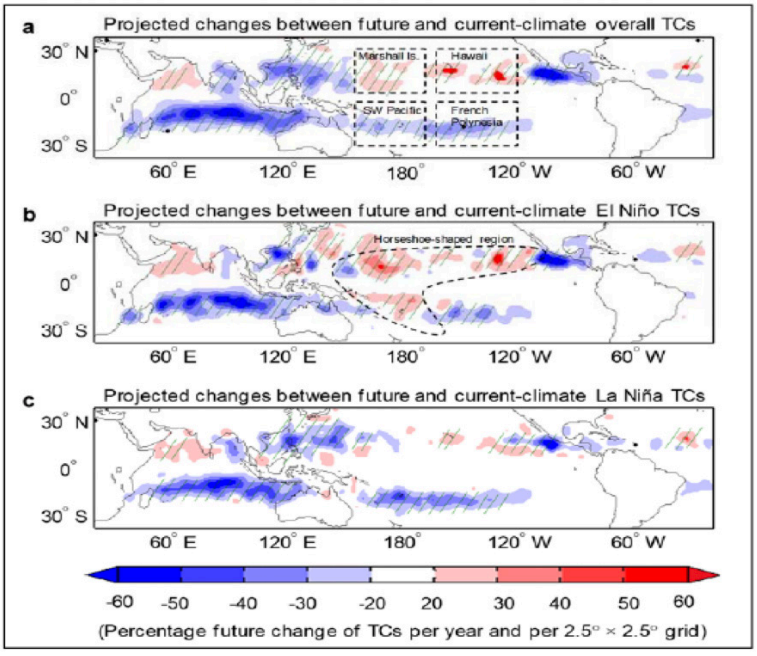
Figure 4. Tuvalu historical and projected November-April rainfall anomaly (% change from the average)[19]



Note: Observations in global databases are from 1979 compared to observations from Tuvalu's weather stations which are from the 1930s.

This graph shows the range of variability in historical rainfall generated by the 36 climate models (grey band). Rainfall observations extracted from gridded global data-sets are shown as a dark grey line. The large range of rainfall anomaly is projected to continue on a similar future trajectory with a possible small increase in 2020-2040 rainfall (light pink bar). Beyond 2040, the projections are similar to those expected in 2020-2040 (red bars) with little difference between very low emission pathway (RCP2.6) (green band) and very high emissions pathway (RCP8.5) (red band). The model average projected increase in November-April rainfall (blue bar compared to the red bars) is very small compared to ongoing natural year-to-year variability, as shown in the observed data (dark grey line). However, there is a large range between the climate models that are all plausible.

Figure 5. Projected changes in tropical cyclone occurrences between future and current-climates[20]



This figure shows the changes in ENSO-driven variability in tropical cyclone (TC) occurrence. For the group of small island nations in the Pacific region by the end of this century TC occurrences become more frequent (~20-40%) during future climate El Niño events compared with present-climate El Niño events. TC occurrences become less frequent during future-climate La Niña events compared with present-climate La Niña events. Tropical cyclones remain as a major hazard for small Pacific islands, including Tuvalu.

Intergovernmental Panel on Climate Change Special Report on Global Warming of 1.5˚C above pre-industrial levels[21]

The IPCC's special report finds that:

- Global warming is likely to reach 1.5 °C between 2030 and 2052 if the current growth rate continues (high confidence).
- Warming from anthropogenic emissions from pre-industrial period to today will persist for centuries to millennia. This will continue to cause further long-term changes in the climate system, such as rising sea levels, and their associated impacts will continue to be an issue (high confidence).
- Climate-related risks to health, livelihoods, food security, water supply, human security and economic growth are projected to increase with global warming of 1.5 °C and will increase even further with global warming of 2 °C.
- SIDS and the world's least-developed countries are at disproportionately higher risk of adverse consequences with global warming of 1.5°C (high confidence).
- Small islands and low-lying coastal areas will suffer amplified exposure to the risks associated with rising sea levels, including saltwater intrusion, flooding and damage to infrastructure (high confidence). Sea level related threats for SIDS will persist well beyond the 21st century even if global warming is limited to less than 1.5 °C.
- If global warming is limited to 1.5 °C by 2100, the mean sea level rise is projected to be around 0.1 metre less than at 2 °C (medium confidence). A slower rate of sea level rise enables greater adaptation opportunities for human and ecological systems of small islands and low-lying coastal areas (medium confidence).
- Limiting global warming to 1.5 °C, rather than 2 °C, would mean many SIDS could experience lower water stress from projected changes in aridity (medium confidence).
- Small islands are projected to experience high multiple interrelated climate risks even if global warming is limited to 1.5 °C (high confidence).

