DISASTER RISK REDUCTION IN OCEANIA

Policy Research Project Report
May 2020

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Acknowledgements

This material is based upon work supported by, or in part by, the Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM). We'd also like to acknowledge the guidance and insight provided by Beth Holland, the University of South Pacific.

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List of Acronyms

CRI	Climate Risk Index
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HFA	Hyogo Framework for Action
IGO	International Government Organizations
JNAPII	Joint National Action Plan on Climate Change and Disaster Risk Management
KJIP	Kiribati Joint Implementation Plan
NAB	National Advisory Board
NAP	National Action Plan
NCCCC	National Climate Change Coordination Committee
NCCP	National Climate Change Policy
ND-GAIN	Notre Dame Global Adaptation Initiative

List of Acronyms

NDRMO	National Disaster Risk Management Organization
NDMO	National Disaster Management Organization
NDRMA	National Disaster Risk Management Arrangements
NSAP	National Strategic Action Plan
PDNA	Post Disaster Needs Assessment
SIDS	Small Island Developing States
UN-DRR	United Nations Disaster Risk Reduction (formerly UNSDIR)
UNDP	United Nations Development Project
UNDRR	United Nations Disaster Risk Reduction
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
USAID	United States Agency for International Development
WRI	World Risk Index

Executive Summary

Introduction

Most of Oceania consists of small island nations, spread across a vast ocean, creating a landscape that is extremely vulnerable to natural hazards and increasingly being threatened by climate change. It is of growing importance to countries and supporting external actors alike that the vulnerability of these nations be understood. This paper aims to discuss the priority areas for the region, for each country, and present the findings through actionable recommendations.

Research Questions

Our initial aim of this research project was to understand Oceania's climate preparedness; however, it became apparent that existing data, policies, and other literature does not separate climate related vulnerability from the broader umbrella of natural hazard vulnerability, more commonly referred to as disaster risk reduction. Therefore our report presents overall vulnerability scores and concerns, highlighting climate-related hazards, but still including other natural hazards. We provide an overview of the region as well as a country-level analysis to provide the reader with a clearer understanding of the status of disaster risk reduction efforts in relation to their vulnerability.

We look at the three most urgent components that will indicate the status of a country's resilience--the type and level of natural hazards exposure, the amount of people exposed to natural hazards, and the government's efforts towards risk reduction. More detailed research questions are as follows:

Executive Summary

Hazard & Population Exposure

- What are the overall natural hazards in the region? What are the climate-related hazards?
- What is the population for each country living near coastal zones and facing sea-level rise?

Preparedness

- How are governments building up their disaster resilience?
- Are governments participating in existing disaster risk reduction frameworks?

There are several existing frameworks, such as the Hyogo and Sendai frameworks, and indices, such as the World Risk Index, Climate Risk Index, and more that have been compiled by researchers, IGO's, and inter-governmental agencies that aim to answer these exact questions. We first looked at these indices to try and answer several of these questions. However, due to the inconsistencies in language and data quality issues, we observed that comparing their final rankings could be misleading.

Therefore, we've developed rapid assessment tests in the three areas - natural hazard exposure, population exposure, and government preparedness to present a consistent and simplified ranking for users to understand the vulnerability of countries in Oceania..

Our findings demonstrate that most countries are within the 'medium' to 'high' vulnerability score, most in part due to high levels of natural hazard exposure and population exposed. Further, most countries have 'low' to 'medium' government preparedness. After analyzing all the countries' performance over the three measures - hazard exposure, population exposure, and government preparedness, we come to a conclusion that Micronesia, Palau, and Tuvalu are the most vulnerable countries.

Executive Summary

Through our findings, we have formulated the following recommendations; further discussion of these points can be found on pages 39 & 40.

Countries Should;

- **Recognize the distinction between swift onset hazards, such as cyclones, and slow onset hazards, like sea-level rise, which may cause a country to become inhospitable, and plan their DRR activities such as to mitigate the effects of both the types of hazards.**
- **Focus on effective implementation of policies formulated, so as to bridge the gap between planning and actual progress on the ground.**
- **Prioritize and invest in training, capacity building, and reporting that are specific to their national DRR and climate adaptation plans.**
- **Develop clear and transparent fiduciary systems that track and report DRR and climate adaptation related activities.**

Supporting Actors Should;

- **Investigate the measurement systems of existing indices and be aware of their language inconsistencies, errors in reporting, and aggregation of natural and climate related hazards. Actors should consider building off of existing data sources to create a climate change index that reflects climate-only risks.**
- **Support country-specific training and capacity building exercises that move forward DRR and climate-related management policies.**
- **Support funding strategies that allow countries to improve the implementation of their policies.**
- **Work within existing consortiums, working groups, and tasks forces, and align work with existing DRR and climate-related policies in place.**

SECTION ONE:
Preparedness Across Oceania

Regional Background

In this section, we outline the current and predicted hazards for the Oceania region (inclusive of both natural and climate-related hazards), the necessary background information on how governments engage in DRR and climate related activities, and the existing frameworks and indices for assessing overall vulnerability.

Natural Hazards Exposure

Cyclones

Broadly, Oceania's biggest threats are cyclones. Cyclones have inflicted some of the heaviest damage throughout Oceania region and are anticipated to become an even greater threat. From 1981-2016, there have been 27 Category 5 and 32 Category 2 cyclones that have caused significant damage to the region.

- Cyclone Evan, Samoa, 2012: $210 million, 30% GDP losses
- Cyclone Ian, Tongo, 2014: $50 million, 11% GDP
- Cyclone Pam, Vanuatu, Tuvalu, Kiribati, $450 million, 64% GDP
- Cyclone Winston, Fiji, 2016, estimated over $450 million, 20% of GDP[1]

Flooding

Flood damage, documented as rainfall flooding, is not associated with cyclones, and yet has been recorded as the second largest weather hazard threat in Oceania. However, flooding has not been consistently recorded. Key historical events associated with flooding have occurred mostly in Fiji and the Solomon Islands. Fiji has recorded damages due to flooding in the year 2004, 2009, 2012, with one event causing $135 million in damages. Solomon Islands had a flooding event occur in 2014, causing up to $106.9 million in damage, which is around 9.2% of their GDP.[1]

Regional Background

Droughts

Droughts are a prolonged period of very little or no rain. This can result in huge losses to agricultural activity and cause public health challenges in rural areas and urban areas that rely on rainwater catchment systems for their drinking and household water. For example, in 2011, Tuvalu experienced a national emergency and had to severely ration freshwater over a two month period. In 2015 and 2016, the Republic of Micronesia declared a State of Emergency due to droughts.[2]

Sea level rise, salt water intrusion, changing rainfall patterns

Additional heightened threats of weather-related damages will occur through hazard impacts, or the damage that is caused by these events over time. Often, there is a slower onset, and these hazard impacts are more challenging to measure. These include increased sea level rise, coastal erosion, saline intrusion, and changes in rainfall. These are anticipated to have large effects on agriculture, fisheries, and human displacement.

Other hazards to note, but currently less damaging are electrical storms, extreme winds, landslides, storm surges, and volcanic eruptions.[2]

Regional Background

Tsunamis and Earthquakes

Although tsunamis and earthquakes are not climate-related hazards, they are included in the broader disaster risk reduction literature. Therefore we've included it in this report. Due to the geographic location of the islands and their alignment on tectonic plates, known as the 'Ring of Fire', the islands are vulnerable to both tsunamis and earthquakes. Typically, an earthquake will occurs first, generating a surge in waves. In Oceania, Vanuatu is most at risk. Notable earthquakes include:

- 1999, Vanuatu, 7.5 magnitude, 10 dead, 100 injured
- 2002, Vanuatu, 7.3 magnitude
- 2009, Samoa, 8.1 magnitude, 189 dead
- 2013, Solomon Islands, 8.0 magnitude, 9 dead[1]

Regional Background

DRR Government Preparedness

Oceania has been actively involved in readiness programs that support national disaster risk reduction efforts, which is inclusive of climate change readiness.

Governments have created alliances to work collaboratively towards disaster risk reduction and climate preparedness efforts. For example, the Pacific Islands Forum is the one of many platforms that brings relevant actors together. The Pacific Islands Forum brings governments together to act collectively towards action on the economy, development, health, education, and more.[3]

Other efforts have been spearheaded by international organizations, such as the World Bank under Pacific Possible.[10] Pacific Possible brings together Oceania governments to develop plans and recommends best practices for fisheries, agriculture, and infrastructure protection for the region.

An additional platform to bridge national governments, is Ocean Cities, a University of South Pacific spearheaded consortium, that does similar work to Pacific Possible.[11] Numerous other groups that exist.

Lastly, we see that all national governments have a DRR related management plan. However, key informants and self-reports from national governments in their Sendai and Hyogo reports, two UN disaster risk reduction reporting platforms discussed in more detail, demonstrate that the capacity and commitment of governments may not be as strong as they seem on paper.

Therefore, we have developed a rapid assessment test that we believe gives a clearer picture of government preparedness.

Regional Background

DRR Government Preparedness

Understanding the government preparedness both regionally and by individual country is important for identifying key areas where support is needed. Further, it can provide a sense of whether a government is committed towards disaster risk reduction. One way of monitoring a country's performance by their national government was set up by the Hyogo Framework and the subsequent Sendai Framework.[4] In order to assess the region, we first conducted a review of existing indices. We were looking for indices that included vulnerability and preparedness data, were produced by accredited institutions, and had seemingly little data quality issues.

From a total of eight indices, we identified a short-list of indices, We performed a secondary analysis that reviewed the indices' methods and data sources. From there, we found that although indices were seemingly reporting on the same thing, the measurement definitions they used varied widely. Additionally, we found large gaps in data quality that may not reflect the true state of vulnerability in a given country. Our summary of the indices, what they are measuring, and critical comparability issues are outlined in Section 1. Below is a brief snapshot of the indices we use to generate information on the region.

Regional Background

Existing Measurements: Frameworks & Indices

Hyogo Framework

The Hyogo Framework for Action (HFA) monitor aimed to track the status and progress in disaster risk reduction efforts. Implemented from 2005 to 20015, its primary purpose was to assist countries in monitoring their own progress in the implementation of disaster risk reduction and recovery actions. The self reporting tool was designed by the United Nations Office for Disaster Risk Reduction (UNISDR). It provided details about the new legislative and instrumental systems, policies, budgetary allocations, information systems, early warning mechanisms, and disaster preparedness actions undertaken by governments. It also provided insight, albeit to a lesser extent, on the corrective disaster risk management.[5]

Sendai Framework

The Sendai Framework for Disaster Risk Reduction is the successor agreement to the Hyogo Framework. It was adopted in 2015 and aims to substantially reduce the "disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries." Target E from the Sendai Framework is a measure that estimates the number of countries and local actors that have Disaster Risk Reduction (DRR) strategies in place. Its goal is to: "Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020."[4]

Regional Background

Existing Measurements: Frameworks & Indices

ND Gain

The ND Gain Readiness index measures a country's ability to leverage investments and convert them to adaptation actions. It is comprised of three subcomponents: Economic; Governance; and Social Readiness.[6]

World Risk Index

The World Risk Index, developed and calculated by Prof. Birkmann and Dr. Welle from the University of Stuttgart, evaluates the exposure to natural hazards and assesses inherent vulnerabilities of countries towards suffering from impacts when facing these hazards.[7]

INFORM

INFORM GRI is a global, open source risk assessment for humanitarian crises and disasters that is updated annually. INFORM is a collaboration of the Inter-Agency Committee Reference Group on Risk, Early Warning and Preparedness and the European Commission.[8]

Climate Risk Index

The Global Climate Risk Index (CRI) is an annual ranking of the extent countries have been affected by the impacts of weather loss events. The index uses three main sources; extreme weather events, relevant socio-economic data.[9]

Endnotes

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Methodology | Measuring DRR

In order to understand regional and country-level vulnerability and preparedness, our team looked to existing indices and frameworks that had already attempted to measure DRR.

Each index scores the countries on the basis of a number of components, some of which are common across all indices. In order to better gauge the performance of Oceania countries, we analyzed the scores of Oceania countries relative to each other.

The purpose of this exercise is to generate relative rankings for Oceania countries and also give us insights into how different indices measure scores across different and varied components.

As is seen from our analysis, there is significant variation in how different indices rank Oceania countries. Much of this variation is owing to missing data for one or more components of an index. The absence of data for some countries prevents us from ranking them.

In addition to variation across countries, there is also a variation across time in the relative rank of a country for the same index. We can see this from how the relative ranks of some countries vary significantly for the INFORM index. This discrepancy is primarily caused by different indices capturing different kinds of information, categorizing and classifying it differently and using different methodologies to come up with different scores. The resultant variation in scores highlights the discrepancy across countries.

Methodology | Measuring DRR

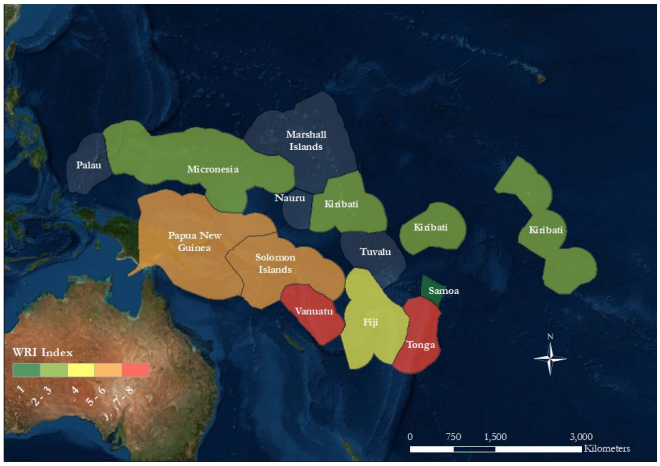
These indices use various sub-indicators and sources to derive their own index. However, in order to effectively highlight usefulness of the indices, we have distilled their sub-indicators into four broad categories: economic, social, natural, and governmental. Economic measures include any data source that collects information on the countries' economic status. The category of social is inclusive of all socially-relevant sub-indicators such as individual coping capacity and resilience. The natural category includes any national data collected about weather or hazard events. This can also include data that discusses the environmental resiliency. Lastly, governmental includes information pertaining to government commitment and capacity.

Index	Economic	Social	Natural	Governmental
Hyogo Framework for Action				✓
Sendai Framework for Disaster Risk Reduction (Target E)				✓
World Risk Index		✓	✓	✓
Climate Risk Index	✓	✓	✓	
ND Gain Readiness Index	✓	✓		✓
INFORM		✓	✓	✓

Methodology | Measuring DRR

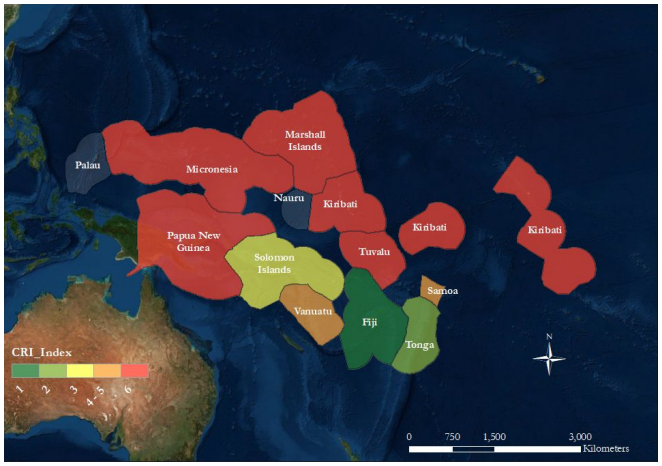
The maps below demonstrate the overall rankings per index. These maps highlight the large differences that the indices present, based on indicators they are using in the methodology. The purpose of these maps is to show the need to understand the underlying indicators of each index before use.

WorldRiskIndex (WRI)



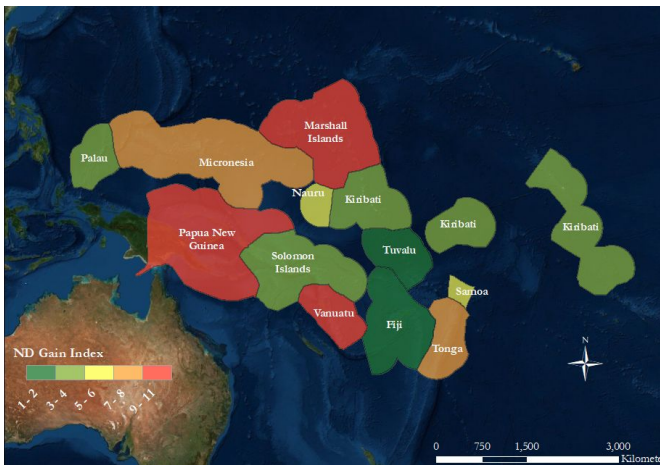
[Social - Environmental - Governmental]

Global Climate Risk Index (CRI)



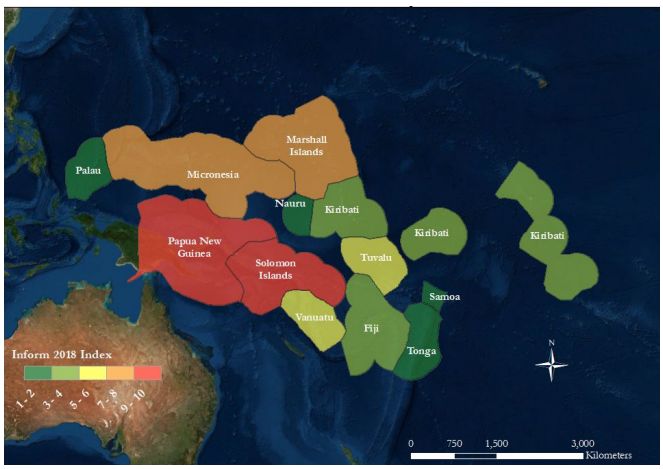
[Economic - Social - Environmental]

ND Gain



[Economic - Social - Governmental]

INFORM



[Social - Environmental - Governmental]

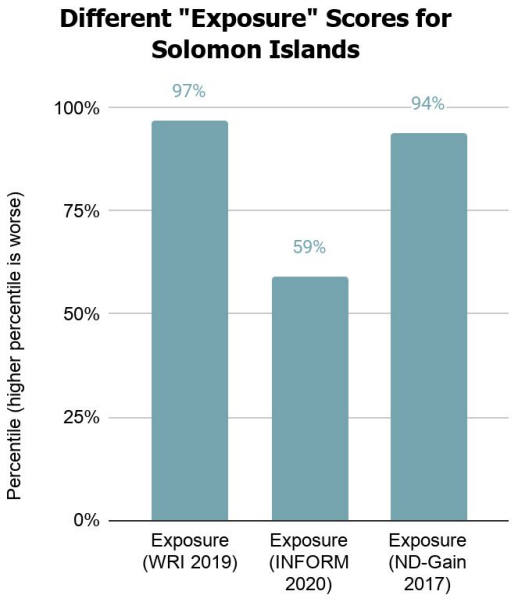
Methodology | Measuring DRR

Comparing indices at face value is a hard task. First of all, indices do not use the same unit of measure, which is why we initially had to convert all scores into ranks and then into percentiles. Once all ranks were given the same denominator (100%) and directed in the same ascending order (from worst to best), comparisons became easier. In addition to world rankings, we also provide the relative ranks and percentiles within Oceania for each of the 11 countries we are examining.

