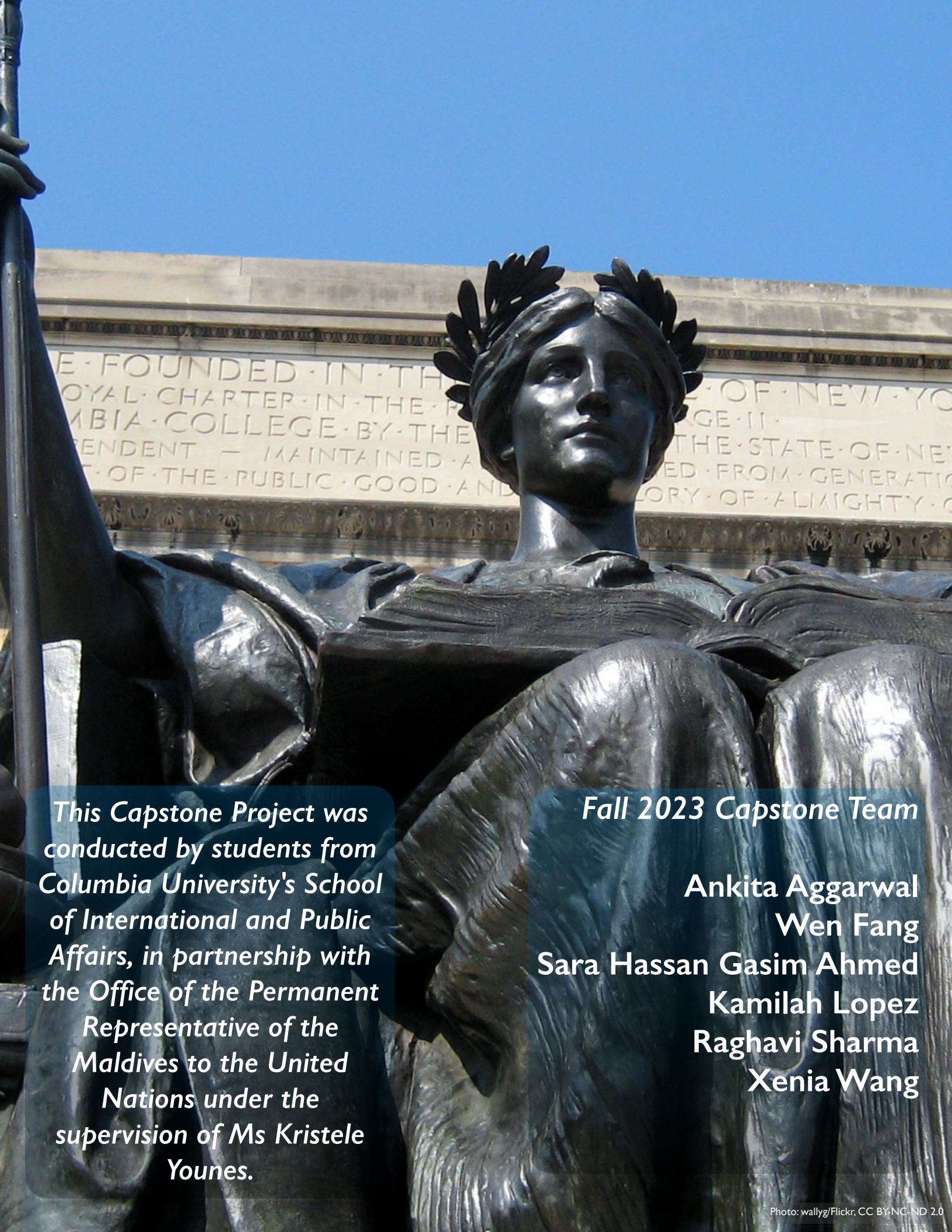




# Climate Change and Statelessness

A close-up, low-angle shot of the Statue of Liberty's head and shoulders. The statue is made of dark, weathered metal and wears a crown of stars. The background shows the stone facade of the pedestal with inscriptions in English. The sky is clear and blue.

*This Capstone Project was conducted by students from Columbia University's School of International and Public Affairs, in partnership with the Office of the Permanent Representative of the Maldives to the United Nations under the supervision of Ms Kristele Younes.*

*Fall 2023 Capstone Team*

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# Table of Contents

Acknowledgements	5
Acronyms	6
Executive Summary	7
Key Recommendations	8
Introduction	9
Impact of Climate Change on SIDs	12
• Compound Effects Analysis	
• Scenario Analysis & Key Risks	
• Threshold Analysis on Atolls	
• Climate Tipping Points	
Relocations as a Mitigation Strategy	27
Maldives Relocation Case Study	28
• The Boxing Day Tsunami	
• Planned Permanent Relocation	
• Challenges	
• Lessons Learned	
Gardi Sugdub, Panama	38
• Who Are the Guna People?	
• Gardi Sugdub & Climate Threats	
• Relocation to the Mainland	
• Challenges	
• Lessons Learned	
Newtok, Alaska	49
• Who are the Yup'ik people?	
• The Newtok Community & Climate Threats	
• Relocation to Mertarvik, Alaska	
• Challenges	
• Lessons Learned	

Existing Legal Frameworks 60

---

- How does climate change contribute to increased displacement?
- The 1951 Refugee Convention
- Disturbances to Public Order: The OAU 1969 Convention & 1984 Cartagena Declaration
- What is a Climate Refugee?
- The Existing International Refugee System
- Guiding Principles on Internal Displacement
- The Kampala Convention
- Current Discussions & Progress on Addressing Climate Change Displacement

