Climate Security in Oceania

Comprehensive Executive Summary

Policy Research Project Final Report

Under the supervision of Dr. Joshua Busby, LBJ School of Public Affairs, University of Texas-Austin, May 2020

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Comprehensive Executive Summary

Context. Oceania's Pacific island nations face existential challenges related to climate change and have become more strategically significant to outside actors including the United States and China. This project evaluates climate change-related disaster risks, preparedness, and geopolitical strategy in the region. For the purposes of this project, Oceania includes 20 small-island countries, with a combined population of approximately 2.7 million people spread over 1,288 islands.[1]

In analyzing climate and security risks in the region and their relevance to the United States and the US Department of Defense (DOD), some considerations emerged. Though the US has important assets in the region in Guam and other places, Oceania is spread out and distant even from Hawaii, let alone the continental US. This means that more proximate partners such as Australia and New Zealand have more of a role to play, particularly with respect to response to climate-related hazards.

The US niche thus is more on the preparedness and resilience side. Given limited military capabilities of most states in the region, the core tasks associated with climate adaptation and preparedness are likely to be carried out by civilian actors. While the Center and USINDOPACOM have expertise in this space, other USG tools and offices may be as, if not more, effective interlocutors for shoring up Oceania's resilience to climate shocks and change more broadly. These include development and diplomatic resources from USAID and the State Department. The region also suffers from key information deficits, both in its ability to monitor the natural and built environments as well as basic attributes such as population and infrastructure vulnerability. Here, DOD and the US government writ large may have important assets that could help the region enhance its own situational awareness of its vulnerabilities. One complicating factor in the region for both the United States and Australia is their governments' postures on climate change policy. Climate change is a top tier issue for countries in Oceania, and the role of the US and Australia on this issue undercuts some of their regional appeal. China, for its part, simultaneously supports actions to address climate change but also is the leading source of greenhouse gas emissions.

Reports. With these considerations in mind, we wrote four reports to identify action areas for the United States and USINDOPACOM to address climate-related vulnerabilities in the region including the following themes: mapping vulnerability, disaster risk reduction, migration, and the strategic landscape:

- **Mapping Vulnerability in Oceania** provides a series of maps to communicate climate-related vulnerability and recommends addressing key data deficiencies to facilitate accurate mitigation.

[1] The project includes only American Samoa, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna. We largely exclude Papua New Guinea because it alone has a population of seven million with different vulnerabilities than Oceania's small-island states.

- **Disaster Risk Reduction** uses comprehensive risk assessments based on existing indices to present regional and country risk profiles and recommends mitigation planning and risk modelling efforts.
- **Migration in Oceania** examines climate change as a factor in the decision to migrate and provides four policy recommendations to address the consequences of migration in Oceania.
- **The Political, Security, and Climate Landscape in Oceania** presents the state of regional geopolitical affairs and recommends increasing American leadership on climate change and outlines tools the US can use to deepen regional engagement while addressing the region's climate and development interests.

Together, the four reports provide a holistic analysis of vulnerability to climate change in the study area and offer recommendations for US action to improve resiliency. Climate change will make it more difficult to minimize risk in Oceania as the magnitude and complexity of vulnerability increases. It is impossible to prepare for climate hazards once they happen. The United States should therefore act immediately to increase disaster preparedness in the region.

Cross-cutting Themes

Increasing Susceptibility to Climate Change: The reports all identify climate change as a driver of sociopolitical vulnerability. Oceanic states are increasingly susceptible to coastal sea level rise, erosion, saltwater intrusion, and extreme weather events. For small island developing states, these trends threaten not only livelihoods and territorial integrity, but also fragile governance capacities, political, economic, and social stability, and democratic processes. If emissions continue their current trajectory, the study area will become more exposed to climate-related hazards and will struggle to recover from them as they become more frequent and pervasive.