While quantitatively the scores became comparable, substantively the comparison was still flawed. "Risk" is defined differently by every database and so calculating it assumes different metrics. For instance, the World Risk Index (WRI) places Fiji as the 12th most at-risk country, while INFORM places it as the 123rd. How can a country rank among the least and most at-risk countries at the same time? Delving deeper into each index, we realized that INFORM, for example, computes socio-economic factors as part of risk while WRI strictly examines climate-related risk.

To make risk scores even more comparable, we highlighted the common metrics across the various indices; namely: "exposure", "vulnerability," "lack of coping capacities," etc and sought to compare them instead.

We were surprised to find that even the same metric such as "Exposure" yielded different results for Solomon Islands across the various platforms *(figure 1).*



Methodology | Measuring DRR

While all Exposure metrics take into account natural hazards, INFORM also considers epidemics and projected conflict risk and violent existing ones.

Therefore, in general, **we recommend using climate-focused indices such as WRI or ND Gain to assess exposure to natural hazards.** The INFORM exposure score is useful in the absence of either or both ND Gain and WRI exposure scores or to have a sense of exposure to non-natural disasters.

Finally, the Germanwatch Global Climate Risk Index (CRI) only reflects the direct impacts--direct economic losses and fatalities--of extreme weather events. It is useful should the analyst want to assess material and human loss on a yearly basis or as an average from 1998-2018. In our study, we only include the assessment on a yearly basis as it reflects the enduring climate-induced losses in Oceania.

A reference sheet for all the indices and metrics and their significance can be found on the next page.

Methodology | Measuring DRR

For all the numerical ranks, lower ones are worse. Ranks may differ from those on the official platform because we have converted them all to an ascending order from worst to best. For the percentiles, higher percentiles are worse.

INFORM [Social, Environmental, Governmental] *(2020)*	**World Rank** *Based on total # of countries studied*	**Oceania Rank** *Based on # of countries studied in Oceania*
Total Risk *Combination of socio-economic, political, and environmental vulnerability and readiness*	*Ranked from most at risk to least in the world*	*Ranked from most at risk to least in Oceania*
Hazard and Exposure *Includes natural and human-made disasters such as epidemics*	*Ranked from most exposed to least in the world*	*Ranked from most exposed to least in Oceania*
Vulnerability *Mostly social: aid dependency, development, inequality, uprooted people, food insecurity...*	*Ranked from most vulnerable to least in the world*	*Ranked from most vulnerable to least in Oceania*
Lack of Coping Capacities *DRR, communication, institutions, infrastructure, access to healthcare...*	*Ranked from least coping to most in the world*	*Ranked from least coping to most in the world*

ND Gain [Economic-Social-Environmental-Governmental] *(2017)*	**World Rank** *Based on total # of countries studied*	**Oceania Rank** *Based on # of countries studied in Oceania*
Total Risk *Vulnerability and readiness related to climate change*	*Ranked from most at risk to least in the world*	*Ranked from most at risk to least in Oceania*
Vulnerability *Socio-economic & environmental vulnerability*	*Ranked from most vulnerable to least in the world*	*Ranked from most vulnerable to least in Oceania*
Lack of Readiness *Sociocial, economic, governmental & environmental readiness*	*Ranked from least ready to most ready in the world*	*Ranked from least ready to most ready in oceania*
Exposure *Exposure to natural hazards only*	*Ranked from most exposed to least in the world*	*Ranked from most exposed to least in Oceania*
Lack of Coping Capacity *Sustainable adaptation*	*Ranked from least coping to most in the world*	*Ranked from least coping to most in the world*

WorldRiskIndex [Social, Environmental, Governmental] *(2019)*	**World Rank** *Based on total # of countries studied*	**Oceania Rank** *Based on # of countries studied in Oceania*
Total Risk *Vulnerability and susceptibility to natural hazards*	*Ranked from most at risk to least in the world*	*Ranked from most at risk to least in Oceania*
Exposure *Includes earthquakes, cyclones, floods, droughts, sea level rise*	*Ranked from most exposed to least in the world*	*Ranked from most exposed to least in Oceania*
Vulnerability *Combination of the three scores below (coping and adaptive capacities, susceptibility)*	*Ranked from most vulnerable to least in the world*	*Ranked from most vulnerable to least in Oceania*
Lack of Coping Capacities *Government, authorities, medical services, social networks*	*Ranked from least coping to most in the world*	*Ranked from least coping to most in the world*
Lack of Adaptive Capacities *Education, equity, ecosystem protection, investments*	*Ranked from least adaptive to most in the world*	*Ranked from least coping to most in the world*
Susceptibility *Infrastructure, housing, dependency, poverty*	*Ranked from most susceptible to least in the world*	*Ranked from most susceptible to least in Oceania*

CRI [Economic-Social] *(1999-2018)*	**World Rank** *Based on total # of countries studied*	**Oceania Rank** *Based on # of countries studied in Oceania*
Total Risk *only reflects the direct impacts (direct economic losses and fatalities) of extreme weather events*	*Ranked from most losses and fatalities to least in the world*	*Ranked from most losses and fatalities to least in Oceania*

Methodology | Measuring DRR

Example of where to find the needed information and how to substantively read the composite table.

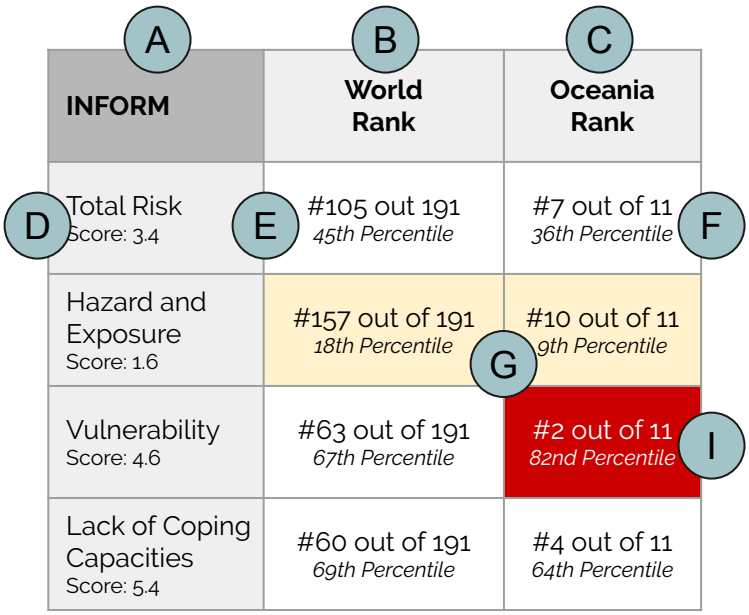
A. These numbers have been taken from the INFORM database.

B. This is a converted rank, ranking all the countries that INFORM studied in ascending order from worst performing to best.

C. This is a converted rank, ranking in ascending order from worst performing to best, and based on INFORM scores, the 11 Oceania countries that our study examines. Some indices do not provide a score for all the 11 countries, so the total is not fixed at 11.

D. The scores on the left hand side are absolute scores as found on the INFORM database.

E. As per INFORM, this country is the 105th most at-risk out of 191, which means it is performing well above average. Specifically, it is among the 45% best-performing country in the world in this category.



F. As per INFORM, this country is the 7th most at-risk out of 11 Oceania countries studied which means, in Oceania specifically, it is among the 36% best-performing countries in Oceania.

G. Yellow cells indicate the categories where the country is performing well. Looking at the INFORM Hazard and Exposure metric, the country seems to be among the 18% that are the least exposed in the world, and the 9% least exposed in Oceania. However, knowing that this metric specifically takes into consideration man-made and socio-economic hazards, this ranking does not reflect the reality of this Oceania country. In this case, we ought to look at Exposure scores from other indices such as ND Gain and WRI.

H. Red cells indicate the worst-performing categories (>70th percentile). According to INFORM, this country is the second most vulnerable country in Oceania.

Methodology | Measuring Hazard Exposure

A Rapid Assessment

For a quick diagnosis of the Hazard Exposure we are relying on Exposure metrics from WRI, ND Gain, CRI, and INFORM based on the following criteria:

Criteria A
High:
WRI and ND Gain are above 70 Percentile (or one of them is).

Criteria B
Medium:
WRI and ND Gain are between 40 and 70 Percentile (or one of them is).

Criteria C
Low:
WRI and ND Gain are between 0 and 40.

INFORM exposure (and calculated INFORM) can serve as substitutes in the absence of data or to mitigate discrepancies between WRI and ND Gain.

Methodology | Measuring Population Exposure

A Rapid Assessment

For a quick diagnosis of the Population Exposure we are relying on the % of population living off the coast and the percent population living at low elevation.

Criteria A
High:
If the percentage of population living within 1 km of the coast line or the percentage of population living in zones at less than 1 m elevation, whichever is higher, is above 70 percent

Criteria B
Medium:
If the percentage of population living within 1 km of the coast line or the percentage of population living in zones at less than 1 m elevation, whichever is higher, is less than 70 percent but above 40 percent

Criteria C
Low:
If the percentage of population living within 1 km of the coast line or the percentage of population living in zones at less than 1 m elevation, whichever is higher, is less than 40 percent

Methodology | Measuring Government Preparedness

A Rapid Assessment

Due to the lack of comparability of these indices, our team developed a rapid assessment for measuring governance preparedness for DRR. We included four questions to understand the resources and efforts national governments have committed to DRR.

Our first question, "**Does the government have a DRR strategy in place**' measures if the government has developed a plan around how to handle disasters. We believe that if the government has a documented plan in place, they will respond to a disaster more promptly.

Our second question, '**Has the government been proactively reporting on the Hyogo and Sendai frameworks**' is important to understand the country's commitment to international frameworks. Since DRR planning and preparedness are largely collaborative, we believe that if a country is actively reporting, they are most likely interested in international collaboration and engagement.

Our third question, '**Does the government have an independent office under DRR**' aims to provide a deeper measure of the government's commitment. Having a plan in place but not having a governing body to put the plan into action could be problematic. Further, many plans were developed in collaboration with outside partners, so this measure allows us to understand national capacity and commitment.

Our last question, "**What is the national budget per capita alloted to DRR activities**' allows us to understand the level of commitment and capacity to put the DRR plans into action. However, due to a lack of consistency across

A Rapid Assessment

government reporting, we have omitted this question in our results, though we think it would be a useful measure to collect. We attempted to measure the budget per capita by seeking out the national budget on each government's website. We then looked for the designated DRR office (as reported in country's DRR Management Plans). However, what we found was that governments were reporting budget allocations at different ministry levels, making it difficult to quantify monetary allocations specific to an office or program.

For example, in Nauru, the DRR office responsible is the National Risk Disaster Management Office-NDRMO. When visiting their government website, the fiduciary commitments are documented at a higher ministry level. In Nauru, it is unclear what Ministry the NRDMO falls under in the budget line. For example, the NDRMO may fall under the Ministry of the Economy. This means that an overall lump sum for the Ministry of the Economy is given in one lump sum; however it does not further break down allocations down to the specific offices. Because comparisons like these were difficult, we omitted this question from our rapid assessment results.

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Methodology | Measuring Government Preparedness

We would anticipate countries that have answered 'no' to all of these questions would have quite a low capacity to implement DRR related activities and may be looking to international actors or civil society to fill in these gaps. If we can answer 'yes' to each question, then we expect that the country has high capacity to carry out DRR related activities.

Rapid Assessment Questions

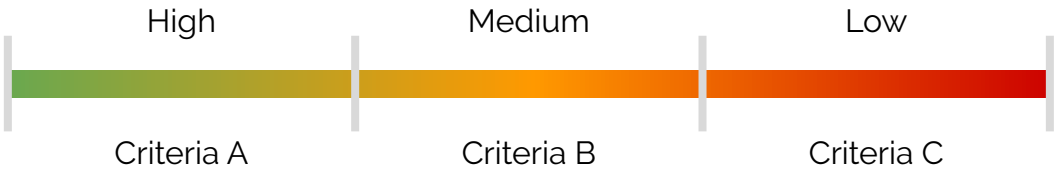
1. Does the government have a DRR strategy in place?
2. Has the government been proactively reporting on the Hyogo and Sendai frameworks?
3. Does the government have an independent office under DRR?

For a quick diagnosis, we ranked countries based on their responses to the above mentioned rapid assessment questions

Criteria A
High: Countries responded with a Yes to all 3 questions

Criteria B
Medium: Countries responded with a Yes to 2 out of 3 questions

Criteria C
Low: Countries responded with a Yes to 1 out of 3 questions



Findings

In order to support the understanding of the current regional and country level disaster risk reduction, our team has taken the three metrics - physical exposure to hazards, population exposure, and disaster preparedness - methodologies to detail regional overview and country level DRR status.

Our team recognizes the work that the existing indices and frameworks have undergone to develop these rankings and our aim is to support the explanation of the inconsistencies of rankings and clarify definitions of DRR-related words in order to describe a realistic picture of regional and country level DRR status.

Regional Hazard Exposure Summary

The following tables have been generated using the three methodologies to measure hazard exposure, population exposure, and government preparedness in the previous section. The following tables provide a sense of an overall regional performance, allowing for cross country comparisons. This table shows the rapid assessment scores per country according to their hazard exposure. For further detail on how the information on preparedness was sourced, refer to the **{DRR Governance Preparedness for each country in the country profile section}.**

Country	Index	Hazard/ Exposure	Assessment
Fiji	WRI 2019	94%	High
	INFORM 2020	30%	
	ND-Gain 2017	62%	
	CRI 1998-2018	N/A	
Kiribati	WRI 2019	87%	High
	INFORM 2020	30%	
	ND-Gain 2017	98%	
	CRI 1998-2018	N/A	
Marshall Islands	WRI 2019	N/A	High
	INFORM 2020	23%	
	ND-Gain 2017	96%	
	CRI 1998-2018	N/A	
Micronesia	WRI 2019	59%	High
	INFORM 2020	32%	
	ND-Gain 2017	97%	
	CRI 1998-2018	N/A	
Nauru	WRI 2019	N/A	High
	INFORM 2020	18%	
	ND-Gain 2017	96%	
	CRI 1998-2018	N/A	
Palau	WRI 2019	N/A	High
	INFORM 2020	19%	
	ND-Gain 2017	90%	
	CRI 1998-2018	N/A	

Country	Index	Hazard/ Exposure	Assessment
Samoa	WRI 2019	47%	Medium
	INFORM 2020	23%	
	ND-Gain 2017	68%	
	CRI 1998-2018	N/A	
Solomon Islands	WRI 2019	97%	High
	INFORM 2020	59%	
	ND-Gain 2017	94%	
	CRI 1998-2018	N/A	
Tonga	WRI 2019	98%	High
	INFORM 2020	47%	
	ND-Gain 2017	93%	
	CRI 1998-2018	N/A	
Tuvalu	WRI 2019	N/A	High
	INFORM 2020	17%	
	ND-Gain 2017	98%	
	CRI 1998-2018	N/A	
Vanuatu	CRI 1998-2018	N/A	High
	WRI 2019	99%	
	INFORM 2020	45%	
	ND-Gain 2017	72%	

Regional Population Exposed Summary

The following table has been generated using the methodology devised for the measurement of population exposure, as explained previously. We sourced the population data from country census reports and other population studies. Using that data and the rapid assessment test, we calculated the exposure score for each country in Oceania. The following table displays those scores.

Country	Category	% Exposed	Ordinal Assessment
Fiji	Distance from Coastline < 1 km	27	Medium
	Elevation < 1 m	49.5	
Kiribati	Distance from Coastline	100	High
	Elevation < 1 m	48	
Marshall Islands	Distance from Coastline < 1 km	100	High
	Elevation < 1 m	89	
Micronesia	Distance from Coastline < 1 km	89	High
	Elevation < 1 m	28.5	
Nauru	Distance from Coastline < 1 km	93	High
	Elevation < 1 m	16	
Palau	Distance from Coastline < 1 km	93	High
	Elevation < 1 m	32	
Samoa	Distance from Coastline < 1 km	61	Medium
	Elevation < 1 m	4	
Solomon Islands	Distance from Coastline < 1 km	65	Medium
	Elevation < 1 m	11.5	
Tonga	Distance from Coastline < 1 km	84	High
	Elevation < 1 m	17	
Tuvalu	Distance from Coastline < 1 km	100	High
	Elevation < 1 m	49.5	
Vanuatu	Distance from Coastline < 1 km	64	Medium
	Elevation < 1 m	7	

Regional DRR Government Preparedness Summary

This table shows the rapid assessment scores per country according to their national government's preparedness efforts. For further detail on how the information on preparedness was sourced, refer to the **{DRR Governance Preparedness for each country in the country profile section}.**

Country	DRR Strategy	Active Reporting	Independent office	Overall Ranking
Fiji	✓	✓	✓	High
Kiribati	✓	✓	✓	High
Marshall Islands	✓	✓	✓	High
Micronesia	✓	✗	✗	**Low**
Nauru	✓	✓	✓	High
Palau	✓	✗	✓	**Medium**
Samoa	✓	✗	✓	**Medium**
Solomon Islands	✓	✗	✓	**Medium**
Tonga	✓	✓	✓	High
Tuvalu	✓	✗	✗	**Low**
Vanuatu	✓	✗	✓	**Medium**

Overall Regional Assessment

This table shows the rapid assessment scores per country on the basis of: Population Exposure, Hazard Exposure, and Government Preparedness.

Country	Natural Hazard Exposure	Population Exposure	Government Preparedness	Overall Vulnerability Score
Fiji	High	Medium	High	Medium
Kiribati	High	High	High	Medium
Marshall Islands	High	High	High	Medium
Micronesia	High	High	Low	High
Nauru	High	High	High	Medium
Palau	High	High	Medium	High
Samoa	Medium	Medium	Medium	Medium
Solomon Islands	High	Medium	Medium	Medium
Tonga	High	High	High	Medium
Tuvalu	High	High	Low	High
Vanuatu	High	Medium	Medium	Medium

Decision Rule

We used the following color rule while deciding upon the final vulnerability score.

Measure 1	Measure 2	Measure 3	Overall Vulnerability Score/ Color
Red	Red	Red	Red
Red	Red	Orange	Red
Red	Red	Green	Orange
Red	Orange	Green	Orange
Red	Orange	Orange	Orange
Orange	Orange	Green	Orange
Green	Green	Red	Orange
Green	Green	Orange	Green
Green	Green	Green	Green

Overall Regional Discussion

Out of the 11 countries in Oceania, we see that 6 are scored 'high' on the overall vulnerability score and the remaining 5 are scored 'medium' on the same. As is visible from all of the many sub-components that go into formulating the overall vulnerability scores, blanket comparisons across countries are difficult to make but still possible provided information and metrics are standardized.