Addressing Possible Statelessness 68

---

- Defining Statehood
- Limitations of Applying this Definition to SIDS
- Case Study 1: The Republic of Kiribati - Navigating the Rising Tides of Climate-Induced Statelessness
- Case Study 2: Tuvalu - Navigating the Tides of Climate Change and Statelessness
- Proposed Framework to Address Climate-Change Induced Statelessness
  1. Multilateral Resettlement Agreements : Collaboration with Neighboring Countries
  2. Regional Governance Hub
  3. Resources: Management of Maritime Resources and Fund Transparency
  4. Citizenship: Dual Citizenship Framework
  5. Initiatives to Facilitate Effective Implementation of the Integrated Framework
  6. Institutional Support:
- Existing Initiatives and Approaches
  - I. The Pacific Climate Change Migration and Human Security (PCCMHS):
  - II. United Nations High Commissioner for Refugees (UNHCR):
- Examples of Autonomy Within Existing State Structures:
- Conclusion

Leveraging Technology to Deal With Statelessness in SIDs 85

---

- Tuvalu
- Kiribati
- Marshall Islands
- Maldives' Digitalization

Conclusion 99

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## Acronyms

SIDs	Small Island Developing States
SLR	Sea Level Rise
IDP	Internally Displaced Persons
GHG	Greenhouse Gas
PPM	Parts Per Million
IEA	International Energy Association
IPCC	Intergovernmental Panel on Climate Change
RCP	Representative Concentration Pathways
USAID	United States Agency for International Development
IFRC	International Federation of Red Cross and Red Crescent Societies
VSW	Alaska Department of Environmental Conservation's Village Safe Water Program
CLP	Community Layout Planning
OAU	The Organization of African Unity
UNEP	United Nations Environment Programme
GMG	Global Migration Group
GCR	Global Compact on Refugees
UDHR	United Nations Universal Declaration of Human Rights
IOM	International Organization for Migration
UNFCCC	United Nations Framework Convention on Climate Change
PCCMHS	The Pacific Climate Change Migration and Human Security
UNHCR	United Nations High Commissioner for Refugees
NAPAs	Tuvalu National Adaptation Program of Action
RNI	Rising Nations Initiative
CSC	Civil Service Commission
LAMP	Maldives Learning Advancement and Measurement Project
FEMA	The U.S. Federal Emergency Management Agency

## Executive Summary

Small Island Developing States (SIDs) grapple with a unique blend of geographic, demographic, economic, and environmental challenges, stemming from their small landmass, isolation, and vulnerability to climate change. This report delves into the shared vulnerabilities of SIDs, emphasizing commonalities in demographic structures and economic landscapes. With a reliance on sectors like tourism and fisheries, these nations face external shocks that intensify the delicate balance between development and environmental preservation.

Displacement emerges as a critical concern for SIDs, presenting challenges of limited habitable land, potential cultural identity loss, and economic disruptions. Current legal frameworks inadequately address issues of statelessness, land tenure, and property rights, exacerbating the plight of displaced populations. In response, SIDs have undertaken strategic relocation initiatives over the past decade, prioritizing community identity, resource accessibility, and economic sustainability. Collaborative efforts among SIDs involve knowledge exchange, best practices, and technical expertise to enhance the effectiveness of these relocation projects.

Maldives, as a prominent member of SIDs, stands out with its low-lying geography, cultural diversity, and reliance on tourism and fisheries. The nation actively engages in climate advocacy, proposing innovative solutions and successfully implementing relocation projects, including artificial islands and sustainable urban development. The report underscores the urgent need for collective action, highlighting deficiencies in the international legal framework concerning climate-induced displacement. It explores normative frameworks on Internally Displaced Persons (IDP) and statelessness, using scientific research to underscore the vulnerability of SIDs. The narratives of Maldives and other SIDs serve as cautionary tales, emphasizing the imperative for global cooperation in addressing climate change and building resilient societies. The report concludes by advocating for policy development grounded in ongoing discussions on statelessness, state ownership, and cultural conservation efforts, providing a comprehensive reference for future actions amidst the uncertainties of climate change.

