CLIMATE RISK COUNTRY PROFILE

NAURU

WORLD BANK GROUP

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ACKNOWLEDGEMENTS

This profile is part of a series of Climate Risk Country Profiles that are developed by the World Bank Group (WBG). These profiles synthesize the most relevant data and information on climate change, disaster risk reduction, and adaptation actions and policies at the country level. The profile is designed as a quick reference source for development practitioners to better integrate climate resilience in development planning and policy making. This effort is co-led by Veronique Morin (Senior Climate Change Specialist, WBG) and Ana E. Bucher (Senior Climate Change Specialist, WBG).

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Climate and climate-related information is largely drawn from the Climate Change Knowledge Portal (CCKP), a WBG online platform with available global climate data and analysis based on the current Intergovernmental Panel on Climate Change (IPCC) reports and datasets. The team is grateful for all comments and suggestions received from the sector, regional, and country development specialists, as well as climate research scientists and institutions for their advice and guidance on use of climate related datasets.

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FOREWORD

Climate change is a major risk to good development outcomes, and the World Bank Group is committed to playing an important role in helping countries integrate climate action into their core development agendas. The World Bank Group is committed to supporting client countries to invest in and build a low-carbon, climate-resilient future, helping them to be better prepared to adapt to current and future climate impacts.

The World Bank Group is investing in incorporating and systematically managing climate risks in development operations through its individual corporate commitments.

A key aspect of the World Bank Group's Action Plan on Adaptation and Resilience (2019) is to help countries shift from addressing adaptation as an incremental cost and isolated investment to systematically incorporating climate risks and opportunities at every phase of policy planning, investment design, implementation and evaluation of development outcomes. For all IDA and IBRD operations, climate and disaster risk screening is one of the mandatory corporate climate commitments. This is supported by the World Bank Group's Climate and Disaster Risk Screening Tool which enables all Bank staff to assess short- and long-term climate and disaster risks in operations and national or sectoral planning processes. This screening tool draws up-to-date and relevant information from the World Bank Group's Climate Change Knowledge Portal, a comprehensive online 'one-stop shop' for global, regional, and country data related to climate change and development.

Recognizing the value of consistent, easy-to-use technical resources for client countries as well as to support respective internal climate risk assessment and adaptation planning processes, the World Bank Group's Climate Change Group has developed this content. Standardizing and pooling expertise facilitates the World Bank Group in conducting initial assessments of climate risks and opportunities across sectors within a country, within institutional portfolios across regions, and acts as a global resource for development practitioners.

For developing countries, the climate risk profiles are intended to serve as public goods to facilitate upstream country diagnostics, policy dialogue, and strategic planning by providing comprehensive overviews of trends and projected changes in key climate parameters, sector-specific implications, relevant policies and programs, adaptation priorities and opportunities for further actions.

It is my hope that these efforts will spur deepening of long-term risk management in developing countries and our engagement in supporting climate change adaptation planning at operational levels.

Bernice Van Bronkhorst
Global Director
Climate Change Group (CCG)
The World Bank Group (WBG)

KEY MESSAGES

- Nauru is warming and is expected to warm throughout the 21st century. Future rates of warming are clouded by current models' inability to simulate very localized changes but, warming is likely to be in the range of 0.9°C–3.0°C depending on the 21st century rate of global emissions.
- Natural variability between years, even decades, ensure short- and medium-term rainfall changes are difficult to detect and project into the future. Further research is urgently required to develop models better suited to modelling the future climate of Pacific Islands.
- The sea-level near Nauru has been rising at a faster rate than the global average, and is projected to increase throughout the 21st century. While Nauru has higher elevation than some Pacific Island nations, long-term sea-level rise threatens coastal livelihoods and infrastructure.
- Coral bleaching, as a result of climate change, is a significant risk to the country's ecology and economy and is part of a global picture of coral loss.
- A realignment of the nation's fisheries is likely, near-shore fisheries are likely to decline, while deep sea fisheries face an uncertain future. Research and risk monitoring are required given Nauru's economic vulnerability.
- Nauru has an unusual and precarious socioeconomic situation which has led to issues of poverty and poor health. Development issues and other forms of human-driven environmental degradation remain primary drivers of negative social outcomes, but climate change threatens to exacerbate Nauru's problems.
- Adaptation and disaster risk reduction efforts are hampered by Nauru's lack of economic independence, and its inaccessible location. Without support, and new approaches, climate change threatens to drive poverty and inequality.

COUNTRY OVERVIEW

Nauru is located in the south-eastern Micronesia region. It is one of the world's smallest countries with a total land area covering just 21 kilometers square (km^2), and is extremely remote, surrounded by deep sea and coral reefs. Nauru's climate is tropical, but variable rainfall can lead to extended periods of drought. Nauru has limited ground water and no rivers or streams; its land consists of mineral deposits largely rock phosphate. Phosphate mining over the past century has had a very significant impact on the landscape and economy of Nauru. Mining has impacted more than 80% of Nauru's land leaving the inland area uninhabitable, unsuitable for agricultural cultivation, and ecologically degraded. This has had knock-on effects in the surrounding marine environment.

Nauru is considered a fragile Pacific island with acute development challenges linked to its unusual economic circumstances. In 2020, Nauru had a population of 10,834 residents.[1] Over the early 21st century Nauru has struggled with high levels of unemployment and health issues as the phosphate mining industry has declined. According to UNICEF data from 2018, Nauru's under-five mortality rate is 33 per 1000 births, one of the highest in the region, and its obesity prevalence is one of the highest in the world, reported at 61% in 2016 (**Table 1**). Nauru's economy is propped up via international donors, particularly Australia, Japan, New Zealand and Taiwan.

[1] World Bank (2021). World Development Indicators. DataBank. [accessed 19 October, 2021]. URL: https://databank.worldbank.org/source/world-development-indicators

Nauru has very limited access to freshwater, and is almost entirely dependent on rainwater collection tanks. While it is not as low-lying as some of its Pacific neighbors, nor exposed to tropical cyclones, Nauru's precarious socioeconomic system and isolated position make it highly vulnerable to climate change impacts. In 2014 Nauru submitted its Second National Communication to the UNFCCC[2] and its Updated Nationally Determined Contributions to 2021, which details the climate change challenges it faces.

Green, Inclusive and Resilient Recovery

The coronavirus disease (COVID-19) pandemic has led to unprecedented adverse social and economic impacts. Further, the pandemic has demonstrated the compounding impacts of adding yet another shock on top of the multiple challenges that vulnerable populations already face in day-to-day life, with the potential to create devastating health, social, economic and environmental crises that can leave a deep, long-lasting mark. However, as governments take urgent action and lay the foundations for their financial, economic, and social recovery, they have a unique opportunity to create economies that are more sustainable, inclusive and resilient. Short and long-term recovery efforts should prioritize investments that boost jobs and economic activity; have positive impacts on human, social and natural capital; protect biodiversity and ecosystems services; boost resilience; and advance the decarbonization of economies.