With the exception of Samoa, all countries in Oceania have a high hazard exposure. Taking into account data from INFORM, WRI, ND Gain & CRI, we were able to determine their exposure based on certain internal criteria. We used methodologies listed earlier to help us generate a fair assessment. Despite these rankings, it is important to read them keeping in mind the differences in each of the index sub-components. For example, exposure means very different things under INFORM and WRI. The latter captures exposure to sea-level rise but INFORM doesn't. These discrepancies, though difficult to standardize, are important in their own way.

For all countries in Oceania, all rankings across various sub-components put them in the high to medium risk. Additionally, other than sea level rise and population exposure to coastlines, there are no other climate change induced unifying threats across all countries which makes it difficult to conceptualize the region as a whole as other countries have other pressing urgencies and the same is not reflected across all.

The biggest take away and realization is the stark differences in government preparedness across the region which truly impact the countries overall DRR strategy and preparedness. Such differences are very clearly obvious when comparing countries such as Fiji, that have more resources, land ,and financial capacity to prepare resiliency plans with those such as Samoa, whose geographic remoteness and high external dependency inhibit building internal capacity.

Recommendations

For Countries: Based upon the vulnerability scores that we developed (explained in the previous sections), and also the relative ranking of each country across the parameters measured by the indices, we developed the following recommendations to strengthen resiliency;

- **Recognition of the distinction between swift onset hazards, such as cyclones, and slow onset hazards, like sea-level rise, which may cause a country to become inhospitable.** A common issue that we faced when studying countries' resilience is a lack of separation between the two hazards, and the resulting gap in countries' DRR activities in response to the slow onset hazards.
- **Focus on effective implementation of policies formulated, so as to bridge the gap between planning and actual progress on the ground.** The reports on the Sendai Framework were often conflicting with those found in the nations' DRR management plans, We believe this is due in part to external consultants developing plans, leaving a gap between the planning and implementation.
- **Prioritize and invest in training, capacity building, and reporting that are specific to their national DRR and climate adaptation plans.** We found that a majority of the countries have well developed plans in place, but face challenges with implementation.
- **Develop clear and transparent fiduciary systems that track and report DRR and climate adaptation related activities.** A common issue that we faced across all the countries was ascertaining the budget allocated to DRR activities. Transparency in budgets allocated will not only provide a more accurate measure of countries' preparedness, but will also aid in guiding international efforts aimed at building up resilience in the Oceania region.

Recommendations

For supporting actors: Our study reveals several salient points that key external actors may want to consider during their planning process to support DRR and other climate related efforts.

- **Investigate the measurement systems of existing indices and be aware of their language inconsistencies, errors in reporting, and aggregation of natural and climate-related hazards. Actors should consider building off of existing data sources to create a climate change index that reflects climate-only risks.** Our key finding is the observation about the comparative strength and weaknesses of different indices. All indices at surface level look to be measuring climate and disaster related risk. However, overall rankings vary widely because of differing definitions of language, methodology, and quality. While none of the indices gives a complete picture by itself, we found the WRI to be the most exhaustive and reliable. WRI covers the risks from hazards - natural as well as climate change, and also measures country readiness.

- **Support country-specific training and capacity building exercises that move forward DRR and climate-related management policies.** Although recommendations for the region are relatively homogenous, each country faces unique challenges and response efforts should be built accordingly. Detailed country-level analysis demonstrates that although vulnerability rankings are generally 'high', there are varying situations within countries. Specifically adapted support plans at the country level should be considered.

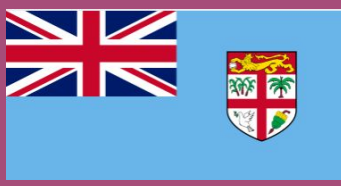
- **Support funding strategies that allow countries to improve the implementation of their policies.** Countries need the opportunity to drive their implementation strategies rather than creating new strategies. Funding should be made available that aligns with their plans.

Recommendations

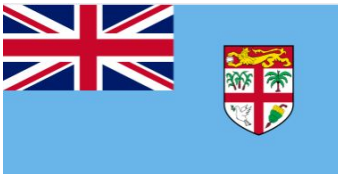
For supporting actors... cont'd.

- **Work within existing consortiums, working groups, and tasks forces, and align work with existing DRR and climate-related policies in place.** Our findings show that several existing consortiums exist. Therefore external actors should consider aligning themselves with existing platforms, rather than developing new ones.

The following section provides a detailed analysis of the vulnerability per country. This section is the supporting documentation for the overall regional assessment.



Fiji



Fiji | Country Vulnerability Snapshot

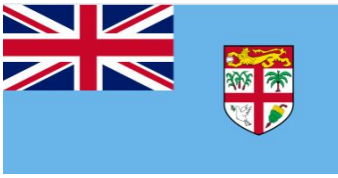
Country: Fiji
Island Type: Volcanic[1]
Population: 837,271[2]
Main Hazards: Cyclonic Storms[1] Tsunamis[3]
Recent Disasters: Tropical Cyclone Gita (2018)[4]

Overall Assessment

High Hazard Exposure | Medium Population Exposure | High Preparedness | Medium Vulnerability

1 Km of the coast: % of population; total number	27%; 226,063
5 Km of the coast: % of population; total number	76%; 636,326
10 Km of the coast: % of population; total number	91%; 761,917
Low elevation coastal zones: % of population; total number	5.8%; 49,842

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	Yes
Does the government have an independent office under DRR?	Yes



Fiji | DRR Vulnerability Composite

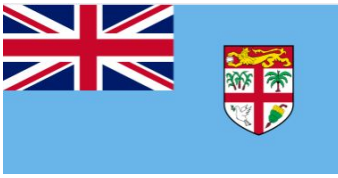
This page provides a synthesis of the scores Fiji has received on several relevant indices. For all the numbers below, **lower ranks indicate poor performance**. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow.

INFORM	World Rank	Oceania Rank
Total Risk Score: 2.9	#123 out 191 *36th Percentile*	#10 out of 11 *9th Percentile*
Hazard and Exposure Score: 2.2	#134 out of 191 *30th Percentile*	#6 out of 11 *45th Percentile*
Vulnerability Score: 3.4	#92 out of 191 *52nd Percentile*	#9 out of 11 *18th Percentile*
Lack of Coping Capacities Score: 3.1	#144 out of 191 *25th Percentile*	#11 out of 11 *0th Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: 48.77	#95 out of 181 *48th Percentile*	#6 out of 6 *0th Percentile*
Vulnerability Score: 0.452	#75 out of 181 *59th Percentile*	#6 out of 6 *0th Percentile*
Lack of Readiness Score: 0.428	#112 out of 191 *41st Percentile*	#10 out of 11 *9th Percentile*
Exposure Score: 0.46	#73 out of 192 *62nd Percentile*	#11 out of 11 *0th Percentile*
Lack of Coping Capacity Score: 0.529	#69 out of 180 *62nd Percentile*	#4 out of 6 *33rd Percentile*

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: 17.83	#12 out of 180 *93rd Percentile*	#4 out of 7 *43rd Percentile*
Exposure Score: 38.43	#11 out of 180 *94th Percentile*	#4 out of 7 *43rd Percentile*
Vulnerability Score: 46.41	#85 out of 180 *53rd Percentile*	#7 out of 7 *0th Percentile*
Lack of Coping Capacities Score: 78.76	#72 out of 180 *60th Percentile*	#6 out of 7 *14th Percentile*
Lack of Adaptive Capacities Score: 38.93	#73 out of 180 *59th Percentile*	#5 out of 7 *29th Percentile*
Susceptibility Score: 21.54	#103 out of 180 *43rd Percentile*	#7 out of 7 *0th Percentile*

CRI	World Rank	Oceania Rank
Total Risk Score: 37.17	#169 out of 181 *7th Percentile*	#9 out of 9 *0th Percentile*



Fiji | DRR Vulnerability Composite Discussion

Physical Exposure

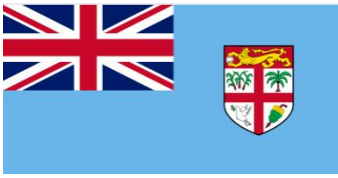
The Republic of Fiji is an island country comprised by 332 islands, most of which are of volcanic origin, and an area of 18,333 sq km.[1] It is prone to hazards typical to tropical marine environments, such as cyclones, heavy rain, and flooding. It is characterized as a high-risk country with regards to its disaster risk profile. In addition to this, Fiji is located in the Pacific ring of fire making it prone to earthquakes.

Population Exposure

Exposure to sea level rise is mostly captured by the "WRI Exposure" metric since this metric takes into account 5 climate factors, one of which is sea-level rise. Around 27% of Fiji's population lives within 1 km of the coastline – the lowest among all the countries included in this study. Even the percentage of population living within 5 km of the coastline is relatively low at 76%. 5.8% of the country's population lives in lower elevation coastal zones. This mitigates some of the risk posed by climate hazards as a lower percentage of people are directly exposed.

Preparedness

Fiji is one of the few countries in Oceania that has a strong disaster response capacity. Aided by a strong economy – Fiji is one of the most developed countries in Oceania, and it consistently ranks well in all the disaster preparedness indices. This trend is reflected in its good rankings across all indices, indicating strong country level preparedness for disasters, as indicated by its INFORM rankings. However WRI ranks Fiji very poorly in terms of total risk and exposure when compared to all countries worldwide, which is expected as Fiji is being compared to more developed and less exposed nations. Within Oceania though, Fiji is still ranked better than most on the same two components within WRI. Fiji's high level of preparedness can also be attributed to its high level of government preparedness. This is reflected in its formulation of DRR plans, regular reporting to Hyogo and Sendai, and overall personnel capacity to deal with such events,



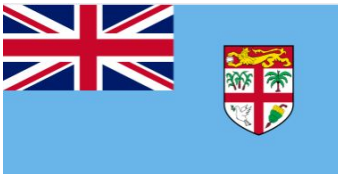
Fiji | Government Preparedness Rapid Assessment Discussion

Question 1: Does the government have a DRR strategy in place?

Yes. The government of Fiji has a DRR strategy in place. It recognizes the risk that climate change poses to the nation. The govt of Fiji initiated a comprehensive study – Climate Vulnerable Assessment of 2018 – with the aim of guiding its development policies and frameworks. In addition to this, Fiji has also created a centralized geospatial platform – GeoNode for the purpose of managing risk information with the support of UNESCAP. The platform "GeoNode" is managed by the National Disaster Management Office (NDMO) and has documents, data and maps related to disaster risk, climate, topography of the islands, demographic details and farming (NDMO, 2017). However, as per Fiji's own DRR report, this service is not regularly updated with inconsistent availability of disaster-related data.

Question 2. Has the government been actively reporting on the Hyogo and Sendai frameworks?

Yes. The government has been actively reporting on the Hyogo and Sendai Frameworks. Our report relies on the Status Report published by Fiji in response to Sendai. In addition to this, Fiji has also regularly published the progress report on the implementation of the Hyogo Framework.

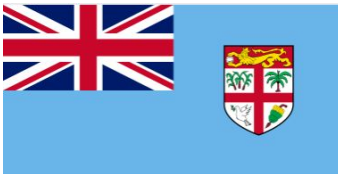


Fiji | Government Preparedness Rapid Assessment Discussion

Question 3: Does the government have independent office under the DRR?

Yes. The government of Fiji has institutionalized disaster risk and response. It passed the Natural Disaster Management Act of 1998 that lays down the roles and responsibilities of various government agencies and stakeholders involved in disaster management. This Act has been revised in the aftermath of Cyclone Winston. It also has a National Disaster Controller and Permanent Secretary of the Ministry who guides the actions of the National Disaster Management Council, which is tasked with coordinating and managing various services within the ministry. Additionally, each ministry has its own sectoral disaster management plan.

The National Action Plan (NAP), however, which was developed on the basis of National Climate Change Policy (2018), is coordinated by the Climate Change and International Cooperation Division of the Ministry of Economy and which serves as the main entity coordinating and facilitating the implementation of the NAP under the supervision of the National Climate Change Coordination Committee (NCCCC). Furthermore, at the subnational level, local government agencies are tasked with implementing DRR activities as per the Local Government Act.[5]



Fiji | Endnotes

[1] The World Factbook, CIA, accessed on 3rd April 2020, https://www.cia.gov/library/publications/the-world-factbook/geos/fj.html

[2] Census of Population and Housing 2007, Fiji Bureau of Statistics, https://www.statsfiji.gov.fj/statistics/2007-census-of-population-and-housing

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] Fiji, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/fiji

[5] Disaster Risk Reduction in the Republic of Fiji, UNDRR, 2019, https://www.unisdr.org/files/68251_682302fijirevised16oct2019.pdf

Kiribati

Kiribati | Country Vulnerability Snapshot

Country: Kiribati
Island Type: Atoll[1]
Population: 109,693[2]
Main Hazards: Typhoons, Sea-Level Rise[4] Tsunamis[3]
Recent Disasters: No Major Rapid Onset Natural Disaster[5]

Overall Assessment

High Hazard Exposure | High Population Exposure | High Preparedness | Medium Vulnerability

1 Km of the coast: % of population; total number	100%; 109,693
5 Km of the coast: % of population; total number	100%; 109,693
10 Km of the coast: % of population; total number	100%; 109,693
Low elevation coastal zones: % of population; total number	48.2%; 65,234

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	Yes
Does the government have an independent office under DRR?	Yes

Kiribati | DRR Vulnerability Composite

This page provides a synthesis of the scores Kiribati has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow..

INFORM	World Rank	Oceania Rank
Total Risk Score: 3.7	#96 out 191 *50th Percentile*	#5 out of 11 *55th Percentile*
Hazard and Exposure Score: 2.2	#133 out of 191 *39th Percentile*	#5 out of 11 *55th Percentile*
Vulnerability Score: 4.2	#71 out of 191 *63rd Percentile*	#4 out of 11 *64th Percentile*
Lack of Coping Capacities Score: 5.3	#64 out of 191 *66th Percentile*	#5 out of 11 *55th Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Readiness Score: 0.422	#106 out of 191 *45th Percentile*	#9 out of 11 *18th Percentile*
Exposure Score: 0.618	#4 out of 192 *98th Percentile*	#2 out of 11 *82nd Percentile*
Lack of Coping Capacity Score: NA	NA	NA

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: 14.64	#19 out of 180 *89th Percentile*	#5 out of 7 *29th Percentile*
Exposure Score: 25.52	#24 out of 180 *87th Percentile*	#5 out of 7 *29th Percentile*
Vulnerability Score: 57.37	#45 out of 180 *75th Percentile*	#2 out of 7 *71st Percentile*
Lack of Coping Capacities Score: 82.56	#51 out of 180 *72nd Percentile*	#2 out of 7 *71st Percentile*
Lack of Adaptive Capacities Score: 49.02	#50 out of 180 *72nd Percentile*	#3 out of 7 *57th Percentile*
Susceptibility Score: 40.53	#47 out of 180 *74th Percentile*	#2 out of 7 *71st Percentile*

CRI	World Rank	Oceania Rank
Total Risk Score: 116.17	#48 out of 181 *73rd Percentile*	#2 out of 9 *78th Percentile*

Kiribati | DRR Vulnerability Composite Discussion

Physical Exposure

Characterized as a Least Developed Country, Kiribati is a highly vulnerable atoll nation with a fragile economy and limited capacity to cope with disasters. It constitutes 32 low-lying coral islands (less than 6m above sea level) and its population is directly threatened by storm surge, coastal erosion, and sea-level rise heightened by climate change. Its spatial spread makes it difficult to build needed infrastructure which increases its overall vulnerability.

Population Exposure

Most of Kiribati is characterised by low-lying islands. It is no surprise that 100% of its population lives within 1, 5 and 10 kms off the coastline, indicating that the entire country population is severely threatened by rising sea-water levels, significantly amplifying its vulnerability. 48.2% of the country's population lives in low-elevation coastal zones.

Preparedness

For Kiribati, the WRI presents a more realistic image as compared to INFORM or ND Gain. As WRI captures country capacities more relevant to climate change induced shocks, hazards, and a country's preparedness in terms of physical and social infrastructure, we see that Kiribati is ranked very poorly across most WRI parameters when compared to other countries worldwide. However within Oceania, despite ranking poorly on vulnerability, lack of coping capacities and susceptibility, Kiribati overall fares well on risk and exposure. This discrepancy can be disconcerting as exposure under WRI captures exposure to sea level rise, which we know is a threat to the country. Even ND Gain ranks Kiribati very poorly worldwide and within Oceania on its high levels of exposure. Additionally, its low rankings on CRI also indicate that Kiribati has suffered significant losses in the past as a result of climate change and hazards. This heterogeneity in scoring within Oceania needs to be read along the country's limited economic and administrative measures to cope with disasters.

Kiribati | Government Preparedness Rapid Assessment Discussion

Question 1: Does Kiribati have a DRR strategy in place?

Yes. In 2019, with the support of the NAP Global Network, Kiribati launched its revised Joint Implementation Plan for Climate Change and Disaster Risk Management (KJIP). KJIP is a "whole-country" approach which aims to enhance resilience by prioritizing 104 climate adaptation and DRR actions for the next 9 years.[1] In 2016, Kiribati put forth a 20-year vision for development known as the KV20. This plan, which is mostly of economic nature, recognized the need to mainstream climate change adaptation and mitigation into various programmes. KJIP enhances the alignment between KV20 and other climate-related policies.

Question 2: Has it been proactively reporting on the Hyogo and Sendai frameworks?

Yes, partially. Kiribati reported on Target E (DRR) only of the Sendai Framework. Kiribati's score for 2019 has significantly improved since 2018 (0,4 out of 1 in 2018 to 0,9 out of 1 in 2019 on DRR strategies). The percentage of local governments that have adopted and implemented local disaster risk reduction strategies in line with national strategies remains low: only 13.04% of local governments have adopted DRR strategies.

Question 3: Does the government have an independent office to carry out DRR activities?

Yes. The National Disaster Risk Management Council (NDRMC) is empowered by the cabinet to oversee DRR activities, including Disaster Risk Management plans. The National Disaster Risk Management Office provides support to NDRMC.[1]

Kiribati | Endnotes

[1] National Disaster Risk Management Plan, October 2012, https://reliefweb.int/sites/reliefweb.int/files/resources/www.pacificdisaster.net_pdnadmin_data_original_KIR_2012_DRM_Plan.pdf

[2] 2015 Population and Housing Census, National Statistics Office, http://www.mfed.gov.ki/statistics/documents/2015_Population_Census_Report_Volume_1final_211016.pdf

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] The World Factbook, CIA, accessed on 3rd April 2020, https://www.cia.gov/library/publications/the-world-factbook/geos/kr.html

[5] Kiribati, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/kiribati

Marshall Islands

Marshall Islands | Country Vulnerability Snapshot

Country: Marshall Islands
Island Type: Islands, Islets, and Atolls[1]
Population: 53,158[2]
Main Hazards: Drought, Tsunamis[3] Typhoons[4]
Recent Disasters: Severe Drought in 2016[1]

Overall Assessment

High Hazard Exposure | High Population Exposure | High Preparedness | Medium Vulnerability

1 Km of the coast: % of population; total number	100%; 53,158
5 Km of the coast: % of population; total number	100%; 53,158
10 Km of the coast: % of population; total number	100%; 53,158
Low elevation coastal zones: % of population; total number	88.9%; 49.680

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	No
Does the government have an independent office under DRR?	Yes

Marshall Islands | DRR Vulnerability Composite

This page provides a synthesis of the scores the Marshall Islands has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow.