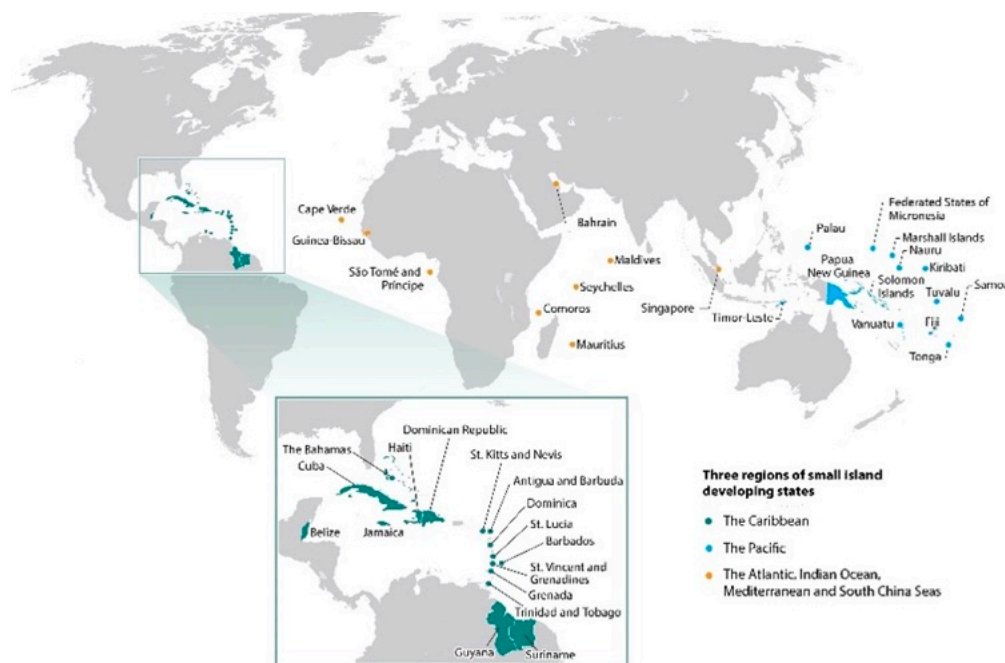
## Key Recommendations

- ❖ Prioritize inclusive community engagement and consultation in relocation planning to ensure that diverse perspectives, needs, and concerns are considered.
- ❖ Implement comprehensive, anticipatory risk assessments that account for potential economic, social, and cultural disruptions to enable the development of sustainable strategies for relocation across diverse global contexts.
- ❖ The SIDs should actively pursue collaborative knowledge sharing initiatives with fellow independent atoll island nations to facilitate the exchange of best practices in addressing climate-induced statelessness. The Maldives should advocate for heightened international collaboration and support on a global scale, encompassing capacity building, resource mobilization, digital nation building, language and culture preservation, as well as access to technical expertise.
- ❖ The Climate-Induced Statelessness Framework offers solutions for displacement in Small Island Developing States (SIDS). Inspired by successful models like the EU and UNHCR, it suggests resettlement agreements, regional hubs, and sustainable funding. By adopting this approach, there's potential to effectively address climate-induced statelessness in SIDS through regional cooperation, transparent fund management, and inclusive strategies for rehabilitation.
- ❖ Emphasize the importance of international collaboration in both the development and implementation of policies that recognize and address the interconnections between global biodiversity and the oceans.
- ❖ Formulate strategies aimed at mitigating further harm to these critical systems, with a focus on safeguarding marine ecosystems and the sustainability of island communities. Emphasize the need for a long-term perspective that includes continuous monitoring, adaptation, and adjustment of policies as new information emerges.
- ❖ Prioritize close monitoring of key thresholds and early warning signs to prevent tipping points in these ecosystems. Invest in international scientific research and data collection to inform strategies and increase public awareness. Promote education and engagement to cultivate a sense of responsibility and stewardship among the global population in supporting conservation efforts.

# Introduction

Small Island Developing States (SIDs) form a distinctive category of nations facing a confluence of geographic, demographic, economic, and environmental challenges. SIDs are characterized by their small landmass and isolation, often consisting of low-lying archipelagos or single islands spreading across the vast expanse of the world's oceans – from the Pacific and Caribbean to the Indian and Atlantic. Their geographical location renders them highly susceptible to the impacts of climate change, with rising sea levels posing an imminent threat to their very existence. Their delicate ecosystems - coral reefs and lush tropical habitats, are facing unprecedented threats such as coral bleaching, loss of biodiversity, and the increased frequency of extreme weather events.

Despite their geographic diversity, SIDs exhibit common demographic patterns, often with small populations compared to continental nations. These nations are home to vibrant communities with rich cultural heritages, and their demographic structures influence their resilience in the face of environmental pressures. SIDs' economic landscape is frequently characterized by a limited range or variety of resources, with many relying heavily on sectors such as tourism, agriculture, and fisheries. This economic vulnerability leaves them exposed to external shocks, particularly those induced by climate change. Efforts to diversify economies and enhance sustainability become paramount as SIDs strive to balance economic development with the imperative of environmental conservation. Striking a harmonious balance between economic development and environmental preservation is a persistent challenge for SIDs as they grapple with the consequences of a warming planet.



Thomson, A., et al. 2008.  
Ann. Rev. Environ. Resour. 45: 1-27

Map showing small island developing states (SIDs)

Displacement is one of the most urgent threats for SIDs and it presents a range of formidable challenges, compounding the vulnerabilities these nations already face due to their unique characteristics. With limited landmasses, finding suitable, habitable land for displaced communities is a significant challenge. The loss of culture and community ties is another significant threat. For SIDs, where cultural heritage is deeply intertwined with the land and the sea, relocation may erode the unique identity and practices of these communities. Established networks and support systems may break down as people are forced to relocate, leading to social fragmentation and increased vulnerability. Simple economic structure can magnify the impact of climate change on displacement. Because many SIDs rely heavily on specific economic sectors, such as tourism and fisheries. Displacement can disrupt livelihoods, leading to economic hardships as displaced individuals may struggle to find employment or may need to adapt to entirely new economic activities. Displacement in SIDs can lead to cross-border migration, posing new questions to the relations with neighboring countries. Issues related to migration policies, sovereignty, and shared resources may arise. The current legal frameworks and policies in many SIDs and in the international community are not adequately equipped to address the complexities of climate-induced displacement, which is closely related to the concept of “statelessness”. This can result in a lack of clarity regarding land tenure, property rights, and the legal status of displaced individuals.

In the past decade, SIDs have put forth relocation initiatives as deliberate and strategic measures to address the challenges brought about by displacement induced by climate change. These initiatives are thoughtfully designed, taking into account various crucial factors such as community identity, accessibility to resources, resilience of infrastructure, and the sustainability of economic activities. The overarching goal is to construct, monitor, and assess ongoing projects with a keen emphasis on enhancing their effectiveness. Furthermore, SIDs actively engage in a collaborative process, exchanging valuable insights, best practices, lessons learned, and technical expertise. This shared knowledge contributes to the continual improvement of their relocation efforts, fostering resilience and ensuring the well-being of communities facing the impacts of environmental change.