Inherent Regional Challenges: It is difficult to plan for and mitigate hazards in our study due to the region's size, island geography, and dispersed population. The combined landmass of the 1,288 islands is approximately the size of Indiana, with only a third of its population, spread out over a geographical area larger than North America. Each island has unique geologic, geographic, demographic, sociopolitical, and economic circumstances that shape its risk profile. Currently, data for island-by-island risk analysis either do not exist, are conflicting, or are incomplete. For example, some digital elevation models predict only a small number of people vulnerable to annual flooding while other studies suggest many islands will be uninhabitable by midcentury. Such differences have major implications for regional planning and managed retreat.

Compound, Complex Causal Mechanisms: While it is clear that climate change leads to vulnerability and potentially negative security outcomes in Oceania, the exact causal links are unclear. Vulnerability is a complex web of factors, including geography, socioeconomic circumstances, governmental capacity and stability, and personal decisions. As climate events become more frequent and pervasive, these factors will compound on one another, making it difficult to predict when climate change and vulnerability will lead to negative humanitarian and security outcomes.

Cross-Cutting Recommendations

All reports identified clear areas in which the United States can take immediate action in Oceania. To reduce Oceania's vulnerability to the complex, existential threat of climate change and the cost of responding to future climate disasters in the region, the US should consider a number of initiatives. We have organized these from the micro-level related to activities of the Center, INDOPACOM, and partners ranging to the broadly strategic at the level of the USG as a whole. Cross-cutting themes across all groups involved information collection, development assistance/training/planning, and diplomatic engagement.

Information Collection

- Help overcome information gaps in situational awareness of climate risks by using reconnaissance, remote sensing technology, and underwater bathymetry (seafloor topography) technology to help countries map climate exposure as well as risks to populations (including informal settlements) and infrastructure
- Support local groundtruthing initiatives of remotely collected data through partnerships with the PIF and the University of the South Pacific with collaboration from the Center and other elements of USG including USAID, Peace Corps, and Fulbright scholars

Development Assistance, Training, and Planning

- Support regional and extra-regional allies and institutions such as the Pacific Islands Forum and FRANZ partners Australia, New Zealand, and France on a focused effort to build local capacity on disaster and climate risk reduction with the goal of facilitating tailored country plans and reporting under the Sendai Framework
- Provide development assistance, technical, and scientific guidance through USAID, USGS, the US Office of Development Assistance, the US Development Finance Corporation, as well as complementary support for US territories with an eye towards building best practice in climate and disaster-proofing and risk reduction

Diplomatic Engagement

- Reaffirm existing alliances and commitments, including renewed Compacts of Free Associations with the Federated States of Micronesia, Palau, and the Marshall Islands, with specific funding for climate change mitigation and adaptation efforts for COFA states as well as US territories
- Establish a State Department Strategic Dialogue with PIF that advances the Forum's disaster response, risk reduction, climate adaptation efforts within the Forum's existing Frameworks and institutions and creates a program of work beyond the PIF's annual meeting
- Provide global climate leadership, including commitments to greenhouse gas abatement, access to renewable energy, and the Paris Agreement

In the subsequent pages, we review the findings and recommendations of all four reports.

Overview of Reports:

1) Mapping Vulnerability in Oceania

The mapping report illustrates key risk factors and vulnerabilities through a series of maps focused on three areas: Island Geology, Population Vulnerability to Coastal Flooding, and Infrastructure Vulnerability to Coastal Flooding. It also provides the context and limitations for each set of maps. For island geology, key findings include the high prevalence of reef islands, which are particularly vulnerable to climate events and sea level rise. There are 437 reef islands in the study area, which is 35% of the region's total islands and 100% of Marshall Islands, Tuvalu, and Tokelau. For population vulnerability we estimate that 484,000 people, 18% of Oceania's population, currently live within one meter of mean sea level and are vulnerable to coastal flooding. We also identify major data deficiencies that limit the accuracy of our coastal flooding model, including a lack of high-resolution satellite imagery and local bathymetry (seafloor topography) data. These same deficiencies limit the report's maps of vulnerable infrastructure on Fiji, Tonga, Tuvalu, Tonga, and Solomon Islands. Finally, we identify opportunities for future research on informal settlements, which are likely growing across Oceania, are acutely vulnerable, and on which limited information exists

Recommendations*:* To enable vulnerability assessment and mapping, the US should:

1. Create freely available high resolution imagery through either satellite or aerial mapping;
2. Create comprehensive, regional bathymetry and infrastructure data sets;
3. Use emerging neural network technology to identify and map informal settlements; and
4. Ground-truth all findings to refine risk modelling.