INFORM	World Rank	Oceania Rank
Total Risk Score: 3.6	#99 out 191 *48th Percentile*	#6 out of 11 *45th Percentile*
Hazard and Exposure Score: 1.9	#147 out of 191 *23rd Percentile*	#7 out of 11 *36th Percentile*
Vulnerability Score: 3.9	#81 out of 191 *58th Percentile*	#7 out of 11 *36th Percentile*
Lack of Coping Capacities Score: 6.3	#41 out of 191 *79th Percentile*	#2 out of 11 *82nd Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Readiness Score: 0.356	#76 out of 191 *60th Percentile*	#2 out of 11 *82nd Percentile*
Exposure Score: 0.587	#7 out of 192 *96th Percentile*	#4 out of 11 *64th Percentile*
Lack of Coping Capacity Score: NA	NA	NA

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Exposure Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Coping Capacities Score: NA	NA	NA
Lack of Adaptive Capacities Score: NA	NA	NA
Susceptibility Score: NA	NA	NA

CRI	World Rank	Oceania Rank
Total Risk Score: 165	#10 out of 181 *94th Percentile*	#1 out of 9 *89th Percentile*

Marshall Islands | DRR Vulnerability Composite Discussion

Physical Exposure

The Republic of the Marshall Islands are spread across 29 low-lying atolls and 5 islands, with a total land area of 70 square miles. These atolls and islands occupy 700,000 square miles of oceans. Recently, the Marshall Islands have been impacted by droughts which has prompted the development of their National Disaster Risk Management Arrangement.

Population Exposure

The spatial spread and low-lying nature of the islands make them extremely vulnerable to sea level rise. 100% of the country's population lives within 1 km of the coastline, exposing all its population to climate change induced stresses and making them more vulnerable. Lack of information under the exposure sub-component of WRI makes it difficult to estimate the exact level of exposure faced. 88.9% of the country's population lives in low-elevation coastal zones.

Preparedness

One of the biggest challenges for comparing across indices for different countries is the lack of standardized information. As there is no WRI information for Marshall Islands, their preparedness is incompletely assessed by INFORM, ND Gain and CRI rankings. With no information from WRI, it is difficult to assess the country's socio-economic, infrastructural and other preparedness, including adaptive capacities. INFORM rankings do not tell us much about the country's susceptibility as Marshall Islands is ranked well on hazard and exposure. This rank is not useful as INFORM includes epidemics, conflict, and geophysical hazards such as earthquakes under exposure, unlike WRI which captures sea level rise under the same component. However INFORM does rank Marshall Islands very poorly on overall lack of coping capacities worldwide and within Oceania. ND Gain also highlights these weaknesses by ranking the country very poorly in terms of exposure and lack of readiness. Similar trends are seen in the CRI index as the Marshall Islands ranks very poorly on total risk across Oceania and when compared to other countries.

Marshall Islands | Government Preparedness Rapid Assessment Discussion

Question 1: Does Marshall Islands have a DRR strategy in place?

Yes. In 2017, they published a 'National Disaster Risk Management Arrangements (NDRMA)'. The NDRMA is a 79 page document developed in collaboration with the European Union, Pacific Community, BSRP, and ACP. The report is broken into 8 parts, covering the general background to the DRR, to DR management, disaster management, disaster response, relief, and recovery.

The report details out roles, responsibilities of government bodies in various circumstances of disaster.

Question 2: Has it been proactively reporting on the Hyogo and Sendai frameworks?

No. Marshall Islands have submitted their Hyogo Framework for Action in 2012, during the last reporting period. They have not yet published their progress towards the Sendai agreement.

The following responses, for standardized methodology purposes, will be informed from their 2011-2013 Hyogo Interim report. However, it should be noted that the NDRMA may be a more complete document to answer these questions.

Question 3: Does the government have an independent office to carry out DRR activities?

Yes, The government of Marshall Islands is made up of the Parliamentary (Nitjela), which provides recommendations at the national level, a committee, and local governance. However, there is a special office, the National Disaster Management Office that spearheads DRR. This office was not found on the Nitijela website though and an official Marshall Island governmental website was also missing.[5]

Marshall Islands | Endnotes

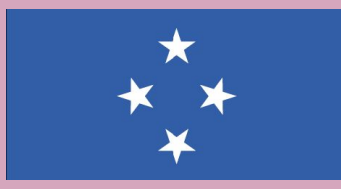
[1] Marshall Islands, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/marshall-islands

[2] RMI 2011 Census of Population and Housing, Economic Policy, Planning, and Statistics Office, https://www.doi.gov/sites/doi.gov/files/migrated/oia/reports/upload/RMI-2011-Census-Summary-Report-on-Population-and-Housing.pdf

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] The World Factbook, CIA, accessed on 3rd April 2020, https://www.cia.gov/library/publications/the-world-factbook/geos/rm.html

[5] NITIJELA, accessed on 5th April 2020, https://rmiparliament.org/cms/



Micronesia

Micronesia | Country Vulnerability Snapshot

Country: Micronesia
Island Type: Volcanic/ Coral[1]
Population: 102,843[2]
Main Hazards: Drought[3] Typhoons[4], Tsunamis,
Recent Disasters: Typhoon Sudal (2004)[5]

Overall Assessment

High Hazard Exposure | High Population Exposure | Low Preparedness | High Vulnerability

1 Km of the coast: % of population; total number	89%; 91,530
5 Km of the coast: % of population; total number	100%; 102,843
10 Km of the coast: % of population; total number	100%; 102,843
Low elevation coastal zones: % of population; total number	28.5%; 29,562

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	No
Does the government have an independent office under DRR?	No

Micronesia | DRR Vulnerability Composite

This page provides a synthesis of the scores Micronesia has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow..

INFORM	World Rank	Oceania Rank
Total Risk Score: 3.8	#91 out 191 *52nd Percentile*	#4 out of 11 *64th Percentile*
Hazard and Exposure Score: 2.3	#129 out of 191 *32nd Percentile*	#4 out of 11 *64th Percentile*
Vulnerability Score: 4.6	#62 out of 191 *68th Percentile*	#1 out of 11 *91st Percentile*
Lack of Coping Capacities Score: 5.2	#68 out of 191 *64th Percentile*	#6 out of 11 *45th Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: 36.45	#30 out of 181 *83rd Percentile*	#1 out of 6 *83rd Percentile*
Vulnerability Score: 0.638	#5 out of 181 *97th Percentile*	#2 out of 6 *67th Percentile*
Lack of Readiness Score: 0.367	#79 out of 191 *59th Percentile*	#3 out of 11 *73rd Percentile*
Exposure Score: 0.598	#5 out of 192 *97th Percentile*	#3 out of 11 *73rd Percentile*
Lack of Coping Capacity Score: 0.638	#40 out of 180 *78th Percentile*	#2 out of 6 *67th Percentile*

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: 7.52	#72 out of 180 *60th Percentile*	#6 out of 7 *14th Percentile*
Exposure Score: 14.72	#74 out of 180 *59th Percentile*	#6 out of 7 *14th Percentile*
Vulnerability Score: 51.05	#63 out of 180 *65th Percentile*	#4 out of 7 *43rd Percentile*
Lack of Coping Capacities Score: 72.11	#107 out of 180 *41st Percentile*	#7 out of 7 *0th Percentile*
Lack of Adaptive Capacities Score: 46.93	#55 out of 180 *69th Percentile*	#4 out of 7 *43rd Percentile*
Susceptibility Score: 34.11	#54 out of 180 *70th Percentile*	#4 out of 7 *43rd Percentile*

CRI	World Rank	Oceania Rank
Total Risk Score: 56.67	#136 out of 181 *25th Percentile*	#7 out of 9 *22th Percentile*

Micronesia | DRR Vulnerability Composite Discussion

Physical Exposure

Micronesia consists of a total of 607 islands with a total land area of 701 sq. km. It also includes small islets that disappear at high tide, coral atolls and large volcanic islands of more than 80 sq. km. The country has fertile volcanic islands with flora and fauna diversity as well as low-lying atolls that have poor quality soil. It is characterised by a tropical climate and high humidity.[1] The country is exposed to drought like conditions, that is exacerbated due to climate change.

Population Exposure

Like other similar small island and developing nations, the spatial spread and geographic remoteness makes increasing sea level rise and climate change a severe problem to the country's survival. 89% of the country's population lives within 1 km of the coast and 100% lives within 5 km and 10 kms, making its residents extremely susceptible. That said, only 28.5% of the country's population lives in low-elevation coastal zones.

Preparedness

Indices present a mixed picture for Micronesia, mandating further research into their applicability and relevance. Across INFORM, Micronesia is only ranked poorly on vulnerability, that too only within Oceania. As the vulnerability sub-component within INFORM only looks at socio-economic and environmental vulnerability, it is not entirely representative of all the climate change related threats faced by the country. ND Gain highlights its fragility better as Micronesia is ranked poorly across all its sub-components, worldwide and within Oceania. It is surprising that despite its geographic spread and low lying areas, Micronesia fares relatively well across the WRI index. Micronesia is ranked fairly well within Oceania on sub-components of risk, exposure and adaptive capacities. Even CRI ranks it fairly low on total risk when compared across all countries and within Oceania, indicating that there hasn't been much socio-economic loss to the country previously.

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Micronesia | Government Preparedness Rapid Assessment Discussion

Question 1: Does Micronesia have a DRR strategy in place?

Yes. Since 2013, Micronesia has had several DRR strategies in place. The Joint State Action Plan for Disaster Risk Management and Climate Change presents the most updated efforts being made to combat DRR. Micronesia's Nation-Wide Integrated Disaster Risk Management and Climate Change Policy provides an overarching framework to address risks, requiring state governments to develop plans of action to address disaster and climate change risks. At the regional level, the development of the Strategy for Climate and Disaster Resilient Development in the Pacific – an integrated framework to address risk and vulnerability for the Pacific region is an example of such an approach. Micronesia also has a Disaster Relief Assistance Act (1989) which outlines government responsibilities for times of disaster. The Disaster Mitigation Act (2000) emphasizes the importance of disaster mitigation and planning for disasters prior to their occurrence.

Question 2: Has it been proactively reporting on the Hyogo and Sendai frameworks?

No. The Department of Environment, Climate Change and Emergency Management collectively manages reporting on the Sendai & Hyogo Frameworks for Micronesia. For Hyogo, some of its questions and indicators have been reported on during 2012-13.

Micronesia | Government Preparedness Rapid Assessment Discussion

Question 3: Does the government have an independent office to carry out DRR activities?

No. In Micronesia, state governments are responsible for implementing the Disaster Risk Management and Climate Change Policy, 2013. The Office of the Governor under the Disaster Assistance Act 1989 is responsible for disaster mitigation, preparedness, response and recovery at the state level.

Micronesia | Endnotes

[1] Micronesia, Encyclopedia Britannica, accessed on 15th April 2020, https://www.britannica.com/place/Micronesia-republic-Pacific-Ocean

[2] Population and Housing Census 2010, FSM Division of Statistics, https://microdata.pacificdata.org/index.php/catalog/9

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] The World Factbook, CIA, accessed on 3rd April 2020, https://www.cia.gov/library/publications/the-world-factbook/geos/rm.html

[5] Federated States of Micronesia, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/federated-states-micronesia

Nauru

Nauru | Country Vulnerability Snapshot

Country: Nauru
Island Type: Coral[1]
Population: 9,945[2]
Main Hazards: Droughts[4], Tsunamis[3]
Recent Disasters: No Major Rapid Onset Natural Disasters[5]

Overall Assessment

High Hazard Exposure | High Population Exposure | High Preparedness | Medium Vulnerability

1 Km of the coast: % of population; total number	93%; 9,249
5 Km of the coast: % of population; total number	100%; 9,945
10 Km of the coast: % of population; total number	100%; 9,945
Low elevation coastal zones: % of population; total number	16%; 1,642

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	Yes
Does the government have an independent office under DRR?	Yes

Nauru | DRR Vulnerability Composite

This page provides a synthesis of the scores Nauru has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow..

INFORM	World Rank	Oceania Rank
Total Risk Score: 3.4	#105 out 191 *45th Percentile*	#7 out of 11 *36th Percentile*
Hazard and Exposure Score: 1.6	#157 out of 191 *18th Percentile*	#10 out of 11 *9th Percentile*
Vulnerability Score: 4.6	#63 out of 191 *67th Percentile*	#2 out of 11 *82nd Percentile*
Lack of Coping Capacities Score: 5.4	#60 out of 191 *69th Percentile*	#4 out of 11 *64th Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Readiness Score: 0.414	#103 out of 191 *46th Percentile*	#6 out of 11 *45th Percentile*
Exposure Score: 0.586	#8 out of 192 *96th Percentile*	#5 out of 11 *55th Percentile*
Lack of Coping Capacity Score: NA	NA	NA

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Exposure Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Coping Capacities Score: NA	NA	NA
Lack of Adaptive Capacities Score: NA	NA	NA
Susceptibility Score: NA	NA	NA

CRI	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA

Nauru | DRR Vulnerability Composite Discussion

Physical Exposure

The Republic of Nauru is the world's smallest independent island nation – with a land area of only 21 sq. km. Historically, Nauru has not faced any major natural disasters but it remains highly vulnerable because of its low coping capacity, and a high percentage of people living in the hazard zone, which increases the country's vulnerability to sea level rise. Historically, Nauru has served as a stop-gap place for Australia for processing asylum seekers who arrived in the country by boat. However as Nauru's government doesn't allow asylum seekers to live there beyond 5 years, this creates a constant struggle on an already small island country with limited resources.[6]

Population Exposure

As the world's smallest independent nation, sea level rise is a very major threat for the country. Nearly 93% of Nauru's population lives within 1 km of the coastline and all of its population lives within 5 and 10 km.[3] Additionally the low level of the island makes this exposure even more precarious. That said, just 16% of the country's population lives in low-elevation coastal zones.

Preparedness

Limited information across various indices makes it difficult to draw comparative analysis of Nauru with other countries. The WRI and CRI, which would have captured information on levels of exposure to sea-rise, past socio-economic losses to disasters and hazards are not available for comparison due to lack of data. Without these 2 indices, INFORM and ND Gain are the only sources available that paint a slightly contradictory picture of the country. Within this limited scope and basis the analysis on INFORM, Nauru ranks fairly well within oceania and worldwide on aspects of hazards and exposure. However, within Oceania, it is ranked very poorly on vulnerability. ND Gain also ranks Nauru very poorly on the exposure sub-component. There is limited information available even across all its sub-components.

Nauru | Government Preparedness Rapid Assessment Discussion

Question 1: Does Nauru have a DRR strategy in place?

Yes. Nauru published the 2015 RONAdapt Framework which provides a high level of detail for a DRR strategy. Prior to the development of the report, they had several policies in place such as the Disaster Risk Management Act of 2008.

Question 2: Has it been proactively reporting on the Hyogo and Sendai frameworks?

Yes. Nauru has submitted their Hyogo Framework for Action report in 2012, during the last reporting period. Additionally, they have submitted their report on progress for the Sendai framework in 2017. Their reporting on the Sendai framework looks quite hurried and less detailed.

Question 3: Does the government have an independent office to carry out DRR activities?

Yes. Within the RONAdapt framework, Nauru claims to have a National Disaster Risk Management Office (NDRMO) but when doing an online review, we were unable to find this office's separate description. We were able to find that these offices do exist, and the NDRMO offices may be integrated into these ministries: Ministry of Finance and Sustainable Development & Ministry of Island Development and Resources. Further, Nauru has no capital city, but most offices are located in Yaren. They have no system of local government due to their low population.

Nauru | Endnotes

[1] Nauru, Encyclopedia Britannica, accessed on 15th April 2020, https://www.britannica.com/place/Nauru

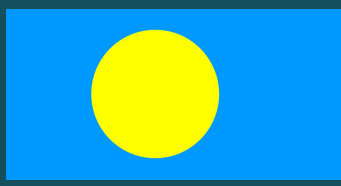
[2] National Report on Population and Housing Census 2011, https://www.spc.int/nmdi/nmdi_documents/2011_NAURU_CENSUS_REPORT.pdf

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

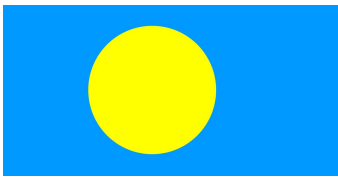
[4] The World Factbook, CIA, accessed on 3rd April 2020, https://www.cia.gov/library/publications/the-world-factbook/geos/rm.html

[5] Nauru, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/nauru

[6] Doherty, B, A short history of Nauru, Australia's dumping ground for refugees, The Guardian, 9th August 2016, https://www.theguardian.com/world/2016/aug/10/a-short-history-of-nauru-australias-dumping-ground-for-refugees



Palau



Palau | Country Vulnerability Snapshot

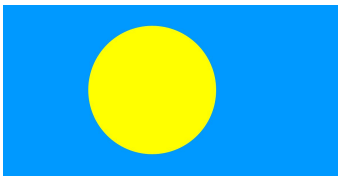
Country: Palau
Island Type: Volcanic[1]
Population: 17,661[2]
Main Hazards: Tropical Cyclone, Tsunamis[3]
Recent Disasters: Super Typhoon Haiyan (2013)[4]

Overall Assessment

High Hazard Exposure | High Population Exposure | Medium Preparedness | High Vulnerability

1 Km of the coast: % of population; total number	93%; 16,425
5 Km of the coast: % of population; total number	100%; 17,661
10 Km of the coast: % of population; total number	100%; 17,661
Low elevation coastal zones: % of population; total number	33%, 9,381;

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	No
Does the government have an independent office under DRR?	Yes



Palau | DRR Vulnerability Composite

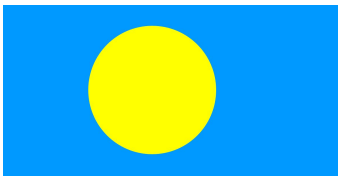
This page provides a synthesis of the scores Palau has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow.

INFORM	World Rank	Oceania Rank
Total Risk Score: 2.5	#134 out 191 *30th Percentile*	#11 out of 11 *0th Percentile*
Hazard and Exposure Score: 1.7	#155 out of 191 *19th Percentile*	#9 out of 11 *18th Percentile*
Vulnerability Score: 2.1	#139 out of 191 *27th Percentile*	#11 out of 11 *0th Percentile*
Lack of Coping Capacities Score: 4.2	#107 out of 191 *44th Percentile*	#9 out of 11 *18th Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Readiness Score: 0.422	#106 out of 191 *45th Percentile*	#8 out of 11 *27th Percentile*
Exposure Score: 0.532	#20 out of 192 *90th Percentile*	#8 out of 11 *27th Percentile*
Lack of Coping Capacity Score: NA	NA	NA

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Exposure Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Coping Capacities Score: NA	NA	NA
Lack of Adaptive Capacities Score: NA	NA	NA
Susceptibility Score: NA	NA	NA

CRI	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA



Palau | DRR Vulnerability Composite Discussion

Physical Exposure

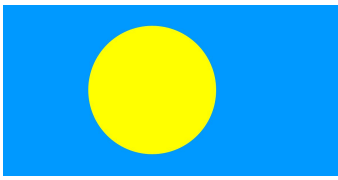
The Republic of Palau is a cluster of 340 islands, out of which only 9 are inhabited. It is highly vulnerable to hazards like typhoons and tropical storms, and to a lesser extent, drought. While the geographic location of Palau makes it more vulnerable and exposed, its distribution of its population and the coping capacity of Palau makes it particularly vulnerable to those hazards.