As a member of SIDs, Maldives faces similar challenges. However, Maldives possesses several unique characteristics that distinguish it within SIDs. The Maldives is an archipelago consisting of 26 atolls and over a thousand coral islands dispersed in the Indian Ocean. The average ground level is only a few feet (about 1.5 meters) above sea level. The highest point in the Maldives is typically reported to be on Villingili Island, with an elevation of around 2.4 meters (7.9 feet) above sea level. This low-lying geography makes the Maldives highly vulnerable to the impacts of climate change, particularly rising sea levels. The Maldives is also a culture tapestry, characterized by cultural and linguistic diversity, with Dhivehi being the official language. The nation's cultural heritage is influenced by South Asian, Middle Eastern, and African traditions, and is one of the most unique cultures in the SIDs. Maldives relies heavily on tourism

and fisheries and the health of its ecosystems is critical for the livelihoods of local communities and the tourism industry.

Maldives, among all SIDs, is particularly active in climate advocacy. The nation's leaders have been outspoken about the urgent need for collective action to address climate change, often serving as a voice for other SIDs in international forums. It has proposed innovative solutions and has conducted successful relocation projects, which includes the establishment of artificial islands and sustainable urban development projects.

Maldives and SIDs share a common narrative shaped by their vulnerability to a rapidly changing global climate. The resilience, resourcefulness, and challenges of SIDs stand as a microcosm of the global struggle for sustainable development in the face of climate uncertainty. In the context of climate change, SIDs serve as a barometer for the broader global challenges ahead. As frontline witnesses to the consequences of rising temperatures and changing weather patterns, SIDs underscore the urgency of international cooperation in addressing climate change, adapting to its impacts, and building resilient societies that can withstand the evolving environmental landscape. The stories of the Maldives and other SIDs resonate as cautionary tales, emphasizing the need for collective action to safeguard the delicate balance between human development and environmental sustainability.

In this context, this report bases its argument on scientific research about the vulnerability of SIDs, and scrutinizes the deficiencies within the international legal framework concerning climate-induced displacement, exploring the normative framework on Internally Displaced Persons (IDP) and statelessness . This report draws from existing discussions on statelessness, state ownership, and cultural conservation efforts, such as digital statehood initiatives, local identity-building programs, and regional resource management corporations to serve as a reference for future policy development.

# Impact of Climate Change on SIDs



# Compound Effects Analysis

Human activities have led to the warming of the atmosphere, ocean, and land. There have been extensive and swift alterations in the atmosphere, ocean, cryosphere, and biosphere as a result. The documented rises in well-mixed greenhouse gas (GHG) concentrations since approximately the year 1750 can undeniably be attributed to human activities. From the year 2011 onwards, these concentrations have persistently risen in the atmosphere, reaching annual averages of 410 parts per million (ppm) for carbon dioxide (CO<sub>2</sub>). As shown in Figure 1<sup>1</sup>, each of the last four decades has consecutively experienced higher temperatures compared to any decade preceding it since 1850. The global surface temperature in the years 2011–2020 was 1.09 °C higher than the baseline of 1850–1900, with more substantial increases observed over land (1.59 °C) than over the ocean (0.88 °C).

Global surface temperature has increased faster since the year 1970 than in any other 50-year period over the last 2,000 years<sup>2</sup>. This has resulted in:

- ❖ Accelerated global sea level rise (SLR), which is caused by the thermal expansion of ocean water, global retreat of glaciers, and the decrease in the Arctic sea ice).
- ❖ The acidification of ocean water.
- ❖ Biomass loss.
- ❖ Increased weather and climate extremes, including heatwaves, intense precipitation, droughts, and tropical cyclones. These are the four factors that will most likely lead to the inhabitability of atolls and islands.