This document aims to succinctly summarize the climate risks faced by Nauru. This includes rapid onset and long-term changes in key climate parameters, as well as impacts of these changes on communities, livelihoods and economies, many of which are already underway. This is a high-level synthesis of existing research and analyses, focusing on the geographic domain of Nauru, therefore potentially excluding some international influences and localized impacts. The core climate projections presented are sourced from the Pacific-Australia Climate Change Science and Adaptation Planning Program,[3,4] as well as the World Bank Group's Climate Change Knowledge Portal (CCKP), incorporating climate projections from the Coupled Model Inter-comparison Project Phase 5 (CMIP5). This document is primarily meant for WBG staff to inform their climate actions. The document also aims to direct the reader to many useful sources of secondary data and research. This document also directs the reader to other useful sources of secondary data and research. For a meta-analysis of the research available on climate change adaptation in small-island developing nations please see Klöck and Nunn (2019).[5]

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2 Ministry of Commerce, Industry and Environment (2014). Second National Communication of the Republic of Nauru. URL: https://unfccc.int/sites/default/files/resource/Final_Nauru_SNC_Report_revised.pdf

3 Australian Bureau of Meteorology and CSIRO (2014) Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports. Pacific-Australia Climate Change Science and Adaptation Planning Program Technical Report, Australian Bureau of Meteorology and CSIRO, Melbourne, Australia. URL: https://www.pacificclimatechangescience.org/wp-content/uploads/2014/07/PACCSAP_CountryReports2014_WEB_140710.pdf

4 The NextGen projections for the Pacific region under CMIP5 are expected to be available from late 2021. These will provide an update on the PACCSAP 2014 projections referenced in this profile. The process for providing the new NextGen CMIP6 projections for the Pacific is still in the planning phase.

5 Klöck, C. and Nunn, P.D., 2019. Adaptation to Climate Change in Small Island Developing States: A Systematic Literature Review of Academic Research. The Journal of Environment & Development, p.1070496519835895. URL: https://journals.sagepub.com/doi/abs/10.1177/1070496519835895

TABLE 1. Key indicators

Indicator	Value	Source
Population Undernourished[6]	N/A	FAO, 2020
National Poverty Rate[7]	24% (2016)	ADB, 2020a
Share of Wealth Held by Bottom 20%[8]	N/A	World Bank, 2020
Net Annual Migration Rate[9]	N/A	UNDESA, 2019
Infant Mortality Rate (Between Age 0 and 1)[10]	N/A	UNDESA, 2019
Average Annual Change in Urban Population[11]	–0.1% (2015–2020)	UNDESA, 2019
Dependents per 100 Independent Adults[12]	N/A	UNDESA, 2019
Urban Population as % of Total Population[13]	100% (2020)	CIA, 2020
External Debt Ratio to GNI[14]	N/A	ADB, 2020b
Government Expenditure Ratio to GDP[15]	125.6% (2019)	ADB, 2020b

CLIMATOLOGY

Climate Baseline

Overview

Typical of the Pacific region Nauru has an extremely stable climate, with temperatures averaging 28°C all year round. Humidity averages around 80%.[1] Rainfall peaks between December and April, averaging 200 millimeters (mm) per month, then falls to around 100 mm per month between June and November (**Figure 1**). Climate, and particularly inter-annual precipitation variation, are influenced strongly by the El Niño-Southern Oscillation (ENSO). ENSO has a complex relationship with climate but can be a driver of both drought and flood events as well as regional sea-levels.

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[6] FAO, IFAD, UNICEF, WFP, WHO (2020). The state of food security and nutrition in the world. Building Resilience for peace and food security. FAO. Rome. URL: http://www.fao.org/documents/card/en/c/ca9692en/

[7] ADB (2020a). Basic Statistics 2020. URL: https://www.adb.org/publications/basic-statistics-2020

[8] World Bank (2021). Income share held by lowest 20%. URL: https://data.worldbank.org/indicator/SI.DST.FRST.20 [accessed 2021]

[9] UNDESA (2019). World Population Prospects 2019. URL: https://population.un.org/wpp/Download/Standard/Population/ [accessed 15/02/2021]

[10] UNDESA (2019). World Population Prospects 2019. URL: https://population.un.org/wpp/Download/Standard/Population/ [accessed 15/02/2021]

[11] UNDESA (2019). World Urbanization Prospects 2019. URL: https://population.un.org/wup/Download/ [accessed 15/02/2021]

[12] UNDESA (2019). World Population Prospects 2019. URL: https://population.un.org/wpp/Download/Standard/Population/ [accessed 15/02/2021]

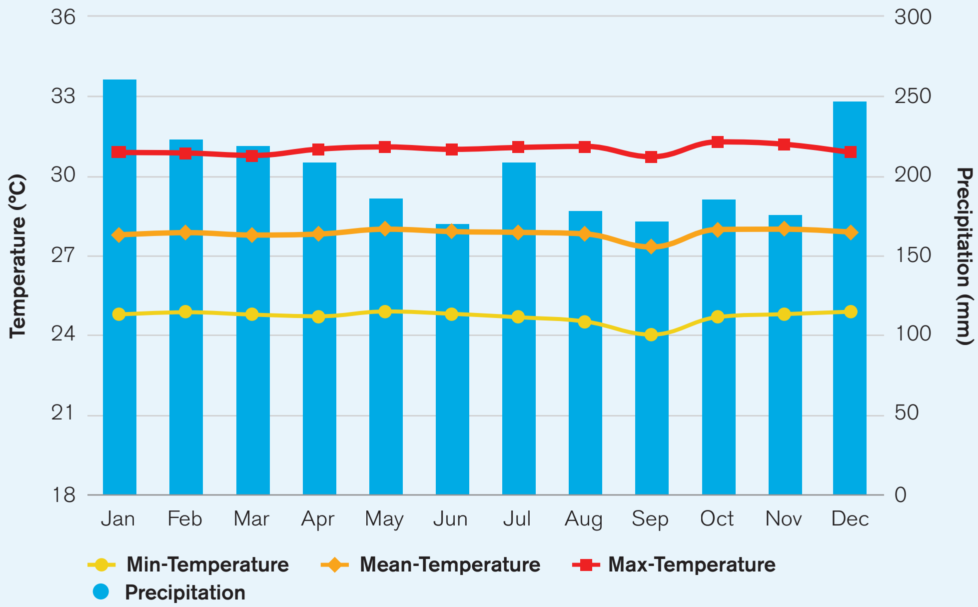
[13] CIA (2020). *The World Factbook*. Central Intelligence Agency. Washington DC. URL: https://www.cia.gov/the-world-factbook/

[14] ADB (2020b). Key Indicators for Asia and the Pacific 2020, 51st Edition. Asian Development Bank. Manila. URL: https://www.adb.org/sites/default/files/publication/632971/ki2020.pdf

[15] ADB (2020b). Key Indicators for Asia and the Pacific 2020, 51st Edition. Asian Development Bank. Manila. URL: https://www.adb.org/sites/default/files/publication/632971/ki2020.pdf

Annual Cycle

FIGURE 1. Average monthly mean, max, and min temperatures and rainfall in Nauru, 1991–2020[16]



Key Trends

Temperature

Nauru's Second National Communication to the UNFCCC suggests temperatures have been rising in the region at around 0.12°C per decade since the 1970s. However, the Berkeley Earth Dataset suggests a slightly more complex picture. Up to the 1990s there was limited warming in the region, but from 1995 that warming accelerated, and temperatures between 2014 and 2018 were averaging around 0.5°C —0.6°C above the long-term average.[17]

Precipitation

A study has pointed to significant natural multi-decadal rainfall variability in the South Pacific Convergence Zone (Nauru is situated at the Northwestern edge). Observing records over 400 years, it shows abrupt changes of ~1800 mm can occur between wet seasons.[18] Historical rainfall has been very strongly correlated with ENSO, peaking in El Niño years and reducing significantly during La Niña. However, no changes in rainfall patterns significantly outside the range of normal inter-annual variation have been documented and linked to human-induced climate changes.