Population Exposure

Cluster and small islands are particularly vulnerable to sea-level rise. In Palau, roughly 93% of its population lives within 1 km of the coastline and the entire population lives within 5 and 10 km from the coastline.[2] 33% of the country's population lives in low-elevation coastal zones.

Preparedness

Like all other small island countries, the lack of WRI data makes it difficult to capture aspects of exposure to sea level rise, socio-economic readiness and overall risk. Despite its geographical disadvantage, INFORM ranks Palau really well across all its indicators, within Oceania and across worldwide countries. This discrepancy in ranking does not provide a holistic image of Palau as we know that the country's population is highly exposed to sea level rise and hazards. Even ND Gain ranks Palau very highly within Oceania on its readiness capacity and exposure, but not across all countries. So before arriving at any conclusions, Palau's high rankings across other indices need to be examined further.



Palau | Government Preparedness Rapid Assessment Discussion

Question 1: Does Palau have a DRR strategy in place?

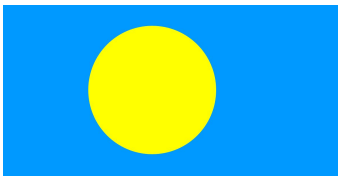
Yes. the National Disaster Management Framework 2010[5].

Question 2: Has it been proactively reporting on the Hyogo and Sendai frameworks?

No. Palau submitted their Hyogo Framework for Action in 2012, during the last reporting period. They have not yet published their progress towards the Sendai agreement.

Question 3: Does the government have an independent office to carry out DRR activities?

Yes. According to their National Disaster Management Framework, as of 2010, Palau had a National Disaster Committee responsible for DRR. The National Disaster Committee oversees and spearheads the National Emergency Management Office (Nemo), which plans across ministries the implementation of the National Disaster Management Plan.



Palau | Endnotes

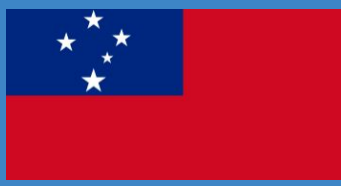
[1] Palau, Encyclopedia Britannica, accessed on 15th April 2020, https://www.britannica.com/place/Palau

[2] 2015 Census of Population Housing and Agriculture for the Republic of Palau, Office of Planning and Statistics - Bureau of Budget and Planning, https://www.palaugov.pw/wp-content/uploads/2017/02/2015-Census-of-Population-Housing-Agriculture-.pdf

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] Palau, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/palau

[5] National Disaster Risk Management Framework 2010, https://reliefweb.int/sites/reliefweb.int/files/resources/National%20Disaster%20Risk%20management%20Framework%202010.pdf



Samoa

Samoa | Country Vulnerability Snapshot

Country: Samoa
Island Type: Volcanic[1]
Population: 187,820[2]
Main Hazards: Tropical Cyclone, Tsunamis[3]
Recent Disasters: Tropical Cyclone Gita (2018)[4]

Overall Assessment

Medium Exposure | Medium Population Exposure | Medium Preparedness | Medium Vulnerability

1 Km of the coast: % of population; total number	61%; 114,570
5 Km of the coast: % of population; total number	97%; 182,185
10 Km of the coast: % of population; total number	100%; 187,820
Low elevation coastal zones: % of population; total number	4.0%; 7,974

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	No
Does the government have an independent office under DRR?	Yes

Samoa | DRR Vulnerability Composite

This page provides a synthesis of the scores Samoa has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow.

INFORM	World Rank	Oceania Rank
Total Risk Score: 2.9	#123 out 191 *36th Percentile*	#9 out of 11 *18th Percentile*
Hazard and Exposure Score: 1.9	#148 out of 191 *23rd Percentile*	#8 out of 11 *27th Percentile*
Vulnerability Score: 3.1	#108 out of 191 *43rd Percentile*	#10 out of 11 *9th Percentile*
Lack of Coping Capacities Score: 4.1	#111 out of 191 *42nd Percentile*	#10 out of 11 *9tht Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: 46.49	#84 out of 181 *54th Percentile*	#5 out of 6 *17th Percentile*
Vulnerability Score: 0.483	#58 out of 181 *68th Percentile*	#5 out of 6 *17th Percentile*
Lack of Readiness Score: 0.413	#102 out of 191 *47th Percentile*	#5 out of 11 *55th Percentile*
Exposure Score: 0.478	#62 out of 192 *68th Percentile*	#10 out of 11 *9th Percentile*
Lack of Coping Capacity Score: 0.521	#71 out of 180 *61st Percentile*	#5 out of 6 *17th Percentile*

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: 6.19	#94 out of 180 *48th Percentile*	#7 out of 7 *0th Percentile*
Exposure Score: 13.04	#95 out of 180 *47th Percentile*	#7 out of 7 *0th Percentile*
Vulnerability Score: 47.5	#75 out of 180 *58th Percentile*	#6 out of 7 *14th Percentile*
Lack of Coping Capacities Score: 79.7	#63 out of 180 *65th Percentile*	#5 out of 7 *29th Percentile*
Lack of Adaptive Capacities Score: 37.27	#82 out of 180 *54th Percentile*	#6 out of 7 *14th Percentile*
Susceptibility Score: 25.52	#82 out of 180 *54th Percentile*	#6 out of 7 *14th Percentile*

CRI	World Rank	Oceania Rank
Total Risk Score: 73.67	#111 out of 181 *39th Percentile*	#5 out of 9 *44th Percentile*

Samoa | DRR Vulnerability Composite Discussion

Physical Exposure

Samoa consists of nine islands, of which Upolu, Savai'i, Manono, and Apolima are inhabited, and the uninhabited islands are Fanuatapu, Namu'a, Nu'utele, Nu'ulua, and Nu'usafee. The largest island, Savai'i, covers an area of 1,707 sq km and has a maximum elevation of 6,095 feet. Between Savai'i and Upolu, the other main island, small islands are smattered between the two.[1]

Population Exposure

In Samoa, 61% of its population lives within 1 km of the coastline, but over 97% lives within 5 km of the coastline and 10 kms, increasing the risk posed by natural disasters, and making the country susceptible to sea-level rise due to climate change. 4% of the country's population lives in low-elevation coastal zones.

Preparedness

Samoa is well connected with its partners in Oceania as well as international agencies involved in disaster risk preparedness and response, which mitigates some of the risk posed to Samoa due to natural disasters. Across all indices and their subcomponents, Samoa ranks quite well within Oceania. Within WRI rankings, Samoa is ranked well across exposure, risk, vulnerability and other components. This can in part be attributed to only 61% of its population living within 1 km of the coastline as WRI does capture exposure to sea-level rise. However all of Samoa's good rankings do not hold when compared to other countries' preparedness worldwide as they have more resources and personnel at their disposal. Only INFORM ranks Samoa well worldwide on exposure. However this high ranking should be further examined critically as INFORM's classification of exposure includes conflict and epidemics, which are not entirely relevant to DRR preparedness.

Samoa | Government Preparedness Rapid Assessment Discussion

Question 1: Does the government have a DRR strategy in place?

Yes. The country has a DRR strategy that is guided by its 5 years National Action Plan (NAP).[5]

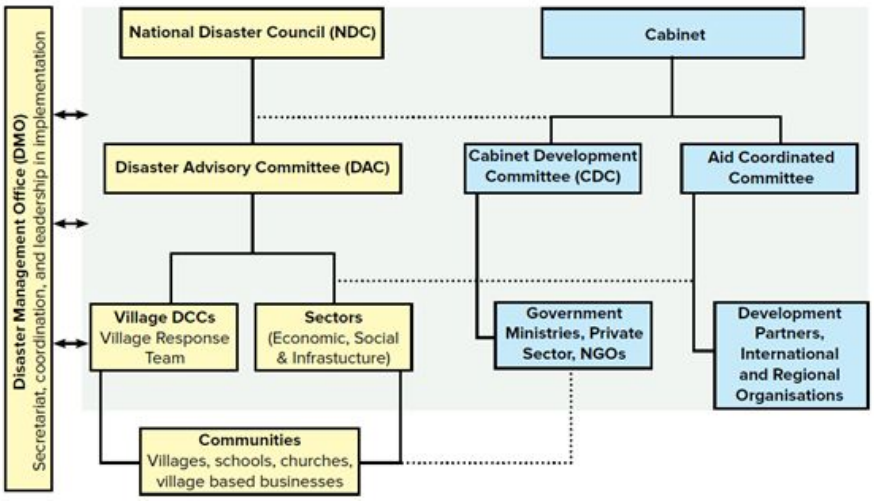
Question 2: Has the government been actively reporting on the Hyogo and Sendai frameworks?

No. The last progress report was its response to the implementation of the Hyogo framework for the years 2011-2013. We could not find any reports for Sendai.

Question 3: Does the government have independent office under the DRR?

Yes. Samoa has an office – the Disaster Management Office – comprised by a secretariat that coordinates and provides leadership for DRR activities and that oversees the implementation of DRR activities.[6]

Figure 1 Institutional Arrangements for DRM Implementation in Samoa (Source: NDMP 2017-2020)



Samoa | Endnotes

[1] Samoa, Encyclopedia Britannica, accessed on 15th April 2020, https://www.britannica.com/place/Samoa-island-nation-Pacific-Ocean

[2] Population and Housing Census 2011, Samoa Bureau of Statistics, https://www.sbs.gov.ws/digi/Census%20Report%202011.pdf

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] Samoa, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/samoa

[5] Samoa National Action Plan For Disaster Risk Management 2017 - 2021, Disaster Management Office, accessed on 2nd April 2020, https://bsrp.gsd.spc.int/wp-content/uploads/2018/05/samoa-national-action-plan.pdf

[6] Samoa National progress report on the implementation of the Hyogo Framework for Action (2011-2013) - interim, Disaster Management Office - Samoa Government, https://www.preventionweb.net/files/28739_wsm_NationalHFAprogress_2011-13.pdf

Solomon Islands

Solomon Islands | Country Vulnerability Snapshot

Country: Solomon Islands
Island Type: Volcanic/ Atolls[1]
Population: 515,870[2]
Main Hazards: Tropical Cyclones[4], Tsunamis, Earthquakes[3]
Recent Disasters: Tropical Cyclone Ita (2014)[1]

Overall Assessment

High Hazard Exposure | Medium Population Exposure | Medium Preparedness | Medium Vulnerability

1 Km of the coast: % of population; total number	65%; 335,316
5 Km of the coast: % of population; total number	91%; 469,442
10 Km of the coast: % of population; total number	98%; 505,553
Low elevation coastal zones: % of population; total number	11.5%; 77,454

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	No
Does the government have an independent office under DRR?	Yes

Solomon Islands | DRR Vulnerability Composite

This page provides a synthesis of the scores the Solomon Islands has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow.

INFORM	World Rank	Oceania Rank
Total Risk Score: 4.7	#57 out 191 *70th Percentile*	#1 out of 11 *91st Percentile*
Hazard and Exposure Score: 3.8	#79 out of 191 *59th Percentile*	#1 out of 11 *91st Percentile*
Vulnerability Score: 4.1	#75 out of 191 *61st Percentile*	#6 out of 11 *45th Percentile*
Lack of Coping Capacities Score: 6.6	#34 out of 191 *82nd Percentile*	#1 out of 11 *91st Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: 38.09	#38 out of 181 *79th Percentile*	#2 out of 6 *67th Percentile*
Vulnerability Score: 0.658	#3 out of 181 *98th Percentile*	#1 out of 6 *83rd Percentile*
Lack of Readiness Score: 0.42	#104 out of 191 *46th Percentile*	#7 out of 11 *36th Percentile*
Exposure Score: 0.557	#11 out of 192 *94th Percentile*	#6 out of 11 *45th Percentile*
Lack of Coping Capacity Score: 0.659	#34 out of 180 *81st Percentile*	#1 out of 6 *83rd Percentile*

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: 29.36	#4 out of 180 *98th Percentile*	#3 out of 7 *57th Percentile*
Exposure Score: 48.31	#5 out of 180 *97th Percentile*	#3 out of 7 *57th Percentile*
Vulnerability Score: 60.77	#39 out of 180 *78th Percentile*	#1 out of 7 *86th Percentile*
Lack of Coping Capacities Score: 80.95	#59 out of 180 *67th Percentile*	#3 out of 7 *57th Percentile*
Lack of Adaptive Capacities Score: 55.00	#32 out of 180 *82nd Percentile*	#1 out of 7 *86th Percentile*
Susceptibility Score: 46.37	#34 out of 180 *81st Percentile*	#1 out of 7 *86th Percentile*

CRI	World Rank	Oceania Rank
Total Risk Score: 70	#117 out of 181 *35th Percentile*	#6 out of 9 *33th Percentile*

Solomon Islands | DRR Vulnerability Composite Discussion

Physical Exposure

The Solomon Islands is a conglomeration of approximately 992 mostly small islands including six major ones, Choisuel, Guadacanal, Malaita, Makira, New Georgia and Santa Isabel.[4] It is made up of two chains of volcanic islands and low-lying coral atolls.[1] The country is particularly vulnerable to tsunamis, tropical cyclones, and earthquakes.[5] Like other SIDS, Solomon Islands' small size, remoteness, lack of resourcefulness, and high exposure to natural hazards make it hard to achieve sound sustainable development.[5] Solomon Islands also struggles to recover from its history of colonialism, ethnic conflicts, and weak governmental policies pertaining to disaster risk preparedness, infrastructure, and access to healthcare among other things.[6] A large portion of its citizens also inhabit hazardous lands given the country's many informal settlements.[7]

Population Exposure

With 91% of its population living 5km from the coastline, the country is also highly susceptible to sea level rise. Exposure to sea level rise is mostly captured by the "WRI Exposure" metric since this metric takes into account 5 climate factors, one of which is sea-level rise. 11.5% of the country's population lives in low-elevation coastal zones.

Preparedness

Across all indices, the Solomon Islands ranked fairly poorly. Most indices place Solomon Islands as highly at-risk. Specifically the WRI--which only calculates climate risk--ranks Solomon Islands at the 4th most at-risk country in the world, making it among the riskiest 2% worldwide. Within Oceania, the Solomon Islands has the least coping capacity (INFORM, ND Gain), and is the most vulnerable and susceptible to climate events (WRI, ND Gain). Only CRI, within Oceania, ranks the country slightly better. However, since CRI is only reflective of past climate-induced losses (economic loss and fatalities), this metric is not telling of the projected exposure given the rapidly changing climate landscape. Lack of preparedness is probably due, among other things, to the fact that the country only developed a detailed a national disaster management plan in 2018. It has also never reported on Sendai which makes it harder, without qualitative fieldwork research, for the international community or the general public to assess the country's specific needs.

Solomon Islands | Government Preparedness Rapid Assessment Discussion

Question 1: Does Solomon Islands have a DRR strategy in place?

Yes. In March 2019, Solomon Islands committed to mobilize resources under the World Bank's Post Disaster Needs Assessment (PDNA) methodology and Disaster Recovery Framework. In 2018, Solomon Islands developed a new National Disaster Management Plan to manage disaster events and enhance resilience. The country also created a centralised GIS based-portal for natural hazards, vulnerability and risk information sharing system for government and partners, improved weather forecasting and early warning capabilities of the national meteorological service and expanded weather observation.[6]

Question 2: Has it been proactively reporting on the Hyogo and Sendai frameworks?

No. Solomon Islands has not yet reported on Sendai. The last time it reported on Hyogo was in 2011, one year after its cabinet approved a National DRM plan.

Question 3: Does the government have an independent office to carry out DRR activities?

Yes. Solomon Islands has an independent office - the National Disaster Council. Although it is answerable to the cabinet, it is responsible for national planning and operations. It is comprised of offices across different sectors, including the National Disaster Management Office, and Health Services.

Solomon Islands | Endnotes

[1] Solomon Islands, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/solomon-islands

[2] Census 2009, Solomon Islands National Statistics Office, https://www.statistics.gov.sb/statistics/demographic-statistics/census

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

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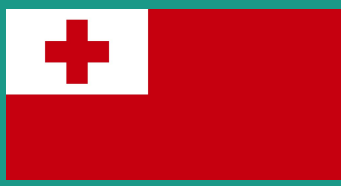
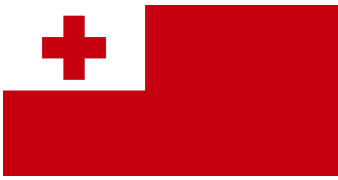
[6] Talo, F, Solomon Islands National Adaptation Programmes of Action, UNFCCC, November 2008, http://unfccc.int/resource/docs/napa/slb01.pdf

[7] McGovern, et al. Case Study of Solomon Islands Peace and Conflict-related Development Analysis, Human Development Report 2005, http://hdr.undp.org/sites/default/files/hdr2005_mcgovern_and_choulai_33.pdf

[8] Honiara Urban Resilience & Climate Action Plan, UN-HABITAT 2016, http://www.fukuoka.unhabitat.org/programmes/ccci/pdf/HURCAP_final_Endorsed.pdf



Tonga



Tonga | Country Vulnerability Snapshot

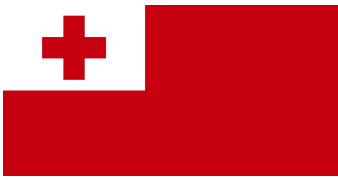
Country: Kingdom of Tonga
Island Type: Volcanic[1]
Population: 100,691[2]
Main Hazards: Tropical Cyclones, Earthquakes[3], Tsunamis,
Recent Disasters: Tropical Cyclone Gita (2018)[4]

Overall Assessment

High Hazard Exposure | High Population Exposure | High Preparedness | Medium Vulnerability

1 Km of the coast: % of population; total number	84%; 84,580
5 Km of the coast: % of population; total number	100%; 100,691
10 Km of the coast: % of population; total number	100%; 100,691
Low elevation coastal zones: % of population; total number	17.3%; 18,453

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	Yes
Does the government have an independent office under DRR?	Yes



Tonga | DRR Vulnerability Composite

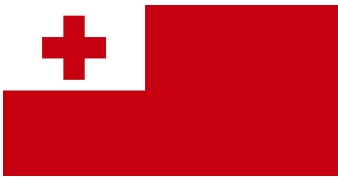
This page provides a synthesis of the scores the Kingdom of Tonga has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow.