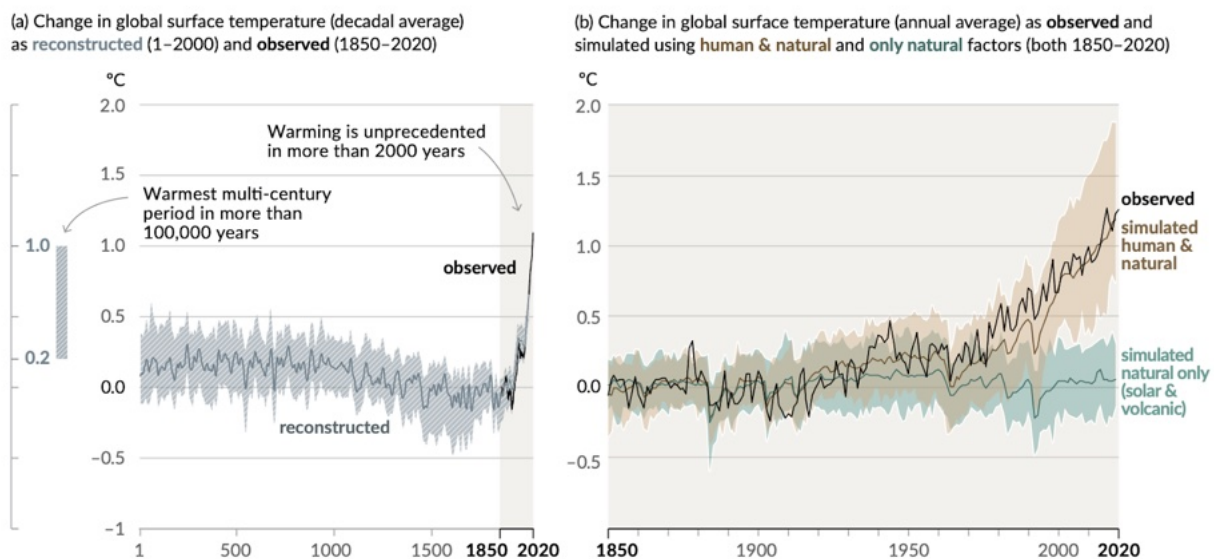
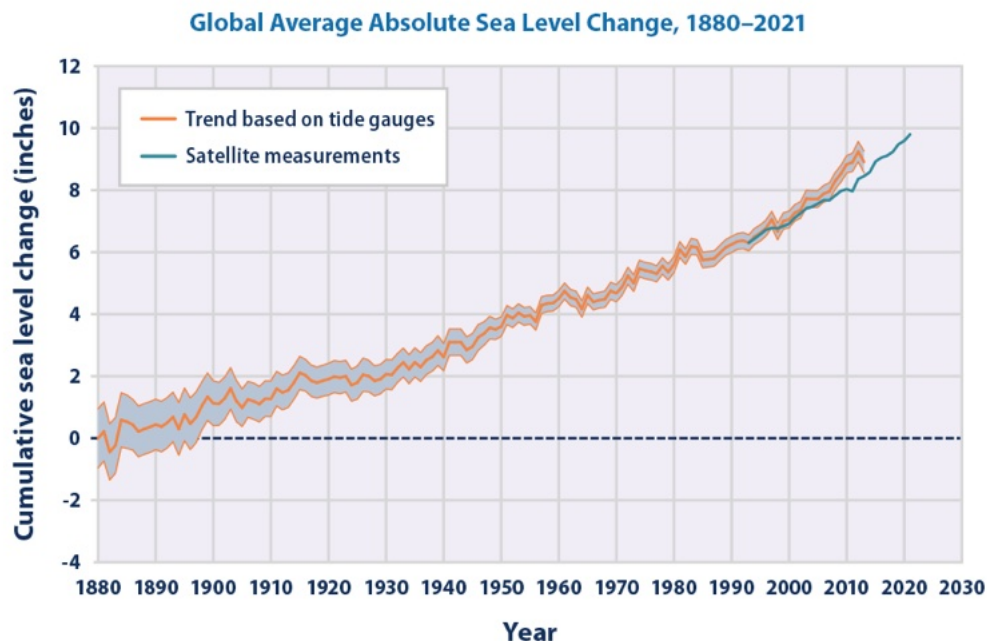


Figure 1: Changes in Global Surface Temperature relative to 1850-1900

<sup>1</sup> Change, I. P. O. C. (2007). Climate change 2007: The physical science basis. *Agenda*, 6(07), 333. All of the following figures if not stated separately are collected from this report.

<sup>2</sup> “UN Fast Facts on Climate Change and Temperature Rise”, United Nations, [https://www.un.org/sites/un2.un.org/files/fastfacts\\_temperature\\_rise.pdf](https://www.un.org/sites/un2.un.org/files/fastfacts_temperature_rise.pdf)

SLR directly leads to territorial losses and land habitat loss, which will cause biodiversity degradation and direct displacement of humans over time. SLR will also cause seawater invasion and reduce the ground freshwater reserve that many island countries' agriculture depends on. Another consequence of SLR is soil salinization, which increases inarable lands and reduces local agrarian production. SLR rate is accelerating, as demonstrated in Figure 2. Although the Sea Level Rise (SLR) rate varies by region, on average, the rate of global SLR is 3.3mm per year over the past century<sup>3</sup>.



Data sources:

- CSIRO (Commonwealth Scientific and Industrial Research Organisation). 2017 update to data originally published in: Church, J.A., and N.J. White. 2011. Sea-level rise from the late 19<sup>th</sup> to the early 21<sup>st</sup> century. *Surv. Geophys.* 32:585–602. Accessed September 2017. [www.cmar.csiro.au/sealevel/sl\\_data\\_cmar.html](http://www.cmar.csiro.au/sealevel/sl_data_cmar.html).
- NOAA (National Oceanic and Atmospheric Administration). 2022. Laboratory for Satellite Altimetry: Sea level rise. Accessed March 2022. [www.star.nesdis.noaa.gov/sod/lsa/SeaLevelRise/LSA\\_SLR\\_timeseries\\_global.php](http://www.star.nesdis.noaa.gov/sod/lsa/SeaLevelRise/LSA_SLR_timeseries_global.php).

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at [www.epa.gov/climate-indicators](http://www.epa.gov/climate-indicators).

Figure 2: Global Average Absolute SLR, 1880-2021

Ocean acidification will cause behavioral changes in fish, especially skipjack tuna<sup>4</sup>, the main product for the Maldivian fishing industry. Freshwater availability is likely to be the pivotal factor because islands depend extensively on rainfall for water

<sup>3</sup> Mimura N. Sea-level rise caused by climate change and its implications for society. *Proc Jpn Acad Ser B Phys Biol Sci.* 2013;89(7):281-301. doi: 10.2183/pjab.89.281. PMID: 23883609; PMCID: PMC3758961.

<sup>4</sup> Frommel, A. Y., Margulies, D., Wexler, J. B., Stein, M. S., Scholey, V. P., Williamson, J. E., ... & Havenhand, J. (2016). Ocean acidification has lethal and sub-lethal effects on larval development of yellowfin tuna, *Thunnus albacares*. *Journal of Experimental Marine Biology and Ecology*, 482, 18-24.

supply<sup>5</sup>. Frequent droughts, heat waves, and heavy precipitation, coupled with the salinization of groundwater, threaten water security. As shown in Figure 3, most likely, only increasing adverse impacts will occur on small islands and in cities by the seas.