[16] WBG Climate Change Knowledge Portal (CCKP, 2021). Climate Data: Nauru Historical. URL: https://climateknowledgeportal.worldbank.org/country/nauru/climate-data-historical

[17] Carbon Brief (2018). Mapped: How every part of the world has warmed – and could continue to warm. [26 September 2018]. URL: https://www.carbonbrief.org/mapped-how-every-part-of-the-world-has-warmed-and-could-continue-to-warm [accessed 25/10/2019]

[18] Partin, J.W., Quinn, T.M., Shen, C.C., Emile-Geay, J., Taylor, F.W., Maupin, C.R., Lin, K., Jackson, C.S., Banner, J.L., Sinclair, D.J. and Huh, C.A. (2013). Multidecadal rainfall variability in South Pacific Convergence Zone as revealed by stalagmite geochemistry. *Geology*, *41*(11), pp. 1143–1146. DOI: https://doi.org/10.1130/G34718.1

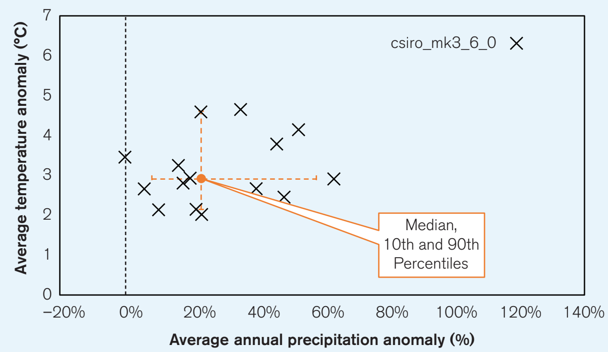
Climate Future

Model Ensemble

Due to differences in the way global circulation models (GCMs) represent the key physical processes and interactions within the climate system, projections of future climate conditions can vary widely between different GCMs. This is particularly the case for rainfall related variables and at sub-national scales. Exploring the spread of climate model outputs can assist in understanding uncertainties associated with climate models. The range of projections from 16 GCMs on the indicators of average temperature anomaly and annual precipitation anomaly for Nauru under RCP8.5 is shown in **Figure 2**. However, it should be noted that concerns have been raised about the realism of some of the more extreme outlier models.[19]

The majority of the models from which outputs are presented in this report are from the CMIP5 round of standardization and quality assurance. Unfortunately, models of this generation operate at large spatial scales and are not well equipped to simulate the future climate of small islands. Typically, the changes projected will relate more to the expected changes over nearby ocean than the island itself. Caution should therefore be applied in interpreting results. This highlights a major area for future development, a research opportunity, and an urgent need from the perspective of policy makers planning for climate change.

FIGURE 2. 'Projected average temperature change' and 'projected annual rainfall change' in Nauru. Outputs of 16 models within the ensemble simulating RCP8.5 over the period 2080–2099. Models shown represent the subset of models within the ensemble which provide projections across all RCPs and therefore are most robust for comparison.[20] One anomalous model is labelled.



A Precautionary Approach

Studies published since the last iteration of the IPCC's report (AR5), such as Gasser et al. (2018), have presented evidence which suggests a greater probability that earth will experience medium and high-end warming scenarios than previously estimated.[21] Climate change projections associated with the highest emissions pathway (RCP8.5) are presented here to facilitate decision making which is robust to these risks.

[19] McSweeney, C.F., Jones, R.G., Lee, R.W. and Rowell, D.P. (2015). Selecting CMIP5 GCMs for downscaling over multiple regions. Climate Dynamics, 44(11–12). pp. 3237–3260. URL: https://link.springer.com/article/10.1007/s00382-014-2418-8

[20] WBG Climate Change Knowledge Portal (CCKP, 2021). Climate Data: Projections. URL: https://climateknowledgeportalworldbank.org/country/Nauru/climate-data-projections

[21] Gasser, T., Kechiar, M., Ciais, P., Burke, E. J., Kleinen, T., Zhu, D., . . . Obersteiner, M. (2018). Path-dependent reductions in CO2 emission budgets caused by permafrost carbon release. Nature Geoscience, 11, 830–835. URL: https://www.nature.com/articles/s41561-018-0227-0?WT.feed_name=subjects_climate-sciences

RCPs

The Representative Concentration Pathways (RCPs) represent four plausible futures, based on the rate of emissions reduction achieved at the global level. Four RCPs (i.e. RCP2.6, RCP4.5, RCP6.0, and RCP8.5) were selected and defined by their total radiative forcing (cumulative measure of GHG emissions from all sources) pathway and level by 2100. In this analysis, RCP2.6 and RCP8.5, the low and high emissions pathways, are the primary focus; RCP2.6 represents a very strong mitigation scenario, whereas RCP8.5 assumes a high-emissions scenario. For reference, **Table 2** provides information on all four RCPs over two-time horizons. In subsequent analysis RCPs 2.6 and 8.5, the low and high emissions pathways, are the primary focus. RCP2.6 would require rapid and systemic global action, achieving significant emissions reduction throughout the 21st century. RCP8.5 assumes annual global emissions will continue to increase throughout the 21st century. Climate changes under each emissions pathway are presented against a reference period of 1986–2005 for all indicators. For more information, please refer to the RCP Database.

TABLE 2. An overview of Nauru's temperature change projections (°C) under four emissions pathways. Projected changes over the 1986–2005 baseline are given for 20-year periods centered on 2050 and 2090 with the 5th and 95th percentiles provided in brackets.[22]

	Mean Surface Air Temp (Annual)		Max Temp (1-in-20 Year Event)		Min Temp (1-in-20 Year Event)	
Scenario	**2050**	**2090**	**2050**	**2090**	**2050**	**2090**
RCP2.6	0.9 (0.6–1.4)	0.9 (0.6–1.5)	0.7 (0.2–1.2)	0.8 (0.4–1.3)	0.8 (0–1.6)	0.8 (0.4–1.2)
RCP4.5	1.1 (0.6–1.5)	1.5 (1.1–2.5)	0.9 (0.5–1.3)	1.4 (0.8–2.2)	1 (0.6–1.3)	1.4 (0.8–2.1)
RCP6.0	1 (0.7–1.6)	1.9 (1.1–3)	NA	NA	NA	NA
RCP8.5	1.5 (1–2.2)	3 (2–4.5)	1.5 (0.8–2.4)	3 (1.9–4.4)	1.5 (0.8–2.8)	3 (2–4.3)

Temperature

Projections of future temperature change are presented in three primary formats. Shown in **Table 2** are the changes (anomalies) in maximum and minimum temperatures over the given time period, as well as changes in the average temperature. **Figures 2** and **3** display only the average temperature projections. While similar, these three indicators can provide slightly different information. Monthly/annual average temperatures are most commonly used for general estimation of climate change, but the daily maximum and minimum can explain more about how daily life might change in a region, affecting key variables such as the viability of ecosystems, health impacts, productivity of labor, and the yield of crops, which are often disproportionately influenced by temperature extremes.