INFORM	World Rank	Oceania Rank
Total Risk Score: 3.9	#86 out 191 *55th Percentile*	#3 out of 11 *73rd Percentile*
Hazard and Exposure Score: 3	#102 out of 191 *47th Percentile*	#2 out of 11 *82nd Percentile*
Vulnerability Score: 4.5	#64 out of 191 *66th Percentile*	#3 out of 11 *73rd Percentile*
Lack of Coping Capacities Score: 4.4	#97 out of 191 *49th Percentile*	#8 out of 11 *27th Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: 41.16	#59 out of 181 *61st Percentile*	#4 out of 6 *33rd Percentile*
Vulnerability Score: 0.573	#19 out of 181 *90th Percentile*	#3 out of 6 *50th Percentile*
Lack of Readiness Score: 0.396	#92 out of 191 *52nd Percentile*	#4 out of 11 *64th Percentile*
Exposure Score: 0.545	#13 out of 192 *93rd Percentile*	#7 out of 11 *36th Percentile*
Lack of Coping Capacity Score: 0.47	#92 out of 180 *49th Percentile*	#6 out of 6 *0th Percentile*

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: 29.39	#3 out of 180 *98th Percentile*	#2 out of 7 *71st Percentile*
Exposure Score: 61.41	#3 out of 180 *98th Percentile*	#2 out of 7 *71st Percentile*
Vulnerability Score: 47.86	#73 out of 180 *59th Percentile*	#5 out of 7 *29th Percentile*
Lack of Coping Capacities Score: 79.92	#60 out of 180 *67th Percentile*	#4 out of 7 *43rd Percentile*
Lack of Adaptive Capacities Score: 35.47	#95 out of 180 *47th Percentile*	#7 out of 7 *0th Percentile*
Susceptibility Score: 28.19	#73 out of 180 *59th Percentile*	#5 out of 7 *29th Percentile*

CRI	World Rank	Oceania Rank
Total Risk Score: 75.67	#107 out of 181 *41th Percentile*	#4 out of 9 *56th Percentile*



Tonga | DRR Vulnerability Composite Discussion

Physical Exposure

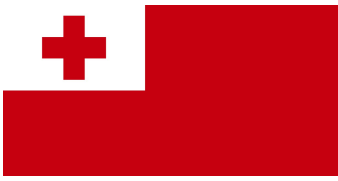
The Kingdom of Tonga is an archipelago comprising 169 islands with a total surface area of about 750 sq. km. With 84% of the population living within 1 km of the coastline, the country is vulnerable to sea level rise. The country is vulnerable to tropical cyclones. Additionally, It is located within the ring of fire, which makes it extremely susceptible to earthquakes. The entire country is divided into three main island groups: Tongatapu in the south, Haʻapai in the centre, and Vavaʻu in the north and there are several isolated islands in the far south.

Population Exposure

In Tonga, a considerable part of the population is exposed to sea level rise. 84% of its population lives within 1 km from the coastline and 100% of its population lives within 5 and 10 kms of the coastline, making it very susceptible to any significant sea level rise. 17.3% of the country's population lives in low-elevation coastal zones.

Preparedness

The INFORM index scores Tonga 3.9 on its total risk, based on its socio-economic, political, and environmental vulnerability and readiness. While worldwide, Tonga is ranked 86 out of 191 countries, within Oceania, its total risk is very high as it is ranked 3 out of 11. Even for hazard and exposure, and vulnerability, Tonga is ranked very poorly, indicating its overall poor preparedness in handling social vulnerability as well as disaster risks. As per ND Gain, Tonga is extremely vulnerable with very high exposure, indicated by its really poor rankings of 19 & 13 respectively. However, within Oceania, Tonga is managing its adaptive capacities really well amongst all other countries. The WRI overall ranks Tonga really poorly on its total exposure and risk across all countries and even within Oceania, This is in line with a high percentage of its population living close to the coastline. However, specifically within Oceania, Tonga is ranked higher than others on its adaptive capacity and susceptibility.



Tonga | Government Preparedness Rapid Assessment Discussion

Question 1: Does Tonga have a DRR strategy in place?

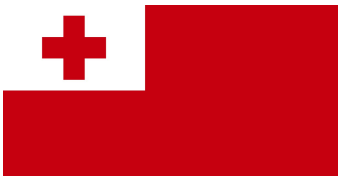
Yes, In 2018, Tonga developed Joint National Action Plan on Climate Change and Disaster Risk Management (JNAPII). JNAPII aims to provide Tonga with a "country-as-a-whole" approach to disaster management and accounting tools. It was developed with support from the European Union, Gesellschaft für Internationale Zusammenarbeit (GIZ), Green Climate Fund, USAID and the joint UNDP-UN Environment NAP-GSP.[5]

Question 2: Has it been proactively reporting on the Hyogo and Sendai frameworks?

Yes. Tonga has partially reported on Targets A and B for Sendai. Targets A and B respectively tackle the reduction of disaster-related mortality and the number of affected people globally. This makes Tonga one of 24% of countries to validate its scores for Target A, and one of 30% to do so for Target B. Although it has submitted its data readiness report that reviews the availability of data needed to measure the global targets of the Sendai Framework, it has not reported on Target E which is DRR-specific.[5]

Question 3: Does the government have an independent office to carry out DRR activities?

Yes. The Department of Climate Change is tasked with resilience activities. Within the Department, the Joint National Action Plan (JNAP) secretariat is the focal point for coordinating DRR activities across different branches of the government, including the Parliament and Cabinet.



Tonga | Endnotes

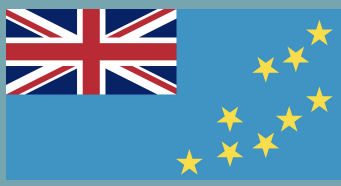
[1] Tonga, Encyclopedia Britannica, accessed on 15th April 2020, https://www.britannica.com/place/Tonga

[2] Tonga 2011 Census of Population and Housing, Tonga Department of Statistics, https://tonga-data.sprep.org/system/files/2011_CensusReportVol2.pdf

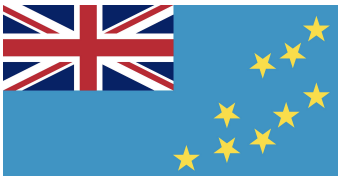
[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] Tonga, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/tonga

[5] Joint National Action Plan 20N Climate Change and Disaster Risk Management 2018-2028, M.E.I.D.E.C.C., May 2018, https://www.preventionweb.net/files/60141_tongajnap2final.pdf



Tuvalu



Tuvalu | Country Vulnerability Snapshot

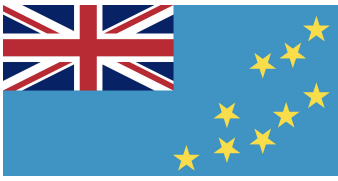
Country: Tuvalu
Island Type: Atoll[1]
Population: 10,640[2]
Main Hazards: Cyclones, Sea-Level Rise[4], Tsunamis[3]
Recent Disasters: Tropical Cyclone Pam (2015)[5]

Overall Assessment

High Hazard Exposure | High Population Exposure | Low Preparedness | High Vulnerability

1 Km of the coast: % of population; total number	100%; 10,640
5 Km of the coast: % of population; total number	100%; 10,640
10 Km of the coast: % of population; total number	100%; 10,640
Low elevation coastal zones: % of population; total number	49.5%; 6,049

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	No
Does the government have an independent office under DRR?	No



Tuvalu | DRR Vulnerability Composite

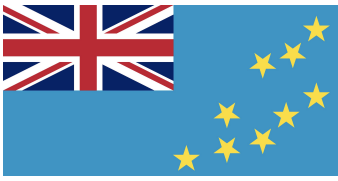
This page provides a synthesis of the scores Tuvalu has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow.

INFORM	World Rank	Oceania Rank
Total Risk Score: 3.1	#112 out 191 *41st Percentile*	#8 out of 11 *11th Percentile*
Hazard and Exposure Score: 1.6	#158 out of 191 *17th Percentile*	#11 out of 11 *0th Percentile*
Vulnerability Score: 3.7	#85 out of 191 *55th Percentile*	#8 out of 11 *27th Percentile*
Lack of Coping Capacities Score: 5.1	#73 out of 191 *62nd Percentile*	#7 out of 11 *36th Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Readiness Score: 0.553	#156 out of 191 *18th Percentile*	#11 out of 11 *0th Percentile*
Exposure Score: 0.0.631	#3 out of 192 *98th Percentile*	#1 out of 11 *91st Percentile*
Lack of Coping Capacity Score: NA	NA	NA

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: NA	NA	NA
Exposure Score: NA	NA	NA
Vulnerability Score: NA	NA	NA
Lack of Coping Capacities Score: NA	NA	NA
Lack of Adaptive Capacities Score: NA	NA	NA
Susceptibility Score: NA	NA	NA

CRI	World Rank	Oceania Rank
Total Risk Score: 113.67	#54 out of 181 *70th Percentile*	#3 out of 9 *67th Percentile*



Tuvalu | DRR Vulnerability Composite Discussion

Physical Exposure

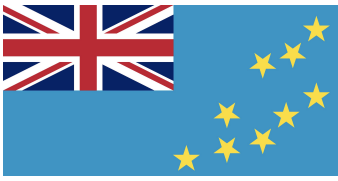
Being an extremely low-lying and small island nation puts Tuvalu at a high risk for climate change induced shocks and disaster risks, especially sea level rise. It has a total land area of 26 sq. kms (10 sq. miles). Overall it consists of 9 sparsely populated islands.

Population Exposure

Like most other small island developing nations in the region, Tuvalu's population is at severe risk from any sea level rise. Specifically, as 100% of its population lives within 1 km. of the coastline, all of the country is very vulnerable. 49.5% of the country's population lives in low-elevation coastal zones.

Preparedness

Such extreme vulnerabilities would warrant the need for more information to devise mitigation plans, but in the absence of complete data, there is not enough information for Tuvalu across all indices to formulate a holistic picture. In the absence of WRI information, ND Gain, INFORM and CRI rankings produce mixed results. INFORM ranks Tuvalu quite well within Oceania on the subcomponents of risk, exposure and vulnerability. But as the sub-component captures exposure to conflict, epidemics and hazards, it might present the most appropriate description of the threats face by Tuvalu as exposure rankings under WRI would have, had there been any information. Also, since we know that all of the country's population lives very close to the coastline, even hazards such as earthquakes would be highly detrimental. ND Gain also presents a contradictory picture as Tuvalu is highly exposed but the most ready country across Oceania and other countries. CRI rankings inform us that Tuvalu has suffered considerable socio-economic losses.



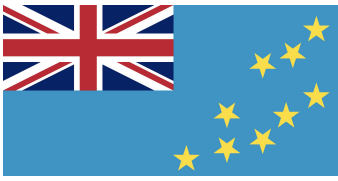
Tuvalu | Government Preparedness Rapid Assessment Discussion

Question 1: Does Tuvalu have a DRR strategy in place?

Yes. Tuvalu's National Climate Change Policy (NCCP 2012-2021) outlines its policies for adapting and responding to climate change impacts and related disaster risks. The policy defines 7 thematic goals, strategies and outcomes that have been prioritized for implementation to ensure that safety and resilience are achieved. The thematic goals include but are not limited to building national resilience, adaptability to climate change shocks, securing rights & livelihoods, ensuring food security, sustainably managing water resources and implementation of required DRR and climate change programs. The policy is directly linked to Tuvalu's National Strategic Action Plan for Climate Change and Disaster Risk Management (NSAP). Unless specified otherwise, Tuvalu's definition of climate change refers to both adaptation and mitigation. The NCCP covers climate change impacts, and climate and hydrological hazards whereas the NSAP covers geological and anthropological hazards and related disasters.

Question 2: Has it been proactively reporting on the Hyogo and Sendai frameworks?

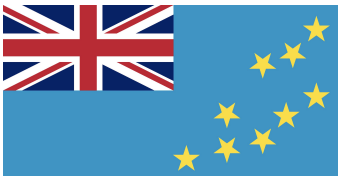
No. While Tuvalu has partially completed the Sendai Framework Data Readiness Review in 2017, it has not reported adequate information on all of the DRR indicators. For Hyogo, updated and relevant information does not seem to be available.



Tuvalu | Government Preparedness Rapid Assessment Discussion

Question 3: Does the government have an independent office to carry out DRR activities?

No. While not entirely independent, the Ministry of Natural Resources, Environment, Agriculture and Lands is responsible for implementing and overseeing climate change and DRR related policies and actions in Tuvalu.



Tuvalu | Endnotes

[1] Tuvalu, Encyclopedia Britannica, accessed on 15th April 2020, https://www.britannica.com/place/Tuvalu

[2] Population and Housing Census 2012, Central Statistics Division, https://microdata.pacificdata.org/index.php/catalog/50

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] The World Factbook, CIA, accessed on 3rd April 2020, https://www.cia.gov/library/publications/the-world-factbook/geos/tv.html

[5] Tuvalu, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/tuvalu

Vanuatu

Vanuatu | Country Vulnerability Snapshot

Country: Vanuatu
Island Type: Coral[1]
Population: 234,023[2]
Main Hazards: Tropical Cyclones, Tsunamis, Earthquakes[3]
Recent Disasters: Tropical Cyclone Pam[4]

Overall Assessment

High Hazard Exposure | Medium Population Exposure | Medium Preparedness | Medium Vulnerability

1 Km of the coast: % of population; total number	64%; 149,775
5 Km of the coast: % of population; total number	94%; 219,982
10 Km of the coast: % of population; total number	98%; 229,343
Low elevation coastal zones: % of population; total number	6.9%; 21,028

Does the government have a DRR strategy in place?	Yes
Has it been proactively reporting on Hyogo and Sendai?	No
Does the government have an independent office under DRR?	Yes

Vanuatu | DRR Indices Composite

This page provides a synthesis of the scores Vanuatu has received on several relevant indices. For all the numbers below, lower ranks indicate poor performance. Poor-performing categories (>70th percentile) are highlighted in dark, best-performing ones (<30th percentile) in yellow.

INFORM	World Rank	Oceania Rank
Total Risk Score: 4.1	#77 out 191 *60th Percentile*	#2 out of 11 *82nd Percentile*
Hazard and Exposure Score: 2.9	#106 out of 191 *45th Percentile*	#3 out of 11 *73rd Percentile*
Vulnerability Score: 4.1	#74 out of 191 *61st Percentile*	#5 out of 11 *55th Percentile*
Lack of Coping Capacities Score: 5.7	#55 out of 191 *71st Percentile*	#3 out of 11 *73rd Percentile*

ND Gain	World Rank	Oceania Rank
Total Risk Score: 39.319	#47 out of 181 *74th Percentile*	#3 out of 6 *50th Percentile*
Vulnerability Score: 0.569	#21 out of 181 *88th Percentile*	#4 out of 6 *33rd Percentile*
Lack of Readiness Score: 0.355	#75 out of 191 *61st Percentile*	#1 out of 11 *91st Percentile*
Exposure Score: 0.487	#54 out of 192 *72nd Percentile*	#9 out of 11 *18th Percentile*
Lack of Coping Capacity Score: 0.569	#56 out of 180 *69th Percentile*	#3 out of 6 *50th Percentile*

WorldRiskIndex	World Rank	Oceania Rank
Total Risk Score: 56.71	#1 out of 180 *99th Percentile*	#1 out of 7 *86th Percentile*
Exposure Score: 99.88	#1 out of 180 *99th Percentile*	#1 out of 7 *86th Percentile*
Vulnerability Score: 56.78	#48 out of 180 *73rd Percentile*	#3 out of 7 *57th Percentile*
Lack of Coping Capacities Score: 84.36	#40 out of 180 *78th Percentile*	#1 out of 7 *86th Percentile*
Lack of Adaptive Capacities Score: 50.66	#41 out of 180 *77th Percentile*	#2 out of 7 *71st Percentile*
Susceptibility Score: 35.32	#52 out of 180 *71st Percentile*	#3 out of 7 *57th Percentile*

CRI	World Rank	Oceania Rank
Total Risk Score: 53.83	#144 out of 181 *39th Percentile*	#8 out of 9 *11th Percentile*

Vanuatu | DRR Indices Composite Discussion

Physical Exposure

The Republic of Vanuatu is particularly vulnerable to climate change as the result of sea-level rise and ocean acidification. Consequently, it is characterized as a high risk country with regards to its disaster risk profile. It consists of a chain of 13 major and several other many smaller islands located 800 km west of Fiji and 1,770 km) east of Australia. Active volcanoes are also found on several islands.[1]

Population Exposure

In Vanuatu, 64% of its population lives within 1 km. of the coastline and 94% lives within 5 km. of the coastline. Overall, 98% of the population lives within 10kms of the coastline. That said, just 6.9% of the country's population lives in low-elevation coastal zones.

Preparedness

Analyzing the WRI gives a more holistic image of Vanuatu as it ranks Vanuatu very poorly across almost all of its subcomponents worldwide and within Oceania. Vanuatu's poor ranks on exposure is in line with the high percentage of its population living in close proximity to the coastline. Overall within WRI, Vanuatu is the most riskiest country, within oceania and across other countries worldwide. However, CRI rankings indicate that the country has not suffered severe socio-economic losses when compared with other oceania countries. INFORM and ND Gain also present contradictory pictures as Vanuatu is ranked poorly across some sub-components but not all. ND Gain ranks the country well in terms of its exposure within Oceania, but that drops when compared worldwide across all countries on that sub-component. INFORM consistently ranks Vanuatu poorly on its lack of coping capacities within Oceania and when compared to other countries. Overall, even across ND Gain and INFORM, Vanuatu ranks very poorly on total risk, lack of coping capacities and vulnerability.

Vanuatu | Government Preparedness Rapid Assessment Discussion

Question 1. Does the government have a DRR strategy in place?

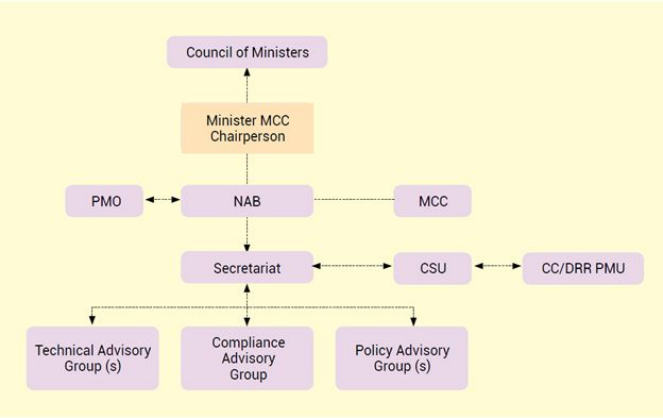
Yes. The government of Vanuatu has a DRR strategy in place that is guided by its vision 'Vanuatu is a resilient community, environment and economy'.

Question 2. Has the government been actively reporting on the Hyogo and Sendai frameworks?

No. There are some gaps in Vanuatu's reporting to the Hyogo and Sendai frameworks. We were not able to find Vanuatu's progress report on the implementation of Sendai. However, Vanuatu has published its progress report on the implementation of Hyogo Framework for the period 2011-2013.

Question 3. Does the government have independent office under the DRR?