2) Disaster Risk Reduction

To assess vulnerability to natural disasters in our study area, we developed an assessment methodology for natural hazard exposure, population exposure, and governmental preparedness based on existing indices such as World Risk Index (WRI), ND Gain, INFORM and Climate Risk Index (CRI) as well as reporting under the United Nations Hyogo and Sendia platforms. The report includes both a regional overview and country level analysis to provide a clear understanding of disaster-related vulnerability and preparedness efforts. Most countries within the study area are highly vulnerable, with high natural hazard exposure, high population exposure, and low government preparedness scores. As with migration, it is impossible to separate climate related vulnerability from the broader umbrella of natural hazard vulnerability in Oceania, though we highlight hazards specific to climate change wherever possible.

Recommendations: To better assess and prepare for climate hazards, external actors should:

1. Harmonize risk measurement tools and distinguish swift-onset hazards from slow-onset hazards to allow for effective projections and risk reduction.
2. Invest in implementation, training, capacity building, and reporting; and
3. Develop clear and transparent fiduciary systems that track and report DRR and climate adaptation related activities.

3) Migration in Oceania

Migrants in Oceania make the decision to migrate based on a complicated set of personal, familial, and economic factors. Climate change and its associated effects likely contribute to migration, though the effects are difficult to isolate. Accordingly, if climate change continues its current trajectory, it will likely contribute to increased migration in Oceania. Each country's response to the political, social, and economic challenges of both in — and out — migration are unique and interrelated to the country's capacity and stance on climate change.

***Recommendations*:** To understand and plan for migration and its consequences, the US should:

1. Play a more active role in supporting Pacific island governments;
2. Increase diplomatic engagement in Oceania to address the consequences of migration beyond financial and military support;
3. Include specific funding in Compacts of Free Association for climate change mitigation and adaptation to prevent migration; and
4. Support key allies, including Australia and New Zealand, to manage challenges to habitability in Oceania.
5. Facilitate increased research on migration drivers and consequences in Oceania.

4) The Political, Security, and Climate Landscape in Oceania

In light of increased climate risks and a growing Chinese presence in Oceania, the United States will need to expand its regional engagements and commitments in our study area. Significant opportunities exist for the US to engage Pacific Island Countries (PICs), in addition to other regional actors such as New Zealand, Australia, France, Japan, and even China in order to promote a free and open Indo-Pacific. Climate risks will affect both US assets and the national politics of each PIC in Oceania, therefore impacting not only US and jointly-operated facilities, but also the political basis for which those assets can be employed. Chinese initiatives are appealing to the region's small island developing states (SIDS) because China offers economic development assistance and is becoming a global leader in the fight against climate change. In return, China advances its interests by denying Taiwan allies, advancing its economic interests, and strengthening its military posture to avoid encirclement by western powers. These developments have prompted greater attention from the US, but will require significantly more involvement — especially in the realm of climate risk mitigation — to secure both the United States' regional assets and relationships.

Recommendations: The US should increase regional involvement in a variety of ways such as:

1. Provide global leadership on climate change;
2. Renew existing compacts with Micronesia and the Marshall Islands;
3. Use existing financial and technical assets to support and fund development and infrastructure projects aimed at climate resilience;
4. Use American military and scientific assets to strengthen regional governments and multilateral organizations' early warning detection and disaster preparedness training capabilities; and
5. Appropriate defense funds to address US military assets' climate vulnerabilities.