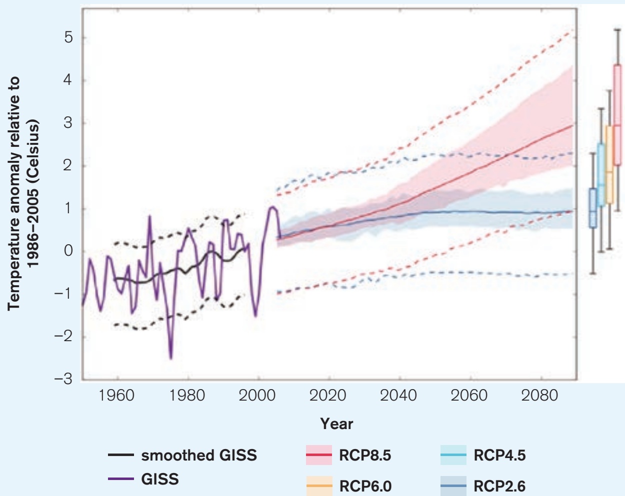
[22] Australian Bureau of Meteorology and CSIRO (2014). Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports. Pacific-Australia Climate Change Science and Adaptation Planning Program Technical Report, Australian Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation, Melbourne, Australia. URL: https://www.pacificclimatechange.net/document/climate-variability-extremes-and-change-western-tropical-pacific-new-science-and-updated

There is relatively good agreement among models that future temperature rises over Nauru will be below the global average. Under the highest emissions pathway temperatures are projected to reach around 3.0°C by the 2090s, compared to around 3.7°C globally, this reflects the moderating effect of large amounts of nearby ocean cover. Projected rises in maximum and minimum temperatures are of a similar magnitude. However, this ocean cover can also distort model simulations, and the current iteration of global models does not have the spatial accuracy to reliably capture climate processes over small island states; as such these projections should be approached with caution.

Precipitation

Nauru is unusual in that there is good agreement among climate models (**Figure 2** and **Figure 4**) on the direction of change in future precipitation. An increase in average annual precipitation in the order of 20%–40% is likely by the 2090s, under the highest emissions pathway, and smaller increases are expected under lower emissions pathways. Considerable uncertainty still surrounds projections of local long-term future precipitation trends in Nauru (**Figure 4**). However, the intensity of sub-daily extreme rainfall events appears to be increasing with temperature.[23] This phenomenon is highly dependent on local geographical contexts and further research is required to constrain its impact in Nauru.

FIGURE 3. Historical and simulated surface air temperature time series for the region surrounding Nauru. The graph shows the anomaly (from the base period 1986–2005) in surface air temperature from observations (the GISS dataset, in purple), and for the CMIP5 models under the very high (RCP8.5, in red) and very low (RCP2.6, in blue) emissions scenarios. The solid red and blue lines show the smoothed (20-year running average) multi-model mean anomaly in surface air temperature, while shading represents the spread of model values (5–95th percentile). The dashed lines show the 5–95th percentile of the observed interannual variability for the observed period (in black) and added to the projections as a visual guide (in red and blue). This indicates that future surface air temperature could be above or below the projected long-term averages due to interannual variability. The ranges of projections for a 20-year period centred on 2090 are shown by the bars on the right for RCP8.5, 6.0, 4.5 and 2.6.[17]



Heat Waves

Nauru regularly experiences high maximum temperatures, with an average monthly maximum of around 31°C. Projected climate changes are expected to push temperatures above 33°C on a regular basis. When combined with the high levels of humidity experienced in Nauru this suggests an increased risk of temperatures which are dangerous for the human body. Further research is required to better understand the implications of climate change, and its interaction with the ENSO phenomenon, for its future temperature regime and potential heat waves.

[23] Westra, S., Fowler, H. J., Evans, J. P., Alexander, L. V., Berg, P., Johnson, F., Kendon, E. J., Lenderink, G., Roberts, N. (2014). Future changes to the intensity and frequency of short-duration extreme rainfall. Reviews of Geophysics, 52, 522–555. URL: https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2014RG000464

An additional factor for consideration is the potential for marine heat waves. Research has identified the Western Tropical Pacific as a global hotspot for climate change impacts on marine heat waves. Marine heat waves are projected to extend their spatial footprint and to grow in duration and intensity.[24] The consequences of this trend may be serious for marine ecosystems in the region (and the livelihoods dependent on them), which are adapted to survive under very stable temperature regimes.

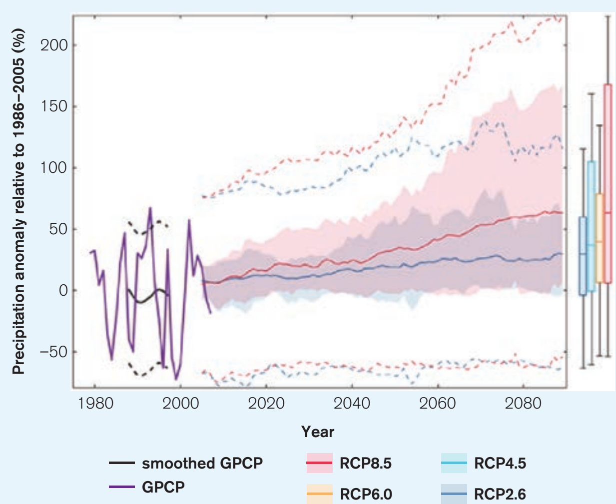
Drought

One primary type of drought affects Nauru, meteorological drought, usually associated with a precipitation deficit. Drought is the main driver of disaster risk in Nauru, contributing to water scarcity and contamination events. Typically associated with La Niña meteorological drought is expected to decline in frequency due to projected increases in rainfall totals. However, the poorly understood interaction between climate change and ENSO means there is low confidence in this projection. This uncertainty represents a major risk as there is very high dependence on rainwater for subsistence.