Yes. All the DRR actions of the government of Vanuatu are guided by the NAB – National Advisory Board on Climate Change and Disaster Risk Reduction. However, there are challenges. There is a lack of clarity in the roles of the stakeholders. Furthermore, limited resources put additional strain on DRR planning and activities.[5]



Vanuatu | Endnotes

[1] Vanuatu, Encyclopedia Britannica, accessed on 15th April 2020, https://www.britannica.com/place/Vanuatu

[2] 2009 National Population and Housing Census, Vanuatu National Statistics Office, https://vnso.gov.vu/index.php/census-and-surveys/census/censuses

[3] INFORM 2020, accessed on 1st March 2020, https://drmkc.jrc.ec.europa.eu/inform-index

[4] Vanuatu, UNOCHA, accessed on 20th March 2020, https://www.unocha.org/office-pacific-islands/vanuatu

[5] Vanuatu Climate Change and Disaster Risk Reduction Policy 2016-2030, Secretariat of the Pacific Community, 2015, https://www.preventionweb.net/files/46449_vanuatuccdrrpolicy2015.pdf

Concluding Remarks

The island nations in Oceania are particularly vulnerable to the effects of climate change. Our report aims to study the risks in the region and prescribe a list of recommendations that may help countries build up their disaster risk preparedness and resilience. Each of the country profiles was designed with the intention of communicating a brief snapshot of the risks, threats, government preparedness and overall exposure and vulnerability. In order to do so, our team compiled information from multiple indices such as INFORM, ND Gain, WRI and CRI.

Our initial goal of corroborating this information through fieldwork did not materialize due to unforeseen and unavoidable circumstances due to the global pandemic. As a result we were not able to corroborate information on budgets and financial capacity within countries. Due to unreliability of some secondary sources, our team collectively decided to not include scores and information on budgets. Additionally, as certain countries within Oceania are more financially stable and less vulnerable, they would by default have more budgetary resources allocated to DRR as compared to much smaller countries like Samoa.

Hence, we had to limit the scope of our study to analyzing the existing indices and the DRR reports published by the countries. Our study finds that most of the countries in Oceania have a high exposure to natural hazards owing to a large percentage of population living in vulnerable areas - within 1 km of coastline and within 1m of elevation. In addition, we found gaps in government preparedness for most of the countries.

APPENDICES

Appendix A: Frameworks

This section includes the Hyogo Framework for Action (HFA) and its subsequent Sendai Framework for monitoring DRR. Their primary purpose is to assist countries in monitoring their own progress in the implementation of disaster risk reduction and recovery actions.

Developed and managed by the UN-DRR, these self-assessment reports provide details about the new legislative and instrumental systems, policies, budgetary allocations, information systems, early warning mechanisms, disaster preparedness actions undertaken by governments.

Appendix A1: The Hyogo Framework for Action in Disaster Risk Reduction

The Hyogo Framework for Action (HFA) monitor aimed to track the status and progress in disaster risk reduction efforts.. Its primary purpose was to assist countries in monitoring their own progress in the implementation of disaster risk reduction and recovery actions. It was in effect from 2005 until 2015, when it was replaced by the Sendai Framework for DRR.

The self reporting tool was designed by the United Nations Office for Disaster Risk Reduction (UNISDR). The self-assessment reports provide details about the new legislative and instrumental systems, policies, budgetary allocations, information systems, early warning mechanisms, disaster preparedness actions undertaken by governments. It also provides insight, albeit to a lesser extent, on the corrective disaster risk management.

Methodology

The Hyogo Self Assessment Reports assesses a countries progress in achieving three goals laid down in the Hyogo Framework. These are as follows:

Strategic Goal 1
The integration of disaster risk reduction into sustainable development policies and planning

Strategic Goal 2
Development and strengthening of institutions, mechanisms and capacities to build resilience to hazards.

Strategic Goal 3
The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery.

With these 3 goals in mind, Hyogo framework lays down five priority actions that countries need to take in order to build up their resilience. For the period 2005-15, these are as follows:

Priority for action 1: Ensure disaster risk reduction is a national and local priority with a strong institutional basis for implementation.

Priority for action 2: Identify, assess and monitor disaster risks and enhance early warning.

Priority for action 3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels.

Methodology

Priority for action 4: Reduce the underlying Risk Factors

Priority for action 5: Strengthen disaster preparedness for effective response at all levels.

The progress that each country is making towards the implementation of these priorities for actions is measured by core indicators. Each core indicator has a set of questions. Response to these questions indicate a countries' progress towards the implementation of Hyogo Frameworks

Based upon their response to the Core Indicators, a countries' progress towards implementing the said priority actions is measured on an ordinal scale consisting of 5 levels:

Level 1: Achievements are minor and there are few signs of planning and forward action to improve the situation.

Level 2: Some progress, but without systematic policy and/or institutional commitment.

Level 3: Institutional commitment attained but achievements are neither comprehensive nor substantial

Level 4: Substantial achievement attained, but with recognized limitations in key aspects, such as financial resources and/ or operational capacities.

Level 5: Comprehensive achievement has been attained, with the commitment and capacities to sustain efforts at all levels.

Usefulness of the Score

The progres reports towards the implementation of Hyogo Frameworks remains one of the key resources to assess a country's efforts towards building up its Disaster Risk Resilience.

The questions are designed to capture qualitative response, and hence is quite comprehensive. In addition, the multiple layers within the framework and the guidelines for response - Goals -> Priority for actions -> Core Indicators -> Questions, ensure that the assessment of a country's progress is extremely exhaustive.

However, there are a few downsides. The scores are self-reported. As there is no third party verification, countries' can possibly inflate their response. Additionally, there is no guideline if a country does not report.

Appendix A2: Target E from the Sendai Framework for Disaster Risk Reduction

The Sendai Framework for Disaster Risk Reduction is the Hyogo Framework (2005-2015)'s successor agreement. It was adopted in 2015 and aims to substantially reduce the "disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries."

Target E from the Sendai Framework is a measure that estimates the number of countries and local actors that have Disaster Risk Reduction (DRR) strategies in place. Its goal is to: "Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020."

However, as it was the case with its predecessor, the Sendai Framework relies on self-assessed scores especially for Target E. Such scores usually include an element of subjectivity which often leads to discrepancies in reporting.

By setting clear targets and deliverables for the year 2030, the Sendai Framework focuses primarily on engaging communities and governments to build resilience. Overall, it has seven targets and four priorities.

Priorities and Targets

Priority 1	Understanding disaster risk
Priority 2	Strengthening disaster risk governance to manage disaster risk
Priority 3	Investing in disaster risk reduction for resilience
Priority 4	Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

Target A	Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015
Target B	Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015
Target C	Reduce direct disaster economic loss in relation to global gross domestic product by 2030
Target D	Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030
Target E	Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;
Target F	Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the framework by 2030
Target G	Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

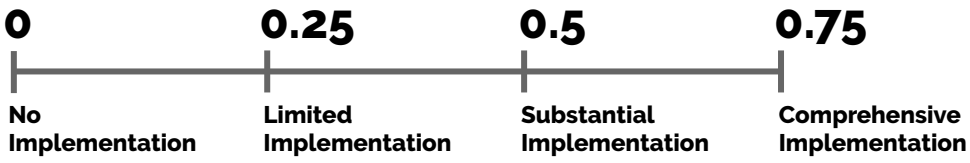
Methodology

Target E is divided into two indicators E1 and E2; the first assesses national strategies and the second assesses local ones. The indicators are described as follows:

> **E1: Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030.**
>
> **E2: Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies. Information should be provided on the appropriate levels of government below the national level with responsibility for disaster risk reduction.**

For E2, the UNDRR defines "local government" as any subnational public administration responsible for DRR whether it is a city council, a municipality, or on a district level. The specificity is to be determined by the country itself. For E1, countries provide a score of 0 to 1 (with 1 being the highest) to each of the ten sub-indicators enumerated in figure 1. Once all ten sub-indicators have been filled, the total score for E1 is simple summation of the different sub-scores divided by 10 (the number of sub-indicators).

For each sub-indicator, the country chooses a score of 0, 0.25, 0.5, or 1 based on the following rationale:



E2 is simply the percentage of local governments that have engaged in DRR. To calculate it, one must report the total number of local governments that exist within a country and then on the number of DRR-compliant local governments.

E1 Sub-indicators

1. Have different timescales, with targets, indicators and time frames
2. Have aims at preventing the creation of risk
3. Have aims at reducing existing risk
4. Have aims at strengthening economic, social, health and environmental resilience 116
5. Address the recommendations of Priority 1, Understanding disaster risk: Based on risk knowledge and assessments to identify risks at the local and national levels of the technical, financial and administrative disaster risk management capacity
6. Address the recommendations of Priority 2, Strengthening disaster risk governance to manage disaster risk: Mainstream and integrate DRR within and across all sectors with defining roles and responsibilities
7. Address the recommendations of Priority 3, Investing in disaster risk reduction for resilience: Guide to allocation of the necessary resources at all levels of administration for the development and the implementation of DRR strategies in all relevant sectors
8. Address the recommendations of Priority 4, Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction: Strengthen disaster preparedness for response and integrate DRR response preparedness and development measures to make nations and communities resilient to disasters
9. Promote policy coherence relevant to disaster risk reduction such as sustainable development, poverty eradication, and climate change, notably with the SDGs the Paris Agreement
10. Have mechanisms to follow-up, periodically assess and publicly report on progress.

Usefulness of the Score

In 2017, the United Nations Office for Disaster Risk Reduction (UNDRR, formerly known as UNISDR) published technical guidelines to help countries and stakeholders compute the relevant targets and report their yearly improvement on the Sendai Mentor. Similarly, the UNDRR launched in 2019 an elearning program to coach stakeholders on how to use the platform. The scores must be reported on a yearly basis using the year 2015 a baseline year for comparison.

However, less than 7.5% of all countries have had their scores validated on the platform; the majority of countries have not even started reporting yet.

Since it is self-reporting, and Oceania countries have not provided their scores, the platform is not as useful as we would have hoped. However, the questions based upon which Target E is computed are relevant and can be used for our qualitative work.

Also, with enough data from fieldwork and research, we may be able to derive our own scores for the region.

Strength: Clear questions and guidelines to get to scores.
Weakness: It's self-reporting, so there is a reliability/credibility issue.

Appendix B: Indices

This section includes detailed information about the methodology of how each index is measuring DRR components, their data sources, and their limitations.

Our team undertook extensive research to find the highest quality and most used data sources reporting on DRR. Reported indices include World Risk Index, Climate Risk Index, ND-Gain Readiness Index, and INFORM.

Appendix B1: World Risk Index

The World Risk Index developed and calculated by Prof. Birkmann and Dr. Welle from the University of Stuttgart, evaluates the exposure to natural hazards and assesses inherent vulnerabilities in countries towards suffering from impacts when facing these hazards.

The WRI breaks away from conventional classification of countries on the basis of economic development and focuses instead on their ability and capacity to adapt. The WRI measures the following:

- Physical exposure to hazards through a comparison of different hazard types by using the same unit of measurement. This should ideally be taken from the same or similar data sources to maintain consistency.
- Vulnerability and adaptation indicators would have to be generic in order to be relevant for multiple hazards analysis

Overall Rankings and Scores

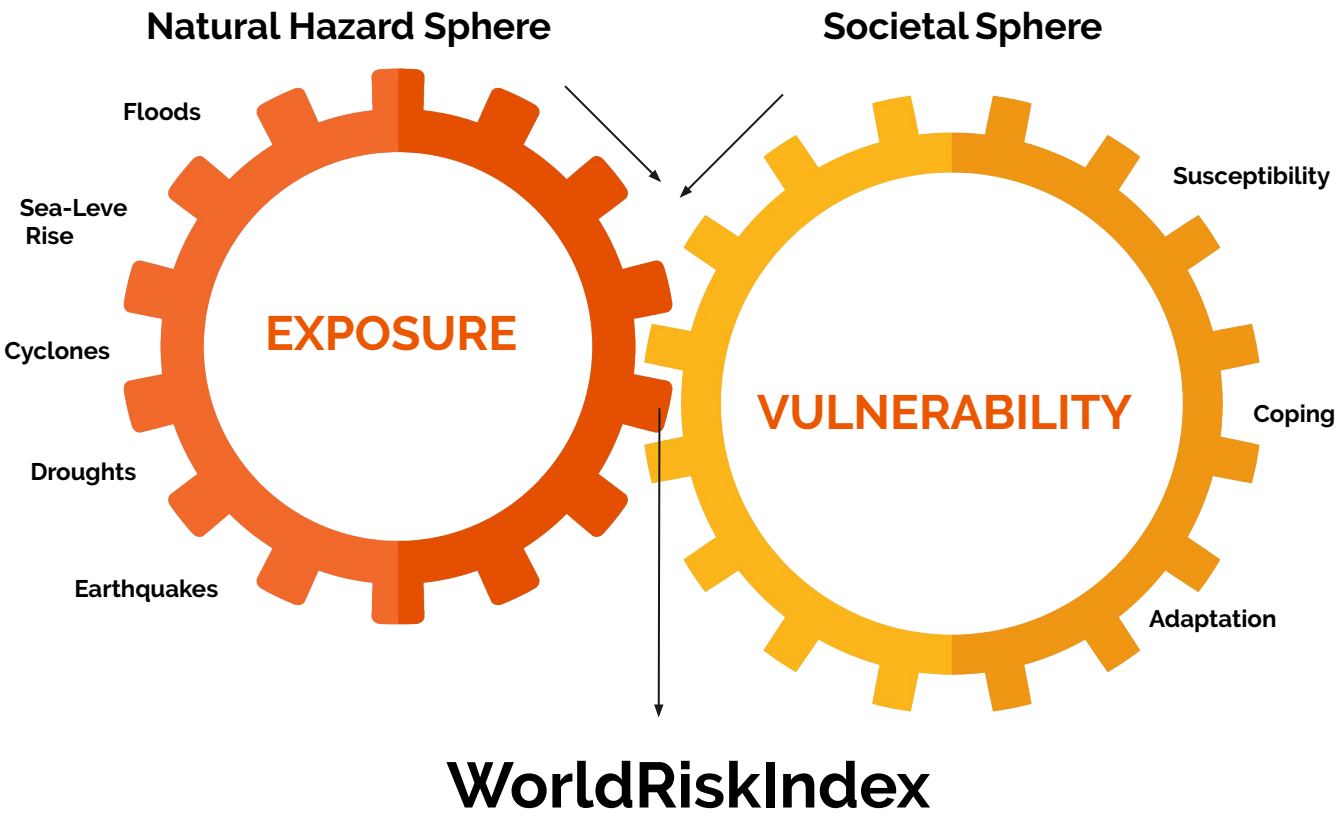
Country Group	Risk $\bar{x}$	Exposure $\bar{x}$	Vulnerability $\bar{x}$	Susceptibility $\bar{x}$	Lack of coping $\bar{x}$	Lack of adaptation $\bar{x}$
Africa	8.94	13.57	62.98	50.30	84.39	55.04
America	7.52	16.37	44.37	23.58	74.97	33.24
Asia	5.77	12.32	44.80	23.46	76.66	36.57
Europe	3.30	11.51	30.18	16.15	57.68	20.00
Oceania	16.24	29.03	49.46	31.15	79.81	42.93
World	**6.49**	**13.16**	**45.42**	**23.77**	**75.61**	**36.41**

Rank	Country	Risk
1.	Vanuatu	56.71
2.	Antigua and Barbuda	30.80
3.	Tonga	29.39
4.	Solomon Islands	29.36
5.	Guyana	22.87
6.	Papua New Guinea	22.18
7.	Brunei Darussalam	21.68
8.	Guatemala	20.69

Rank	Country	Risk
9.	Philippines	20.69
10.	Bangladesh	18.78
11.	Cape Verde	18.02
12.	Fiji	17.83
13.	Costa Rica	17.37
14.	Djibouti	16.46
15.	Timor-Leste	16.39

Methodology

Other than physical exposure, the susceptibilities, the coping capacities and the adaptive capacities of countries are based on several indicators provided by the global databases of the World Bank, the World Health Organization or agencies of the United Nations. The values for these components are calculated by a basic aggregation method after the values of their indicators were transformed to a scale of 0 to 1. All rescaled values were combined with equal weight to a corresponding grouping indicator. Secondly, the weighted average of all grouping indicators within the susceptibility, coping capacity and adaptive capacity components is calculated, resulting in the final value for each of these components.



Usefulness of the Score

The World Risk Index 2019 indicates the disaster risk for 180 countries in the world and includes eight countries more than in the previous year as availability of data allowed updation on exposure to extreme natural events. All data in the exposure component of the World Risk Index is taken from one population data set (LandScan 2017).

Despite WRI's comprehensive risk assessment, current data are not available for all 193 countries in the world. Even with the new procedure for dealing with missing values, several small and island nation countries such as Marshall Islands, Nauru, Palau, and Tuvalu cannot be included due to an excessive number of missing vulnerability values. This is a direct consequence of the fact that, for various reasons, global data archives do not record or obtain data of the required quality for these countries.

This not only impacts overall climate adaptability but is particularly detrimental for disaster and risk hotspots such as Oceania that are extremely susceptible to climate risk. Although the calculation of the World Risk Index and the classification of countries using the quantile method might allow comparison of countries within the year's issue, even minimal differences in the indicators and their index levels can lead to significant changes in rank compared to previous issues although hardly any changes were observed in the country itself.

Oceania Rankings

These are the rankings for the Oceania Country, but due to limited information, not all countries are comparable. The absence of this information makes it difficult for intra and inter region comparisons.

Country Group	Risk	Exposure	Vulnerability	Susceptibility	Lack of coping	Lack of adaptation
Fiji	17.83	38.43	46.41	21.54	78.76	38.93
Kiribati	14.64	25.52	57.37	40.53	82.56	49.02
Micronesia	7.52	14.72	51.05	34.11	72.11	46.93
New Zealand	4.67	17.72	26.35	15.45	45.06	18.53
Papua New Guinea	22.18	32.54	68.18	55.45	86.21	62.88
Samoa	6.19	13.04	47.50	25.52	79.70	37.27
Solomon Islands	29.36	48.31	60.77	46.37	80.95	55.00
Tonga	29.39	61.41	47.86	28.19	79.92	35.47
Vanuatu	56.71	99.88	56.78	35.32	84.36	50.66

Countries not included in the World Risk Index due to incomplete data: **Marshall Islands | Nauru | Palau | Tuvalu.**

Appendix B2: Climate Risk Index

The Global Climate Risk Index (CRI) is an annual ranking of the extent countries have been affected by the impacts of weather loss events. The index uses three main sources; extreme weather events, relevant socio-economic data. The index looks at an overall annual effect and the periodic effect.

The periodic effect compares the trends from 1999-2018, while the annual affect compares the reporting year across the countries.

Methodology

The index compiles data from NatCatSERVICE, the world's leading re-insurance company and the International Monetary Fund to collect information on weather events, event impact, and socio-economic data.

A **Weather Related Disaster Data**

- Death toll (⅙)
- Number of deaths per 100,000 inhabitants (⅓)
- Total economic damage in US millions in purchasing power parity (⅙)
- Losses per unit of gross domestic product (⅓)

B **Weather Events**

- Only weather related events are included: storms, floods, temperature extremes and mass movements.
- Earthquakes, volcanic eruptions, and tsunamis are not included within the events
- Further, long-term declines such as slow onsets of events such as sea level rise are not included.

C **Socio-economic Data**

- Human Development Index

The index is updated annually, however, many of the small island nations in Oceania have missing data.