Annex 2. Policy Linkage to International and Regional Commitments

International

The UNFCCC is the key international environmental treaty on climate change. Tuvalu has submitted two national communications to the UNFCCC. Its intended Nationally Determined Contribution (NDC) was submitted to the UNFCCC Secretariat ahead of COP 21 in 2015. Tuvalu and five other Pacific Island nations were the first to ratify the landmark Paris Agreement on 22 April 2016.

The agreement entered into force on 4 November 2016. The translation of the agreement into domestic legislation was achieved through the enactment of the Tuvalu Climate Change Resilience Act in 2019, committing Tuvalu to ambitious action.

Tuvalu is also committed to the 2030 Agenda for Sustainable Development and the related 17 Sustainable Development Goals (SDGs). Goal 13 on climate action and Goal 14 on oceans are of particular relevance to this policy.

Regional

A key regional document on climate change is the Framework for Resilient Development in the Pacific (FRDP) 2017-2030, which was endorsed by Pacific Island Forum Leaders in September 2016. The FRDP contributes to the achievement of the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction 2015-2030, the World Humanitarian Summit and obligations under the UNFCCC, as well as relevant regional agreements. This policy is strongly aligned with Goals 1 and 2 of the FRDP.

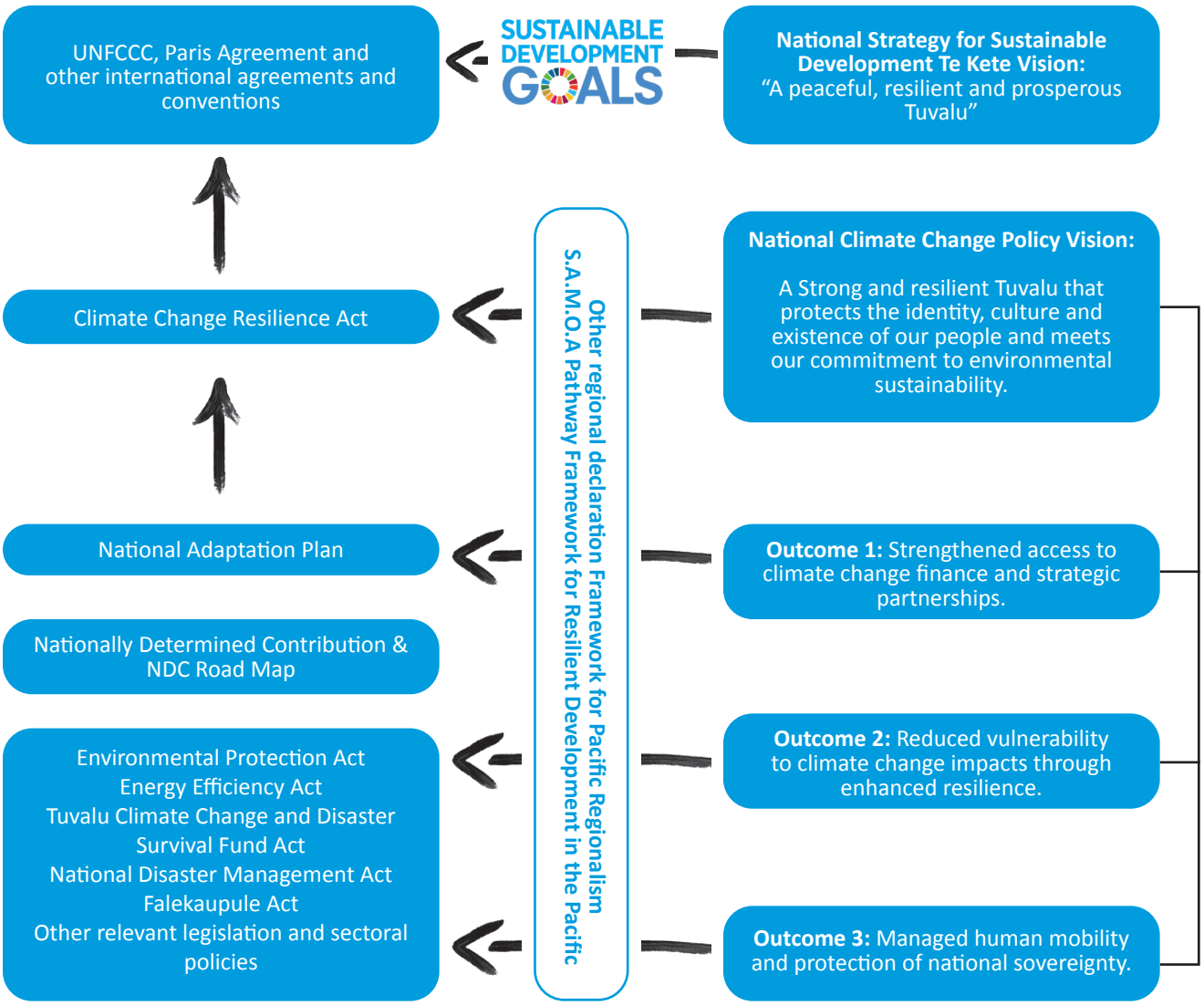
The commitments made in other regional instruments, such as the SIDS Accelerated Modalities of Action (S.A.M.O.A) Pathway, Framework for Pacific Regionalism, Boe Declaration on Regional Security and Kainaki II Declaration for Urgent Climate Action Now are also incorporated into this policy.