Flood, Cyclones, and Storm Surge

Nauru's proximity to the equator means that formation of cyclones is highly unlikely in its Exclusive Economic Zone. Since records began in the 1970s, no cyclone events have been recorded. Climate change is expected to interact with cyclone hazard in complex ways which are currently poorly understood. Known risks include the action of sea-level rise to enhance the damage caused by cyclone-induced storm surges, and the possibility of increased wind speed and precipitation intensity. Modelling of climate change impacts on cyclone intensity and frequency conducted across the globe points to a general trend of reduced cyclone frequency but increased intensity and frequency of the most extreme

FIGURE 4. Historical and projected annual average rainfall time series for the region surrounding Nauru. The graph shows the anomaly (from the base period 1986–2005) in rainfall from observations (the GPCP dataset, in purple), and for the CMIP5 models under the very high (RCP8.5, in red) and very low (RCP2.6, in blue) emissions scenarios. The solid red and blue lines show the smoothed (20-year running average) multi-model mean anomaly in rainfall, while shading represents the spread of model values (5–95th percentile). The dashed lines show the 5–95th percentile of the observed interannual variability for the observed period (in black) and added to the projections as a visual guide (in red and blue). This indicates that future rainfall could be above or below the projected long-term averages due to interannual variability. The ranges of projections for a 20-year period centered on 2090 are shown by the bars on the right for RCP8.5, 6.0, 4.5 and 2.6.[17]



[24] Frölicher, T. L., Fischer, E. M., & Gruber, N. (2018). Marine heatwaves under global warming. Nature, 560(7718), 360–364. URL: https://www.nature.com/articles/s41586-018-0383-9

events.[25,26] One study has suggested that under future climates, cyclone generation will become more frequent during El Niño events, but less frequent during La Niña events.[27] While it is unlikely that cyclone impacts will become a major feature of Nauru's risk profile, further research is required to better understand potential changes in cyclone seasonality and routes, and the potential for cyclone hazards to be experienced in unprecedented locations.

Despite being sheltered from cyclones Nauru is still expose to extreme rainfall events which can drive surface flooding and have been linked to prevalence of vector-borne diseases. The risk of flash flooding of this nature is expected to increase in future due both to rising temperatures and increasing average annual precipitation totals.[3]

CLIMATE CHANGE IMPACTS

Natural Resources

Water

The low-lying small island states of the Pacific face many challenges ensuring secure access to clean water. In 2013 it was estimated that Nauru had an average of 32 liters of freshwater per person per day available, well below the WHO recommended level of 50 liters per day.[28] This is in part due to the contamination of most groundwater supplies through mining and poor waste management practices. Studies have shown that Pacific islands face a very high likelihood of increased water stress under climate change.[29] In Nauru this is expected to include issues caused by extreme rainfall events.[30] In particular, if rainfall is delivered primarily in short high intensity events the ability to harvester water is challenged, both by potential damage to storage systems, and the absence of frequent replenishment. Concerns have also been raised regarding the vulnerability of Nauru's water capture, storage, and treatment infrastructure which is primarily located in the coastal zone, exposing it to high sea-level events.

[25] Walsh, K., McBride, J., Klotzbach, P., Balachandran, S., Camargo, S., Holland, G., Knutson, T., Kossin, J., Lee, T., Sobel, A., Sugi, M. (2015). Tropical cyclones and climate change. WIREs Climate Change: 7: 65–89. URL: https://onlinelibrary.wiley.com/doi/abs/10.1002/wcc.371

[26] Widlansky, M. J., Annamalai, H., Gingerich, S. B., Storlazzi, C. D., Marra, J. J., Hodges, K. I., . . . Kitoh, A. (2019). Tropical Cyclone Projections: Changing Climate Threats for Pacific Island Defense Installations. Weather, Climate, and Society, 11(1), 3–15. URL: https://pubs.er.usgs.gov/publication/70203303

[27] Chand, S. S., Tory, K. J., Ye, H., & Walsh, K. J. E. (2016). Projected increase in El Niño-driven tropical cyclone frequency in the Pacific. Nature Climate Change, 7, 123. DOI: https://doi.org/10.1038/nclimate3181

[28] Government of Nauru (2013). Nauru National Assessment Report for the Third International Conference on Small Islands Developing States (SIDS). URL: https://sustainabledevelopment.un.org/content/documents/1119224NAURU%20National%20Assessment%20Report%20for%20Third%20SIDS%20Conference%202013.pdf

[29] Karnauskas, K. B., Schleussner, C.-F., Donnelly, J. P., & Anchukaitis, K. J. (2018). Freshwater stress on small island developing states: population projections and aridity changes at 1.5 and 2°C. Regional Environmental Change. DOI :https://doi.org/10.1007/s10113-018-1331-9

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The Coastal Zone

Sea-level rise threatens significant physical changes to coastal zones around the world. Global mean sea-level rise was estimated in the range of 0.44 meters (m)—0.74 m by the end of the 21st century by the IPCC's Fifth Assessment Report[31] but some studies published more recently have highlighted the potential for more significant rises (**Table 3**). Localized sea-level rise can in fact be an extremely complex phenomenon to measure and model, notably due to the influence of large-scale climate phenomena such as ENSO. Some studies have suggested that the western Pacific has been experiencing above average rates of sea-level rise, but the extent to which this is attributable to human-driven climate change and/or likely to continue requires further research.[32] This trend is supported in Nauru, where the average rate of rise has been around 5 millimeters per year (mm/yr) since 1993, higher than the global average of around 3.2 mm/yr.[3]

Sea-level rise is not just a threat due to long-term encroachment on coastal areas, but also due to the projected increase in the frequency of extreme sea-level events.[33] The return period of exceptionally high sea-levels, driven by climate circulations, is expected to reduce and low-lying pacific island nations are particularly at risk.[34] Studies have shown that the extent of wave-driven flooding is impacted by coral reef height and health, highlighting the importance of coral conservation.[35] Nauru is protected by a ring of coral reef, and its elevation varies from 5 to 70 meters above sea-level. As such Nauru is not the most at-risk nation of the Pacific Islands. Nonetheless, issues such as saltwater intrusion represent a significant risk and impacts which require monitoring include the intersection of sea-level rise with other climate change influences on coral health.

TABLE 3. Estimates of global mean sea-level rise by rate and total rise compared to 1986–2005 including likely range shown in brackets, data from Chapter 13 of the IPCC's Fifth Assessment Report with upper-end estimates based on higher levels of Antarctic ice-sheet loss from Le Bars et al. (2017).[36]

Scenario	Rate of Global Mean Sea-Level Rise in 2100	Global Mean Sea-Level Rise in 2100 Compared to 1986–2005
RCP2.6	4.4 mm/yr (2.0–6.8)	0.44 m (0.28–0.61)
RCP4.5	6.1 mm/yr (3.5–8.8)	0.53 m (0.36–0.71)
RCP6.0	7.4 mm/yr (4.7–10.3)	0.55 m (0.38–0.73)
RCP8.5	11.2 mm/yr (7.5–15.7)	0.74 m (0.52–0.98)
Estimate inclusive of high-end Antarctic ice-sheet loss		1.84 m (0.98–2.47)

31 Church, J. A., Clark, P. U., Cazenave, A., Gregory, J. M., Jevrejeva, S., Levermann, A., . . . Unnikrishnan, A. S. (2013). Sea level change. In Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (pp. 1137–1216). Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press. URL: https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter13_FINAL.pdf

32 Peyser, C. E., Yin, J., Landerer, F. W., & Cole, J. E. (2016). Pacific sea level rise patterns and global surface temperature variability. Geophysical Research Letters, 43(16), 8662–8669.DOI: https://doi.org/10.1002/2016GL069401

33 Widlansky, M. J., Timmermann, A., & Cai, W. (2015). Future extreme sea level seesaws in the tropical Pacific. Science Advances, 1(8). DOI: https://doi.org/10.1126/sciadv.1500560