Usefulness of the Score

The ranking is relevant to use, as it includes death tolls, deaths per inhabitants which is useful for prioritization or comparison of hazards that turn into disasters. Further, the monetary losses in an important component because it demonstrates the impact the event had on the country, which can shed light on preparedness measures that may need to take place.

As with most of these indices, the indices for small island data is missing data. The small island nation data may be missing because of a lack of capacity in data collection, especially for islands that are underdeveloped.
In both rankings (annual and periodic), no information is included for Nauru and Palau.

The second weakness is the quality of the evidence that the rankings produces. For example, the tables below show that there may be some errors in the quality of the information, rendering evidence based policy making ineffective.

The third most concerning weakness, is that the inter-island comparability data is non-existent. The countries data are reported as a whole. From a policy perspective or a response position, this type of data may be less useful for mobilization and coordination of responses. It would be important to know if urban areas are most likely affected, peri-urban, or rural or if it was the geographic location of the event that has the highest determining effect on risk.

Oceania Rankings for 2018 Risk

The CSI Index assigns the lower scores to countries with the highest risk. The table is presented with the riskiest countries at the top. Data collected in 2017 at the country level was used to create the Risk Index for 2018.

2018 CRI Ranking: Annual

CRI Rank	Country	CRI score	Fatalities in 2018 (Rank)	Fatalities per 100k inhabitants (Rank)	Losses in mil lion US$ (PPP) (Rank)	Losses per unit GDP in % (Rank)
10	Fiji	22.50	64	6	47	6
15	Tonga	25.17	102	3	41	1
29	Solomon Islands	43.17	88	12	103	22
31	Vanuatu	44.67	102	15	106	15
43	Australia	49.50	62	86	11	26
46	New Zealand	53.17	88	68	37	29
70	Samoa	70.50	115	115	74	2
135	Kiribati	125.00	115	115	135	135
135	Marshall Islands	125.00	115	115	135	135
135	Micronesia	125.00	115	115	135	135
135	Papua New Guinea	125.00	115	115	135	135
135	Tuvalu	125.00	115	115	135	135

Oceania countries not included in the Climate Risk Index due to incomplete data: **[Nauru | Palau]**

Oceania Rankings for Periodic Risk

The CSI Index assigns the lower scores to countries with the highest risk. The table is presented with the riskiest countries at the top. Data collected in 2017 at the country level was used to create the Risk Index for 2018.

1999-2018 Periodic Ranking

CRI Rank	Country	CRI score	Fatalities in 2018 (Rank)	Fatalities per 100k inhabitants (Rank)	Losses in million US$ (PPP) (Rank)	Losses per unit GDP in % (Rank)
10	Fiji	22.50	64	6	47	6
15	Tonga	25.17	102	3	41	1
29	Solomon Islands	43.17	88	12	103	22
31	Vanuatu	44.67	102	15	106	15
43	Australia	49.50	62	86	11	26
46	New Zealand	53.17	88	68	37	29
70	Samoa	70.50	115	115	74	2
135	Kiribati	125.00	115	115	135	135
135	Marshall Islands	125.00	115	115	135	135
135	Micronesia	125.00	115	115	135	135
135	Papua New Guinea	125.00	115	115	135	135
135	Tuvalu	125.00	115	115	135	135

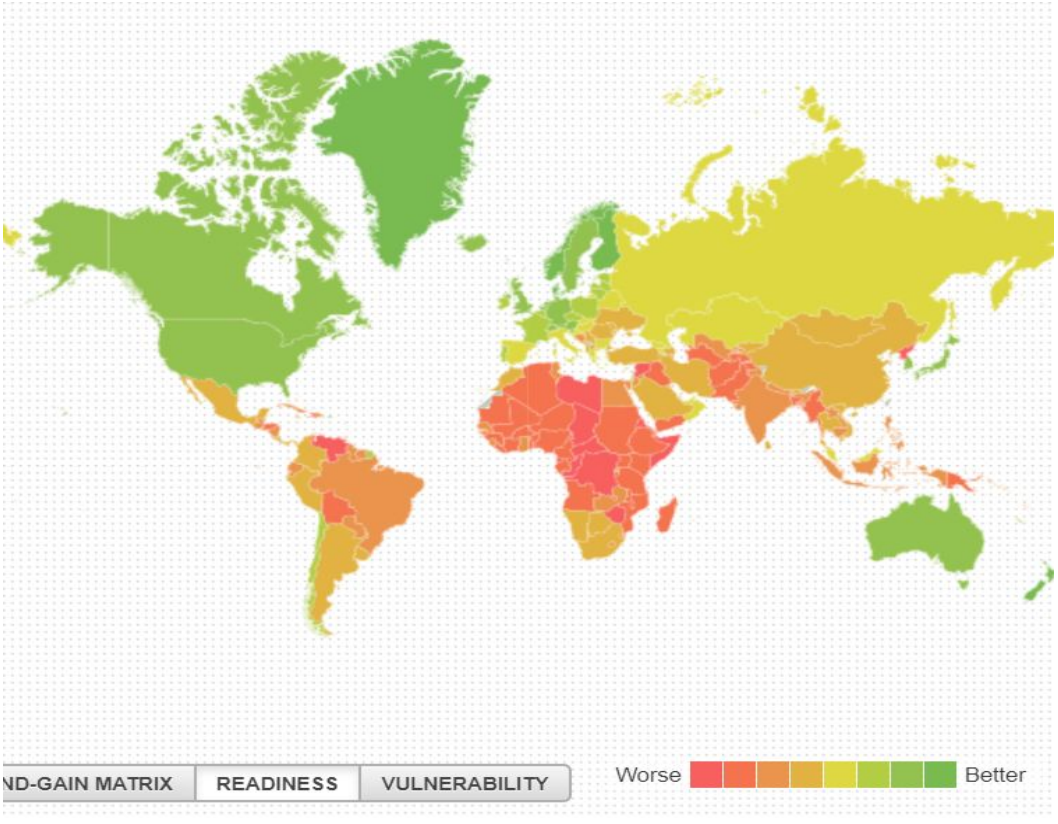
Oceania countries not included in the Climate Risk Index due to incomplete data: **[Nauru | Palau]**

Appendix B3: ND Gain: Readiness Index

The ND Gain Readiness index measures a country's ability to leverage investments and convert them to adaptation actions. It is comprised of three subcomponents: Economic; Governance; and Social Readiness.

A higher score indicates a better performance.

Readiness Scores for 2017



Methodology

As discussed in the overview, the Readiness Index measures three sub-components:

A **Economic Readiness:** This score captures the readiness of a country's business environment to accept investment that could be applied to adaptation in the form of business formation and maintenance.
Source: This score is borrowed from the World Bank

B **Governance:** The score of Governance readiness captures the institutional factors that enhance application of investment for adaptation. Indicators include: political stability and non-violence, control of corruption, regulatory quality, and rule of law.
Source: This score comes from the World Governance Indicators (WGI).

C **Social Readiness:** The score of Social readiness captures the social factors that enhance the mobility of investment to be converted to adaptation actions. Indicators include: social inequality, ICT infrastructure, education and innovation.
Source: unspecified

This index brings together data from different sources to inform the three sub-components. For the economic readiness component, this index draws from the World Bank. Similarly, for governance score, this index draws from another credible source - World Governance Indicators. The only issue is for the Social Readiness score. The methodology does not mention any source for this score.

Usefulness of the Score

The Readiness Index formulated by ND Gain is very relevant. Considering that almost all of the Oceania countries rely on external funds/aid to build up their readiness, this index indicates how good they are at doing so and where they can improve.

Strengths

The foremost strength of the ND Gain Readiness Index is that it sources its data from credible organizations: World Bank and World Governance Index. This acts as a quality check for this Index. Additionally, World Bank and WGI update their index annually, which enables ND Gain to update the Readiness Index accordingly.

Weaknesses

A study of the sub-components reveals a dependence of the Readiness Index on the indices formulated by other organizations. The Readiness Index borrows heavily from World Bank Reports and World Governance Indicators. This implies that any shortcomings in these indicators propagate to the Readiness Index resulting in a skewed ranking of the countries.

Oceania Rankings

The following table illustrates the readiness scores for the Oceania countries.

Country	Rank	Readiness Score	Economic Readiness	Governance Readiness	Social Readiness
Vanuatu	117	0.355	0.342 (106)	0.544 (68)	0.178 (168)
Tuvalu	36	0.553	NA	0.553 (65)	NA
Tonga	100	0.396	0.451 (68)	0.526 (71)	0.212 (149)
Solomon Islands	88	0.420	0.368 (99)	0.472 (90)	NA
Samoa	90	0.413	0.467 (62)	0.634 (43)	0.138 (178)
Papua New Guinea	156	0.277	0.32 (114)	0.357 (148)	0.153 (176)
Palau	86	0.422	0.318 (116)	0.504 (78)	0.444 (48)
Nauru	89	0.414	NA	0.414 (123)	NA
Micronesia	113	0.367	NA	0.552 (66)	0.181 (166)
Marshall Islands	116	0.356	NA	0.471 (92)	0.241 (138)
Kiribati	86	0.422	0.293 (125)	0.552 (66)	NA
Fiji	80	0.428	0.423 (77)	0.537 (70)	0.324 (86)

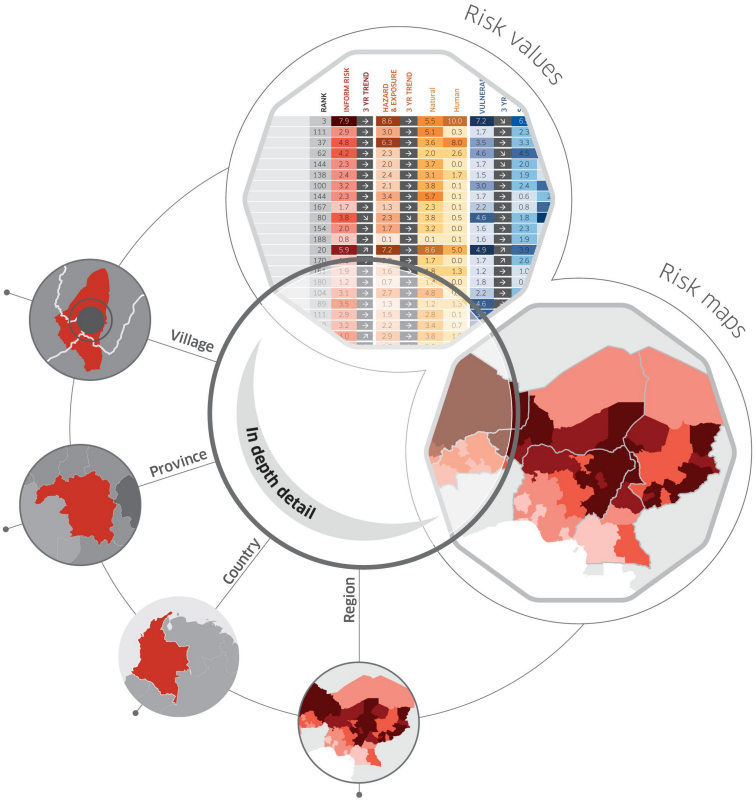
Incomplete data for:
Nauru | Micronesia | Marshall Islands | Tuvalu | Tonga | and Kiribati.

Appendix B4: INFORM

INFORM GRI is a global, open source risk assessment for humanitarian crises and disasters that is updated annually. INFORM is a collaboration of the Inter-Agency Committee Reference Group on Risk, Early Warning and Preparedness and the European Commission.

INFORM provides a table of comparable values for risk across all countries. INFORM also has a sub-national version, however for the purposes of this report, we will be looking at the national values.

Sub-national modeling of INFORM data



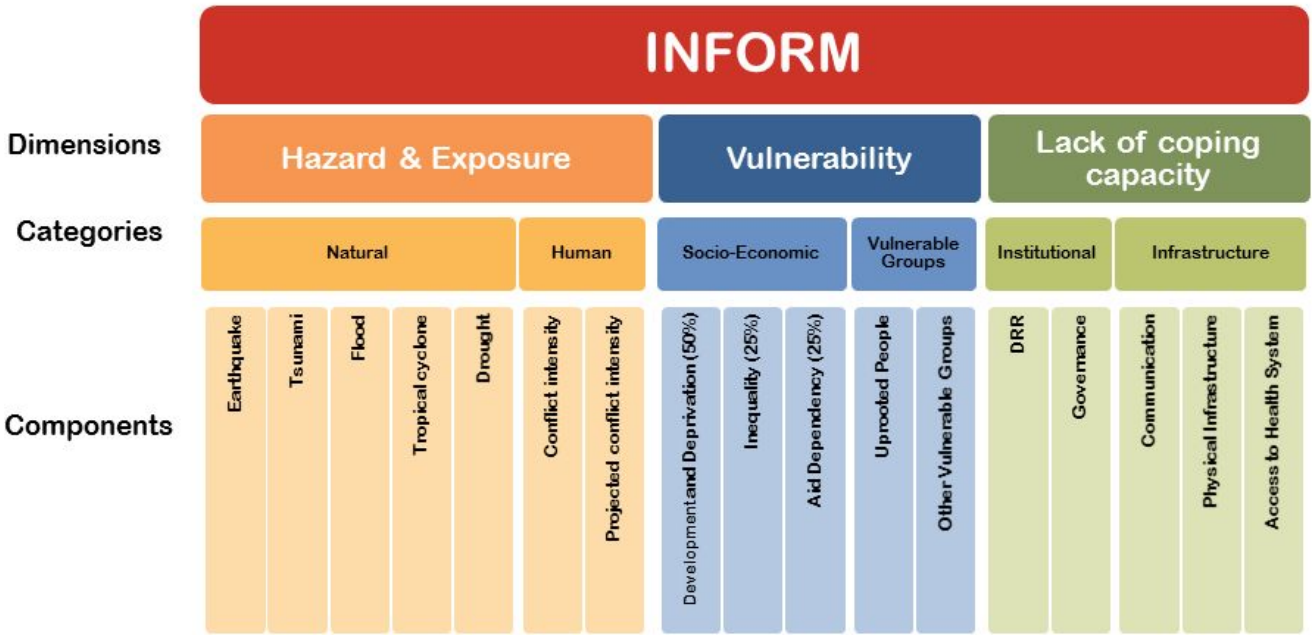
Methodology

INFORM looks at three dimensions, each with several categories of sub-components.

A **Hazard and Exposure:** Hazard & Exposure looks at both natural and human categories. Natural events include earthquakes, tsunamis, floods, tropical cyclones, and droughts. Human categories include conflict intensity and projected conflict intensity.

B **Vulnerability:** Vulnerability is divided into two categories; socio-economic and vulnerable groups. Socio-economic data looks at development and deprivation, inequality, and aid dependency. Vulnerable groups scores are derived from uprooted people and other vulnerable groups.

C **Lack of Coping Capacity:** Lack of coping capacity is divided into two categories; institutional and infrastructure. Institutional includes a DRR score, and governance score. Infrastructure includes communication, physical infrastructure and access to health systems.



Usefulness of the Score

INFORM is an extremely comprehensive index.

Strengths

INFORM is extremely comprehensive, yet also simplifies its scoring to easily compare relevant sub-indicators across countries. The way in which the indices is formatted allows one to quickly compare specific indicators of interest.

Weaknesses

INFORM is updated annually, however, data at the country level is not always updated. Rather than omitting this data from the ranking calculation, INFORM carries over data over from previous years. This is of special interest when the interest is in a developing country context, such as Oceania where less data may be available.

Oceania Rankings

The following table illustrates the 2018 INFORM scores for the Oceania countries.

COUNTRY	HAZARD & EXPOSURE	VULNERABILITY	LACK OF COPING CAPACITY	INFORM RISK	Rank
Fiji	2.4	3.5	3.4	3.1	Low
Kiribati	1.6	4.9	6.1	3.6	Medium
Marshall Islands	2.2	6.0	6.4	4.4	Medium
Micronesia	2.2	5.3	5.8	4.1	Medium
Nauru	0.8	4.5	5.6	2.7	Low
Palau	1.7	2.5	4.4	2.7	Low
Papua New Guinea	4.3	5.2	7.6	5.5	High
Samoa	1.6	3.4	4.3	2.9	Low
Solomon Islands	3.4	4.9	6.6	4.8	Medium
Tonga	1.2	3.7	4.6	2.7	Low
Tuvalu	1.9	5.9	5.5	4.0	Medium
Vanuatu	2.3	4.3	6.1	3.9	Medium

Appendix C: Comparative Tables

This section includes data compilations and analyses conducted for the indices.

For the entire record, please contact busbyj@utexas.edu

World Ranking by Percentiles, Index, and Metric for Oceania Countries

Country	Index	Total Risk	Hazard/ Exposure	Vulnerability	Lack of Coping Capacity	Lack of Adaptive Capacity	Susceptibility	Lack of Readiness
Fiji	WRI 2019	93%	94%	53%	60%	59%	43%	
	INFORM 2020	36%	30%	52%	25%			
	ND-Gain 2017	48%	62%	59%		62%		41%
	CRI 1998-2018	7%						
Kiribati	WRI 2019	89%	87%	75%	72%	72%	74%	
	INFORM 2020	50%	30%	63%	66%			
	ND-Gain 2017		98%					45%
	CRI 1998-2018	73%						
Marshall Islands	INFORM 2020	48%	23%	58%	79%			
	ND-Gain 2017		96%					60%
	CRI 1998-2018	94%						
Micronesia	WRI 2019	60%	59%	65%	41%	69%	70%	
	INFORM 2020	52%	32%	68%	64%			
	ND-Gain 2017	83%	97%	97%		78%		59%
	CRI 1998-2018	25%						
Nauru	INFORM 2020	45%	18%	67%	69%			
	ND-Gain 2017		96%					46%
Palau	INFORM 2020	30%	19%	27%	44%			
	ND-Gain 2017		90%					45%

World Ranking by Percentiles, Index, and Metric for Oceania Countries

Country	Index	Total Risk	Hazard/ Exposure	Vulnerability	Lack of Coping Capacity	Lack of Adaptive Capacity	Susceptibility	Lack of Readiness
Samoa	WRI 2019	48%	47%	58%	65%	54%	54%	
	INFORM 2020	36%	23%	43%	42%			
	ND-Gain 2017	54%	68%	68%		61%		47%
	CRI 1998-2018	39%						
Solomon Islands	WRI 2019	98%	97%	78%	67%	82%	81%	
	INFORM 2020	70%	59%	61%	82%			
	ND-Gain 2017	79%	94%	98%		81%		46%
	CRI 1998-2018	35%						
Tonga	WRI 2019	98%	98%	59%	67%	47%	59%	
	INFORM 2020	55%	47%	66%	49%			
	ND-Gain 2017	67%	93%	90%		49%		52%
	CRI 1998-2018	41%						
Tuvalu	INFORM 2020	41%	17%	55%	62%			
	ND-Gain 2017		98%					18%
	CRI 1998-2018	70%						
Vanuatu	CRI 1998-2018	20%						
	WRI 2019	99%	99%	73%	78%	77%	71%	
	INFORM 2020	60%	45%	61%	71%			
	ND-Gain 2017	74%	72%	88%		69%		61%