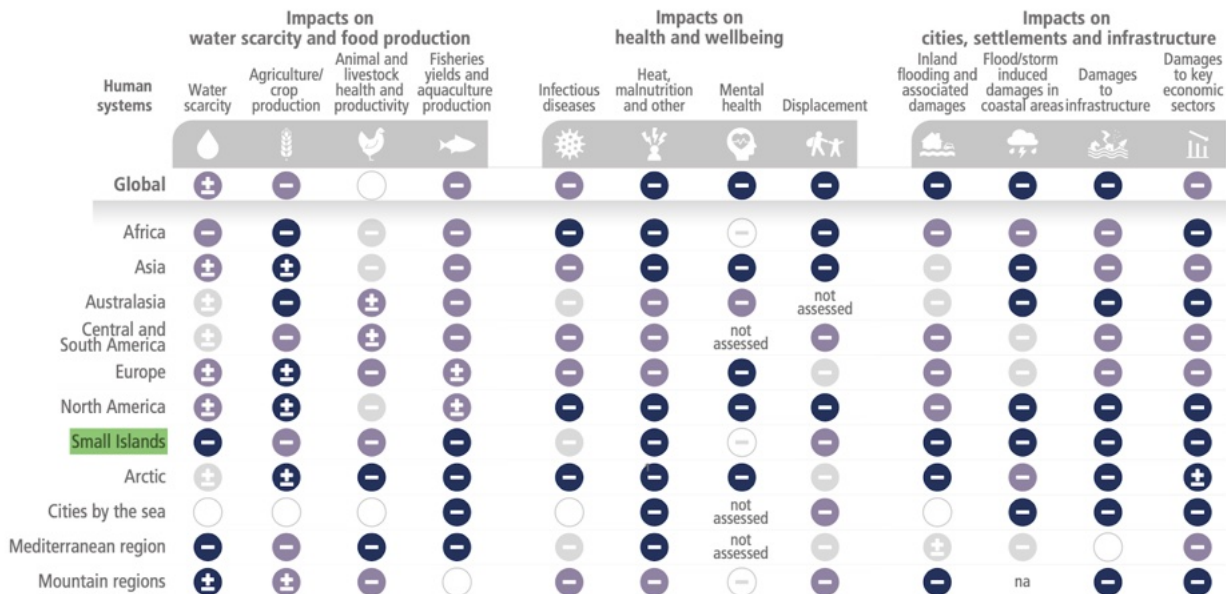


Figure 3: Observed Impacts of Climate Change on Human System

## Scenario Analysis & Key Risks

Currently, there are two widely used climate change models.<sup>6</sup> They are respectively published by the International Energy Association (IEA), and the Intergovernmental Panel on Climate Change (IPCC). The IEA model stresses the energy transition risks for regions. IPCC's models exhibit a wide range of climate sensitivity estimates and compound effects. IPCC models are more suitable for this research's purposes.

IPCC modeled 5 future scenarios based on Representative Concentration Pathways (RCPs). As shown in Figure 4, RCP2.6 signifies a future characterized by low greenhouse gas emissions and intensive mitigation efforts. A probability that this scenario can constrain global warming to below 2°C by 2100 exists. Conversely, RCP8.5 outlines a scenario of high greenhouse gas emissions, assuming a lack of climate change mitigation policies. RCP4.5 and RCP6.0 are intermediate levels with certain mitigation measures being taken.

<sup>5</sup> Adams, R. M., & Peck, D. E. (2008). Effects of climate change on water resources. *Choices*, 23(1), 12-14.

<sup>6</sup> "How Do Climate Models Work?", Carbon Brief, 15/01/2018 <https://www.carbonbrief.org/qa-how-do-climate-models-work/>

Scenario	Near-term: 2031–2050		End-of-century: 2081–2100	
	Mean (°C)	Likely range (°C)	Mean (°C)	Likely range (°C)
RCP2.6	1.6	1.1 to 2.0	1.6	0.9 to 2.4
RCP4.5	1.7	1.3 to 2.2	2.5	1.7 to 3.3
RCP6.0	1.6	1.2 to 2.0	2.9	2.0 to 3.8
RCP8.5	2.0	1.5 to 2.4	4.3	3.2 to 5.4

Figure 4: IPCC Climate Change Scenario Model

In different RCPs, global mean sea level will reach different levels as shown in Figure 5. Within 77 years, the best case scenario is that SLR reaches 0.43m and the worst is that SLR reaches 0.84m. Maldives and many other atoll countries are only 2-3 meters above current sea level. This means that within 77 years, these countries will suffer from significant landmass loss. Applying to the Maldives, in Figure 6, the circle symbolizes the moment when the Maldives will be completely submerged. Figure 7<sup>7</sup> demonstrates the inundation of Male, the most populated island in the Maldives under RCP2.6 and RCP8.5 by 2100, 2200, 2300. By this forecast, Male's 142,909 people will face displacement by 2200.