34 Vitousek, S., Barnard, P. L., Fletcher, C. H., Frazer, N., Erikson, L., & Storlazzi, C. D. (2017). Doubling of coastal flooding frequency within decades due to sea-level rise. Scientific Reports, 7(1), 1399. DOI: https://doi.org/10.1038/s41598-017-01362-7

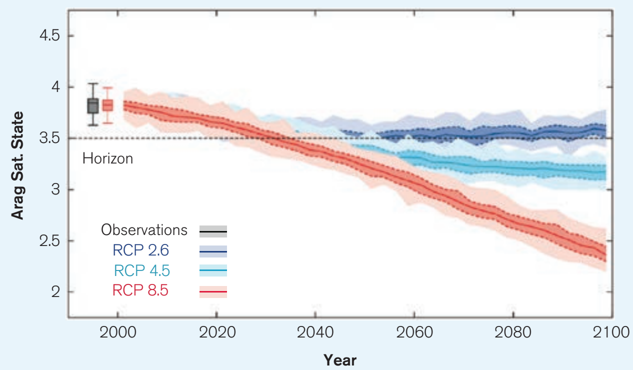
35 Beetham, E., Kench, P. S., & Popinet, S. (2017). Future Reef Growth Can Mitigate Physical Impacts of Sea-Level Rise on Atoll Islands. Earth's Future, 5(10), 1002–1014. DOI: https://doi.org/10.1002/2017EF000589

36 Le Bars, D., Drijhout, S., de Vries, H. (2017). A high-end sea level rise probabilistic projection including rapid Antarctic ice sheet mass loss. Environmental Research Letters: 12:4. URL: https://iopscience.iop.org/article/10.1088/1748-9326/aa6512

Coral Reefs and Fisheries

Calcium carbonite is used for the external skeletons of multiple marine organisms – for instance, plankton, coral reefs, and shell-fish. Increases in atmospheric carbon dioxide are understood to lead to reduced levels of calcium carbonite saturation on the ocean's service via an increase in ocean acidification and by decreasing carbonite ion concentrations. As a result, there are serious concerns that if carbonite minerals, such as aragonite, become under saturated, it could undermine current ocean ecosystems.[37] **Figure 5** shows the projected aragonite saturation state under three emission scenarios for Nauru. Worryingly under RCP4.5 and 8.5 the saturation state is expected to decrease below the threshold needed to sustain healthy coral reefs.

FIGURE 5. Projected changes in aragonite saturation state in Nauru from CMIP5 models under RCP2.6, 4.5 and 8.5. Shown are the median values (solid lines), the interquartile range (dashed lines), and 5% and 95% percentiles (light shading). The horizontal line represents the threshold at which transition to marginal conditions for coral reef health typically occurs.[17]



As Nauru does not have sufficient port capacity, its fishing industry is extremely limited and activity is largely restricted to small-scale subsistence fishing. However, Nauru does draw national income from sale of fishing rights in its waters. Climate change and human resource exploitation represent a dual threat to fisheries. Species living in and around coral reefs, either permanently or in their juvenile period, and particularly larger species, face an extinction threat.[38] As a result of changes in temperature, dissolved oxygen, and acidity, the maximum catch potential of currently resident species is likely negative in Nauru, but research specifically focusing on the island's local fish population is lacking.[39]

[37] Orr, J. C., Fabry, V. J., Aumont, O., Bopp, L., Doney, S. C., Feely, R. A., . . . & Key, R. M. (2005). Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms. Nature, 437(7059), 681. URL: https://pubmed.ncbi.nlm.nih.gov/16193043/

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Climate-change is also projected to affect how tropical tuna stocks in the Pacific are distributed (such as skipjack, yellowfin, bigeye, and albacore). One study shows that the biomass of skipjack and yellowfin tuna is largely expected to shift eastwards during the 21st century with the effect being weaker for bigeye and albacore tuna.[40] Another study has suggested that this may result in a large (up to 20% reduction in Bigeye tuna catch in Nauru's waters.[41] It is unclear how future changes will affect the overall productivity of Nauru's Exclusive Economic Zone but historical trends suggest and potentially negative outlook. There have been strong calls for support to communities in the Pacific Islands to identify suitable responses and financing mechanisms, and to adapt to the changing marine environment.[42]

Island Ecology

Research into the ecological situation of Nauru is scarce, but there is evidence of historically abundant marine biodiversity.[43] Nauru's coral reefs are also reportedly in a good state of ecological health compared to many Pacific reefs.[42] However, the impact of almost a century of Phosphate mining was to significantly degrade the terrestrial biodiversity,[44] this has been compounded by introduction of a large number of non-native species.[40] Impacts have also transferred into the marine environment and impacted on coral diversity. As climate changes so the suitable range for species to inhabit shifts, typically either upslope or away from the equator. In the Island environment the capacity for species to shift is extremely limited and as such loss and extinction are becoming increasingly likely. Major concerns have been raised for the terrestrial ecology of low-lying Pacific islands, for example endemic lizards, which may become trapped in a shrinking habitat.[45] Research has also highlighted the risks to biodiversity in the Pacific through study of tree richness in New Caledonia, where the range sizes of 87%–96% of species was projected to decline, typically by 52%–84%.[46]

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40 Pacific Community (2019). The Western and Central Pacific Tuna Fishery: 2019 Overview and Status of Stocks. URL: https://www.researchgate.net/publication/346512257_The_western_and_central_Pacific_tuna_fishery_2019_overview_and_status_of_stocks

41 Bell J. D. et al. 2011. Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change. Secretariat of the Pacific Community, Noumea, New Caledonia. URL: https://horizon.documentation.ird.fr/exl-doc/pleins_textes/divers15-01/010063492.pdf

42 Hanich, Q., Wabnitz, C. C. C., Ota, Y., Amos, M., Donato-Hunt, C., & Hunt, A. (2018). Small-scale fisheries under climate change in the Pacific Islands region. Marine Policy, 88, 279–284. DOI: https://doi.org/https://doi.org/10.1016/j.marpol.2017.11.011

43 Allen, G. R. (2008). Conservation hotspots of biodiversity and endemism for Indo-Pacific coral reef fishes. Aquatic Conservation: Marine and Freshwater Ecosystems, 18(5), 541–556. DOI: https://doi.org/10.1002/aqc.880

44 Gowdy, J. M., & McDaniel, C. N. (1999). The Physical Destruction of Nauru: An Example of Weak Sustainability. Land Economics, 75(2), 333–338. DOI: https://doi.org/10.2307/3147015

45 Taylor, S., & Kumar, L. (2016). Global Climate Change Impacts on Pacific Islands Terrestrial Biodiversity: A Review. Tropical Conservation Science, 9(1), 203–223. DOI: https://doi.org/10.1177/194008291600900111

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Communities

Poverty, Inequality, and Vulnerability to Climate-Related Disaster

Nauru is considered a fragile country with acute development challenges due to its remote geographical location, weak infrastructure and lack of access sustainable sources of revenue. As of 2013, around 24% of the population were living below the national poverty line (**Table 1**). In 2019, the GDP of Nauru was estimated at $118 million and its GDP per capita at $10,983.[47] Nauru has a very small private sector with the government and state-owned enterprises employing around 95% of the formal labor force.[48]

Furthermore, the country's agricultural potential is constrained due to the phosphate mining scarring the interior part of the island; as such, Nauru is heavily dependent on imports for food and other necessities.[49] Nauru was once one of the richest countries in the world thanks to its rich phosphate deposits it exported. Renewed activity in secondary phosphate mining has raised hopes of better economic prospects.

