

Adaptation actions in Tonga

Adaptation Sectors	Adaptation Actions
Coastal Areas	<ul style="list-style-type: none"> • Construction of coastal protection structures (coral revetment, groynes). • Enforce law to restrict the illegal mining of beach sands • Coastal revegetation/ replanting trees • Relocation (internal or external) • Land reclamation
Agriculture	<ul style="list-style-type: none"> • Introduce temperature & salt-tolerant crops • Improved pests and disease management • Public awareness programs • Promotion of Agroforestry • Agricultural Diversification • Develop adaptation strategies and planning to adapt to climate change impacts on livestock. • Develop an adaptation strategy and planning on the use of biological control of pests, diseases and weeds with the judicious use of pesticides and fertilizers to reduce the extra pressure on the environment.
Water Resources	<ul style="list-style-type: none"> • Strategies to reduce the vulnerability of the water sector to climate change • Better management of ground water extraction and water usage during drought season • Increase water collection systems (Water tank)
Fisheries	<ul style="list-style-type: none"> • Integrate climate change concerns into the Fisheries Management Plan • Raise awareness on the impacts of climate change on fisheries sector. • Regularly monitor climate change impacts on fisheries sector • Increase Special Management Areas and Aquaculture
Infrastructure	<ul style="list-style-type: none"> • Climate proofing of infrastructures (including design, construction, and maintenance) • Develop a floodwater discharge plan • Improve road maintenance to tar sealed and asphaltic concrete surface • Develop road construction and maintenance policy
Human Health	<ul style="list-style-type: none"> • Promote awareness and educational programs on climate change impacts • Promote healthy diet & lifestyle • Eradicate mosquitoes breeding grounds • Improve hygiene

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Impacts, Vulnerability and Adaptation to Climate Change in Tonga



Climate change has adversely impacted the following vulnerable sectors in Tonga.

What is Vulnerability?

The degree to which a system/ people is susceptible to, unable to cope with adverse effects of climate change including climate variability and extremes (UNFCCC Guideline)

What is adaptation?

The adjustment in the natural or human system in response to actual or expected climatic stimuli or their effects, which moderates harm or exploit beneficial opportunities. (UNFCCC Guideline)

Sectors	Description	Climate Issues	What are the impacts?
Coastal Areas	Most of the villages, government buildings, tourist resorts, churches, and other critical infrastructures in Tonga are situated along the coastal areas. These areas are below 4m topographic contour which makes them highly vulnerable to the effects of climate change.	Sea level rise	<ul style="list-style-type: none"> Inundates low-lying coastal areas Beach erosion Intensifies flooding
		More intense tropical cyclones	<ul style="list-style-type: none"> Intensify flooding Erodes low-lying areas
Agriculture	This is one of the key sectors for the economy, which contributes almost 25% of the Gross Domestic Product (GDP) of Tonga, and employs at 1/3 of the workforce and accounts for 50% of export earnings. Given that agriculture is sensitive to the vagaries of climate change, impacts on this sector could prove crippling to the livelihood of the Tongan people.	Sea level rise	<ul style="list-style-type: none"> Inundation of low-lying coastal agricultural zones
		Increase atmospheric temperature	<ul style="list-style-type: none"> Increases evaporation rate reducing available moisture Decrease plant growth and yield will decline Increase pests and diseases to crops
		Extreme rainfall events	<ul style="list-style-type: none"> Result in greater risk of erosion and soil degradation
		More intense tropical cyclones	<ul style="list-style-type: none"> Damages to crops, fruit trees and vegetables Livelihood and Tonga's economy will be affected
Water Resources	The two main sources of water in Tonga are from the rainwater captured and stored in the water tanks and also from the underground water aquifers. Supplementary source of fresh surface water is found in 'Eua and few salty lakes on the islands of Tofua and Niuafou'u.	Sea level rise	<ul style="list-style-type: none"> Increase salinity in wells and underground water. Inundation reducing thickness of Tonga's underground fresh water lens
		Extreme weather events (Tropical Cyclone and Drought)	<ul style="list-style-type: none"> Damage to water storage and contamination of water sources Damages to buildings and rainwater collection system and storage tanks Overtopping of waves cause partial inundation in low-lying islands Shortage of fresh water for drinking Reduction in ground water recharge
Fisheries	This is one of the key sectors for the economy of Tonga and livelihood of the people. There are two areas of fisheries namely inshore or coastal fisheries and offshore or oceanic fisheries. Both areas are vulnerable to climate change.	Increase in sea temperatures	<ul style="list-style-type: none"> Increase ciguatera poisoning Increase in coral bleaching Increase in ocean acidification Decrease in the fish catch rate Loss of income, livelihood, and Tonga's economy will be affected
		More intense tropical cyclones	<ul style="list-style-type: none"> Damages to fisheries habitats e.g. such as coral reefs, seagrasses, mangroves
		Heavy rainfall	<ul style="list-style-type: none"> Increase sedimentation in coastal inshore Reduction of marine biodiversity
Infrastructure	Tonga's infrastructure includes airports, road network, all public and private buildings (government offices, business centers, schools, churches, community halls, hospitals, hotels, tourist resorts), power distribution systems, telecommunication systems, wharves and jetties, coastal protection system, bridges and causeways.	Sea level rise	<ul style="list-style-type: none"> Inundation of roads Degradation of coastal infrastructures
		Heavy rainfall	<ul style="list-style-type: none"> Destabilize soil foundation causing damages to transmission lines Erosion and damage of road surface Damages to drainage system Contaminate water supply system
		More intense tropical cyclones and storm surge	<ul style="list-style-type: none"> Corrosion and rusting of metal structures due to salt spray Damage to roads, bridges, airports & marine ports. Damage to communication towers cause inoperable Information Communication and Technology
Human Health	Tonga has a high level of access to health care and high quality of life with improving health indicators over the last few decades. Almost all Tongans (99%) have access to improved water and sanitation and 100% have access to appropriate health care services. Despite these, the health of the Tongan people is still vulnerable to the adverse effects of climate change.	Increase in atmospheric temperature	<ul style="list-style-type: none"> Heat stress and obstructive airways diseases (asthma) Compromises food security and decrease physical activity increasing vulnerability to Non-Communicable Diseases (NCDs)
		Heavy rainfall	<ul style="list-style-type: none"> Increase spread of dengue fever, diarrhea illnesses, skin infections/infestation, respiratory infections and diseases (influenza, pneumonia)
		Drought	<ul style="list-style-type: none"> Limited access to hygienic water hence increase diarrhea and typhoid incidence
		More intense tropical cyclones	<ul style="list-style-type: none"> Increase in injuries and deaths Psychological and mental impacts