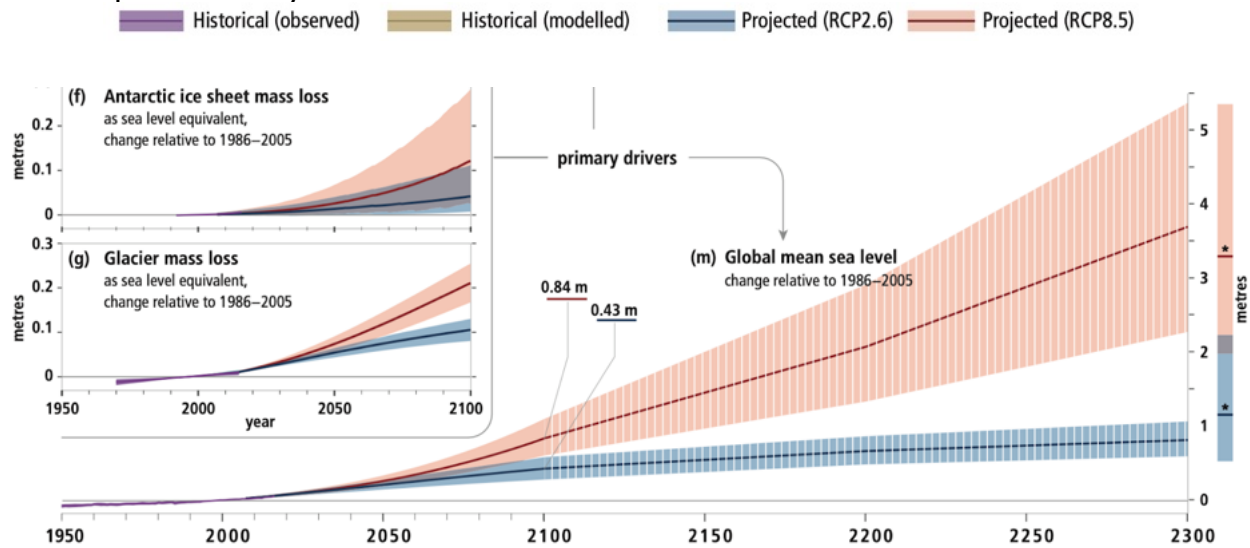


Figure 5: Mean SLR under RCPs

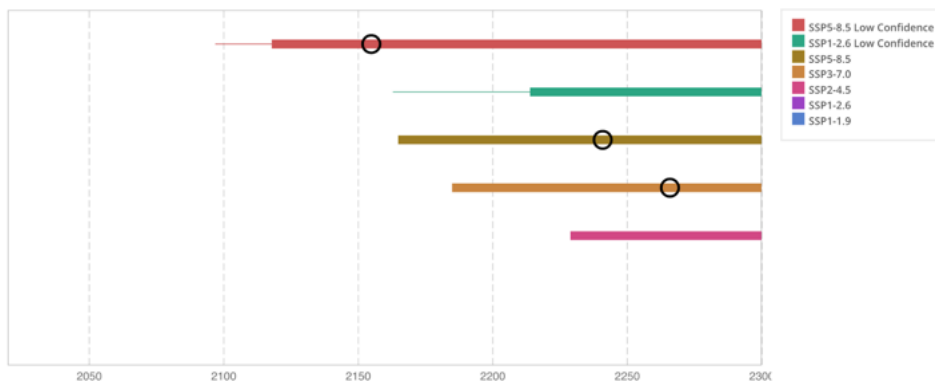


Figure 6: Forecast for Maldives' SLR by 2300

<sup>7</sup> Climate Change Risks Screening Tools, Climate Central  
[https://coastal.climatecentral.org/map/16/73.5089/4.1754/?theme=water\\_level&map\\_type=water\\_level\\_above\\_mhbw&basemap=roadmap&contiguous=true&elevation\\_model=best\\_available&refresh=true&water\\_level=0.8&water\\_unit=m](https://coastal.climatecentral.org/map/16/73.5089/4.1754/?theme=water_level&map_type=water_level_above_mhbw&basemap=roadmap&contiguous=true&elevation_model=best_available&refresh=true&water_level=0.8&water_unit=m)