Nauru continues to struggle to develop alternative sources of income, with revenues from fishing license fees providing a significant boost.[50] Nauru attempted to attract additional revenue by non-traditional means. However, it was forced to revoke the licenses for many of the banks registered in the country following the intergovernmental Financial Action Task Force labelling Nauru as a 'non-cooperative' country in its failure to fight against international money laundering.[44] Nauru also signed an agreement with the Government of Australia to set up a regional processing center (PRC) for refugees and asylum seekers. Frequent concerns have been raised about human rights issues and the living conditions in the RPC.[51] Operations in the RPC started to wind down in 2019 with final details of the eventual closure still being negotiated with the Government of Australia as of June 2021.

Nauru's attempts to strengthen the economic position of its communities have had limited success. Its government struggles to provide adequate healthcare to its citizens, and water quality and supply are often inadequate. A critical lack of data and research prevents detailed understanding of issues of poverty, inequality, and deprivation. Many of the climate changes projected are likely to disproportionately affect the poorest groups in society. While Nauru's island is relatively higher above sea-level than some of its Pacific neighbors, climate displacement may still present a risk. Studies have highlighted the need to better understand the health and wellbeing risks of climate-linked migration.[52]

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47 World Bank Open Data (2021). World Development Indicators. Nauru. URL: http://databank.worldbank.org/data/reports.aspx?source=2&country

48 Asian Development Bank (2016). Mapping fragile and conflict-affected situations in Asia and the Pacific: the ADB experience. URL: https://www.adb.org/sites/default/files/publication/211636/mapping-fcas-asia-pacific.pdf

49 Asian Development Bank (2019). Pacific Finance Sector Briefs: ADB Pacific Liaison and Coordination Office. URL: http://dx.doi.org/10.22617/BRF190379-2

50 International Monetary Fund (2020). Republic of Nauru: 2019 Article IV Consultation Staff Report. https://www.imf.org/-/media/Files/Publications/CR/2020/English/1NRUEA2020001.ashx

51 Harrison V., (2018). Nauru refugees: The island where children have given up on life, BBC. URL: https://www.bbc.co.uk/news/world-asia-45327058

52 Dannenberg, A.L., Frumkin, H., Hess, J.J. and Ebi, K.L. (2019). Managed retreat as a strategy for climate change adaptation in small communities: public health implications. Climatic Change, pp. 1–14. URL: https://ideas.repec.org/a/spr/climat/v153y2019i1d10.1007_s10584-019-02382-0.html

Gender

An increasing body of research has shown that climate-related disasters have impacted human populations in many areas including agricultural production, food security, water management and public health. The level of impacts and coping strategies of populations depends heavily on their socio-economic status, socio-cultural norms, access to resources, poverty as well as gender. Research has also provided more evidence that the effects are not gender neutral, as women and children are among the highest risk groups. Key factors that account for the differences between women's and men's vulnerability to climate change risks include: gender-based differences in time use; access to assets and credit, treatment by formal institutions, which can constrain women's opportunities, limited access to policy discussions and decision making, and a lack of sex-disaggregated data for policy change.[53]

Migration

Nauru is vulnerable to climate change. In the last decade, about 74% of the population has experienced one or more environmental change, particularly droughts which had affected around 61% of the population. Nauru has no streams or ground water as such it runs the risk of constantly being unable to meet its water demands.[54] Most Nauruans live on the coast due to the lack of habitable land in the interior of the island (because of extensive phosphate mining). This has meant that most residents are exposed to sea-level rise and coastal erosion. Questions have been raised regarding the long-term viability of residence in the region. Nauru already faces strain from the size of its population, Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO) suggests that the human-carrying capacity of small islands is around 100 people per square kilometer. In 2015, Nauru had 563 persons per square kilometer.[55]

One study found more than a third of households reported they would most likely migrate in the event of worsening droughts, sea-level rises or flooding as well as salt-water intrusion on the limited ground water that is available in Nauru. Households were less concerned about climate impacts on agricultural and fish production.[52] This is likely because most of the food in Nauru is already imported. However, UN survey data suggest that only one in four or less of households relating to Nauru (but also Kiribati and Tuvalu) see migration as a strategic response to climate change or have the resources to do so.[51]

Migration in Nauru is closely linked with remittances, the mean per capita income for households receiving remittances from overseas labor migrants is more than three times the household average income for people who do not receive remittances. Most of those who migrate for work are men, whilst those who migrate for education are women. Literature suggests, however, the main drivers of migration continue to be economic "pulls" including opportunity to access higher education, find work and improve poor living conditions. Between 2005 and 2015, Nauruans migrated mainly to Fiji as well as Australia.

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[53] World Bank Group (2016). Gender Equality, Poverty Reduction, and Inclusive Growth. URL: http://documents1.worldbank.org/curated/en/820851467992505410/pdf/102114-REVISED-PUBLIC-WBG-Gender-Strategy.pdf

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[55] Curtain R. and Dornan M. (2019). A pressure release valve? Migration and climate change in Kiribati, Nauru and Tuvalu, Development Policy Centre. URL: https://reliefweb.int/sites/reliefweb.int/files/resources/Migration-climate%20change-Kiribati-Nauru-Tuvalu.pdf

Human Health

Since the 1980s, Nauru increasingly relied on imports for food security due to increased urbanization and weak agricultural conditions in the country. Only around 20% of Nauru's areas (about 4 km^2) is dedicated to agricultural practices. Poor quality imports have created a vulnerable population with a variety of health problems, with diabetes in one out of every ten people[56] And child malnutrition due to shortages of fresh fruits and vegetables.[44] The broad human health risks of climate change in Pacific Island Countries were assessed in a 2016 study. A large suite of issues were identified. Specifically flagged in Nauru were the health impacts of extreme weather events, heat-related illness, water security and safety, food security and malnutrition, vector-borne diseases, respiratory illnesses, non-communicable diseases, and a variety of other disorders.[57]

Heat-Related Mortality

Research has placed a threshold of 35°C (wet bulb ambient air temperature) on the human body's ability to regulate temperature, beyond which even a very short period of exposure can present risk of serious ill-health and death.[58] Temperatures significantly lower than the 35°C threshold of 'survivability' can still represent a major threat to human health. Climate change is expected to push global temperatures closer to this temperature 'danger zone' both through slow-onset warming and intensified heat waves.

Honda et al. (2014) utilized the A1B emissions scenario from CMIP3 (most comparable to RCP6.0) to estimate that without adaptation, annual heat-related deaths in the Australasian region, could increase by 211% by 2030 and 437% by 2050.[59] The potential reduction in heat-related deaths achievable by pursuing lower emissions pathways is significant, as demonstrated by Mitchell et al. (2018).[60] Further research is required to better constrain estimates to Nauru's geographical range.