Table 4. Relevant international and regional commitments

Conventions and Agreements	Intent/Relevance to this Policy	Date Ratified by Tuvalu
United Nations Framework Convention on Climate Change (UNFCCC)	Limiting greenhouse gas (GHG) concentrations at a level that would prevent dangerous human interference with the climate system	8 June 1992
Kyoto Protocol	A legally binding agreement which commits industrialised countries to limit and reduce GHG emissions in accordance with agreed individual targets for the period 2008-2012 (first commitment period).	16 November 1998
Doha Amendment to the Kyoto Protocol	Adopted for a second commitment period which covers 2013-2020. It identifies new commitments for limiting and reducing GHG emissions.	4 December 2014
Paris Agreement	Sets ambitious targets to limit global warming by well below 2 °C this century and even further to 1.5 °C above pre-industrial levels. The Paris Agreement aims to bolster the ability of most vulnerable countries to deal with the impacts of climate change through capacity building, technology transfer and finance flows,	22 April 2016

Conventions and Agreements	Intent/Relevance to this Policy	Date Ratified by Tuvalu
Paris Agreement	and it provides a more robust arrangement for countries to be transparent about the actions and support they undertake to meet the agreed obligations.	22 April 2016
2030 Sustainable Agenda and Sustainable Development Goals (SDGs)	Adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. There are 17 SDGs and 169 targets.	25 September 2015
Framework for Resilient Development in the Pacific 2017-2030	A voluntary regional policy framework that provides an integrated and all-stakeholder approach for addressing climate change and disaster risks. The FRDP has three goals: 1. Strengthened integrated adaptation and risk reduction to enhance resilience to climate change and disasters 2. Low carbon development 3. Strengthened disaster preparedness, response and recovery	8 September 2017
SIDS Accelerated Modalities of Action (S.A.M.O.A) Pathway	An outcome from the Third International Conference on SIDS. It recognises the special case of SIDS in achieving sustainable development, including the adverse impacts of climate change and sea level rise, in transgressing the development efforts made by SIDS.	4 September 2014
Framework for Pacific Regionalism	Articulates the region's collective identity as the "Blue Pacific" to reaffirm the connections of the Pacific people with their natural resources, environment, culture and livelihoods.	29 July 2014
Boe Declaration on Regional Security	Climate change is identified as the single greatest threat to the livelihoods, security and wellbeing of the Pacific people and the Pacific nations' commitment to progress the implementation of the Paris Agreement.	6 September 2018
Kainaki II Declaration for Urgent Climate Action Now	Calls for bold and transformative action to address the climate crisis faced by island nations and to urgently pursue efforts to limit global warming to 1.5°C above pre-industrial levels.	16 August 2019

Figure 6. Policy linkage to legal and policy frameworks



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PACIFIC ADAPTATION TO CLIMATE CHANGE AND RESILIENCE BUILDING

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