Disease and General Health

Sea-level rises pose a serious threat to the water security of Pacific nations due to potential salinization of potable water sources. Saline intrusion to drinking water sources has been linked to the increased prevalence of hypertension during pregnancy[61] and, as 60% of the adult population in Nauru is overweight,[62] could contribute to increased levels of hypertension more generally.

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56 Khambalia, A., Phongsavan, P., Smith, B.J. et al. (2011). Prevalence and risk factors of diabetes and impaired fasting glucose in Nauru. BMC Public Health 11, 719. URL: https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-719

57 Lachlan, M., Rokho, K., Alistair, W., Simon, H., Jeffery, S., Dianne, K., . . . L., E. K. (2016). Health Impacts of Climate Change in Pacific Island Countries: A Regional Assessment of Vulnerabilities and Adaptation Priorities. Environmental Health Perspectives, 124(11), 1707–1714. URL: https://pubmed.ncbi.nlm.nih.gov/26645102/

58 Im, E. S., Pal, J. S., & Eltahir, E. A. B. (2017). Deadly heat waves projected in the densely populated agricultural regions of South Asia. Science Advances, 3(8), 1–8. URL: https://advances.sciencemag.org/content/3/8/e1603322

59 Honda, Y., Kondo, M., McGregor, G., Kim, H., Guo, Y-L, Hijioka, Y., Yoshikawa, M., Oka, K., Takano, S., Hales, S., Sari Kovats, R. (2014). Heat-related mortality risk model for climate change impact projection. Environmental Health and Preventive Medicine 19: 56–63. URL: https://pubmed.ncbi.nlm.nih.gov/23928946/

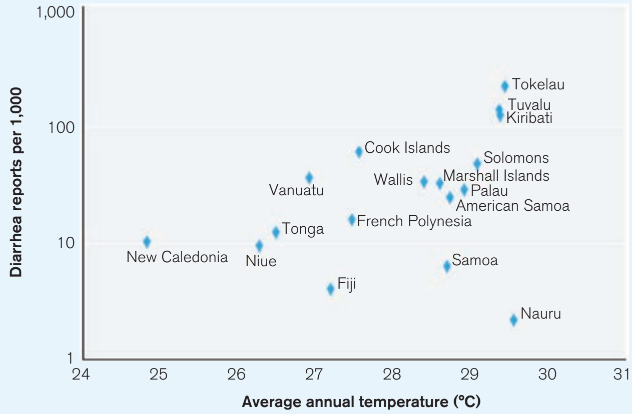
60 Mitchell, D., Heaviside, C., Schaller, N., Allen, M., Ebi, K. L., Fischer, E. M., . . . Vardoulakis, S. (2018). Extreme heat-related mortality avoided under Paris Agreement goals. Nature Climate Change, 8(7), 551–553. DOI: 10.1038/s41558-018-0210-1

61 Khan, A. E., Ireson, A., Kovats, S., Mojumder, S. K., Khusru, A., Rahman, A., & Vineis, P. (2011). Drinking water salinity and maternal health in coastal Bangladesh: implications of climate change. Environmental health perspectives, 119(9), 1328–1332.

62 WHO, Global Health Observatory Repository. URL: https://www.who.int/gho/ncd/risk_factors/overweight/en/ [accessed 01/03/2019]

Multiple studies have found that increased temperatures, drought, and rainfall are correlated with increases in reported levels of diarrheal disease[63,64,65] including specifically in the Pacific Island region.[66] While the interaction between temperature and diarrheal disease is still unclear, one explanation of the association is that rotavirus and other bacteria that cause diarrhea are able to proliferate in warm marine water. Another possible explanation is that higher temperatures can cause food to spoil more rapidly, and thus cause food poisoning.[67] **Figure 6** shows research by Singh et al. (2001),[63] which demonstrated the link between annual average temperature and average reporting rates of diarrheal disease specifically amongst Pacific island states.

FIGURE 6. Annual average temperature and average reporting rates for diarrheal disease, Pacific Islands (1986–1994). $r^2 = 0.49$; $p < 0.05$[62]



POLICIES AND PROGRAMS

National Adaptation Policies and Strategies

- Updated Nationally Determined Contribution (2021)
- Intended Nationally Determined Contribution (INDC) (2015)
- Second National Communication (2014)
- First National Communication (1999)

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63 Chou, W. C., Wu, J. L., Wang, Y. C., Huang, H., Sung, F. C., & Chuang, C. Y. (2010). Modelling the impact of climate variability on diarrhea-associated diseases in Taiwan (1996–2007). *Science of the Total Environment, 409*(1), 43–51. URL: https://pubmed.ncbi.nlm.nih.gov/20947136/

64 Zhou, X., Zhou, Y., Chen, R., Ma, W., Deng, H., & Kan, H. (2013). High temperature as a risk factor for infectious diarrhoea in Shanghai, China. *Journal of epidemiology*, JE20130012. URL: https://pubmed.ncbi.nlm.nih.gov/23994865/

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66 Singh, R. B., Hales, S., De Wet, N., Raj, R., Hearnden, M., & Weinstein, P. (2001). The influence of climate variation and change on diarrheal disease in the Pacific Islands. Environmental health perspectives, 109(2), 155–159. URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240636/

67 Bentham, G., & Langford, I. H. (2001). Environmental temperatures and the incidence of food poisoning in England and Wales. *International journal of biometeorology, 45*(1), 22–26. URL: https://pubmed.ncbi.nlm.nih.gov/11411411/

Climate Change Priorities of the WBG

WBG — Regional Partnership Framework

The World Bank Group has agreed a Regional Partnership Framework: Kiribati, Republic of Nauru, Republic of The Marshall Islands, Federated States of Micronesia, Republic of Palau, Independent State of Samoa, Kingdom of Tonga, Tuvalu, and Vanuatu which covers the period 2017–2021. Climate change is one of four key focus areas of the agreement, which states: "Protecting incomes and livelihoods. A key focus will be on strengthened preparedness and resilience to natural disasters and climate change. Interventions will also help countries strengthen health systems and address NCDs."

Under the heading of strengthening resilience to natural disasters and climate change, the RPF aims to continue to support regional and single-country activities that help the PIC9 strengthen their resilience against natural disasters and climate change. PICs combine high exposure to frequent and damaging natural hazards with low capacity to manage the resulting risks. Vulnerability is exacerbated by poor planning, which has increased losses and exposure to natural disasters, and by climate change, which is predicted to amplify the magnitude of cyclones, droughts, and flooding. Sea level rise will worsen coastal erosion and salinization of freshwater resources and increase the severity of storm surges, which will be particularly damaging in atoll islands and low-lying areas. All these impacts adversely affect agriculture, fisheries, coastal zones, water resources, health and ecosystems and the communities that rely upon them. The cost of inaction is substantial. Investments in disaster proofing and climate resilience cost substantially less than rebuilding after a disaster. The WBG will ensure that at least 35 percent of the total portfolio will directly or indirectly support climate-related co-benefits. The RPF further identifies a range of regional and country-specific interventions including vulnerability assessment and disaster risk planning, financing and insurance initiatives for climate risks and natural hazards, as well as support to resilience building interventions in areas such as transport, agriculture and water supply.

CLIMATE RISK COUNTRY PROFILE

NAURU

WORLD BANK GROUP