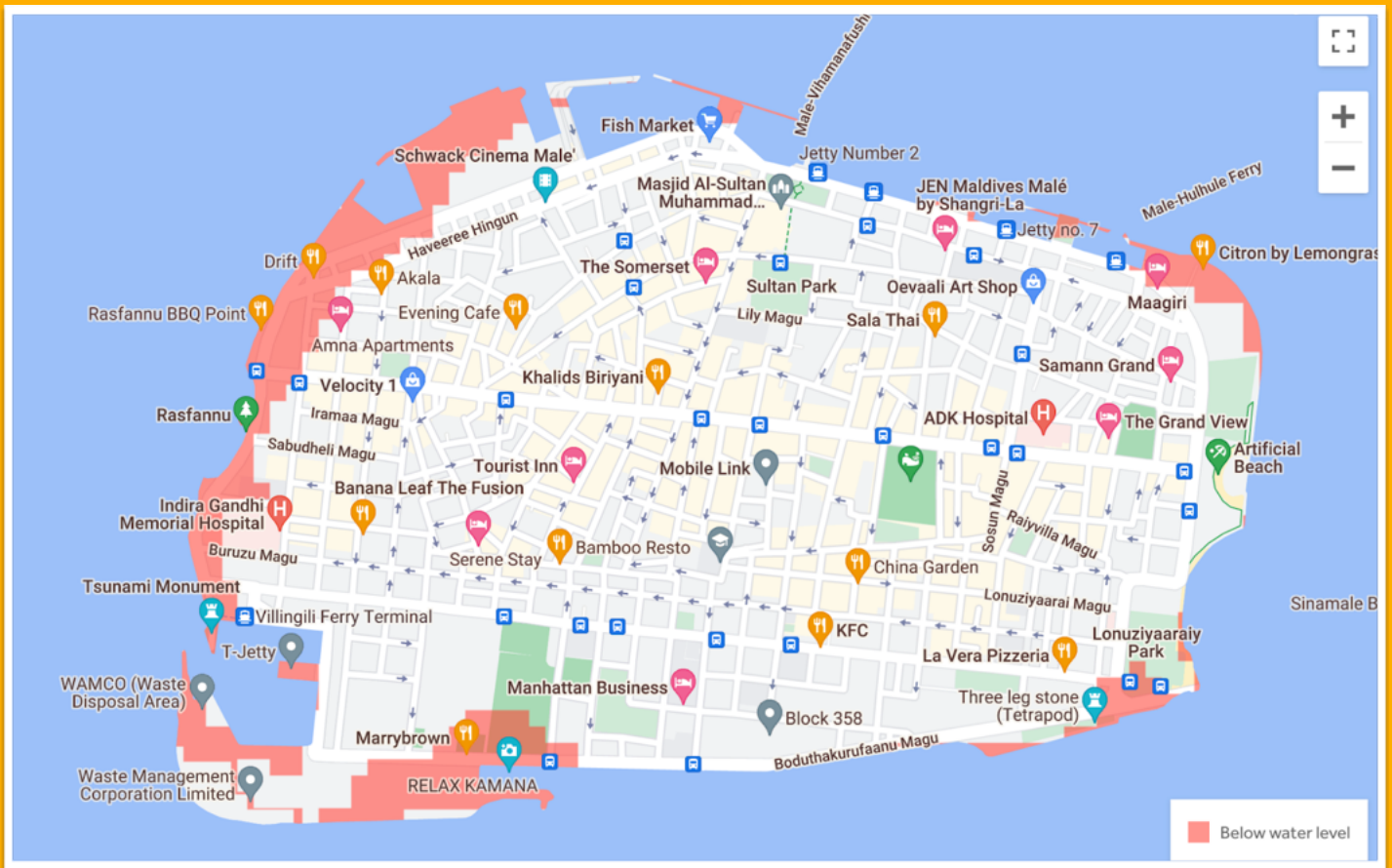


Figure 7(1): Male inundation Base Map

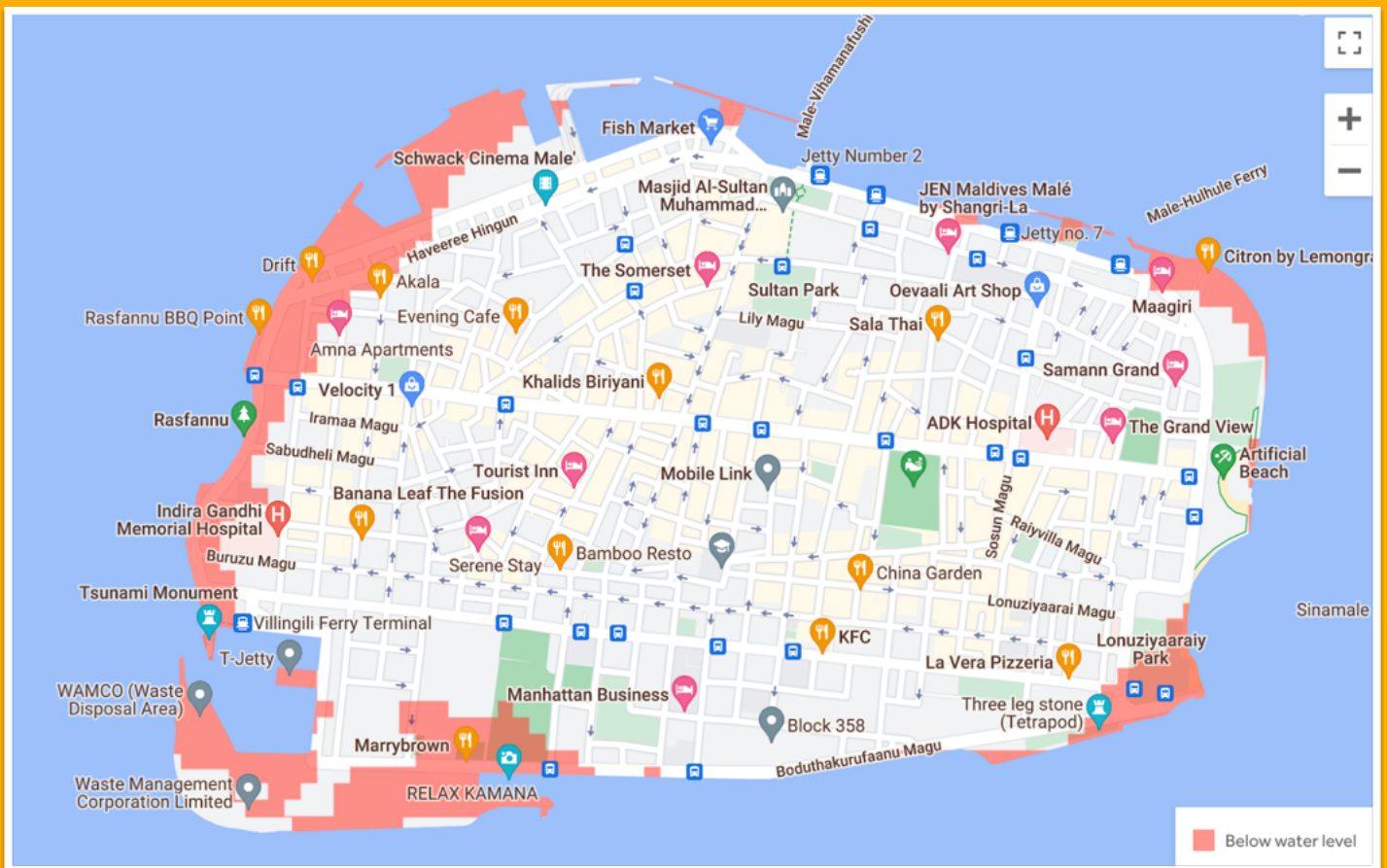


Figure 7(2a): Male Inundation in scenario RCP 2.6, year 2100

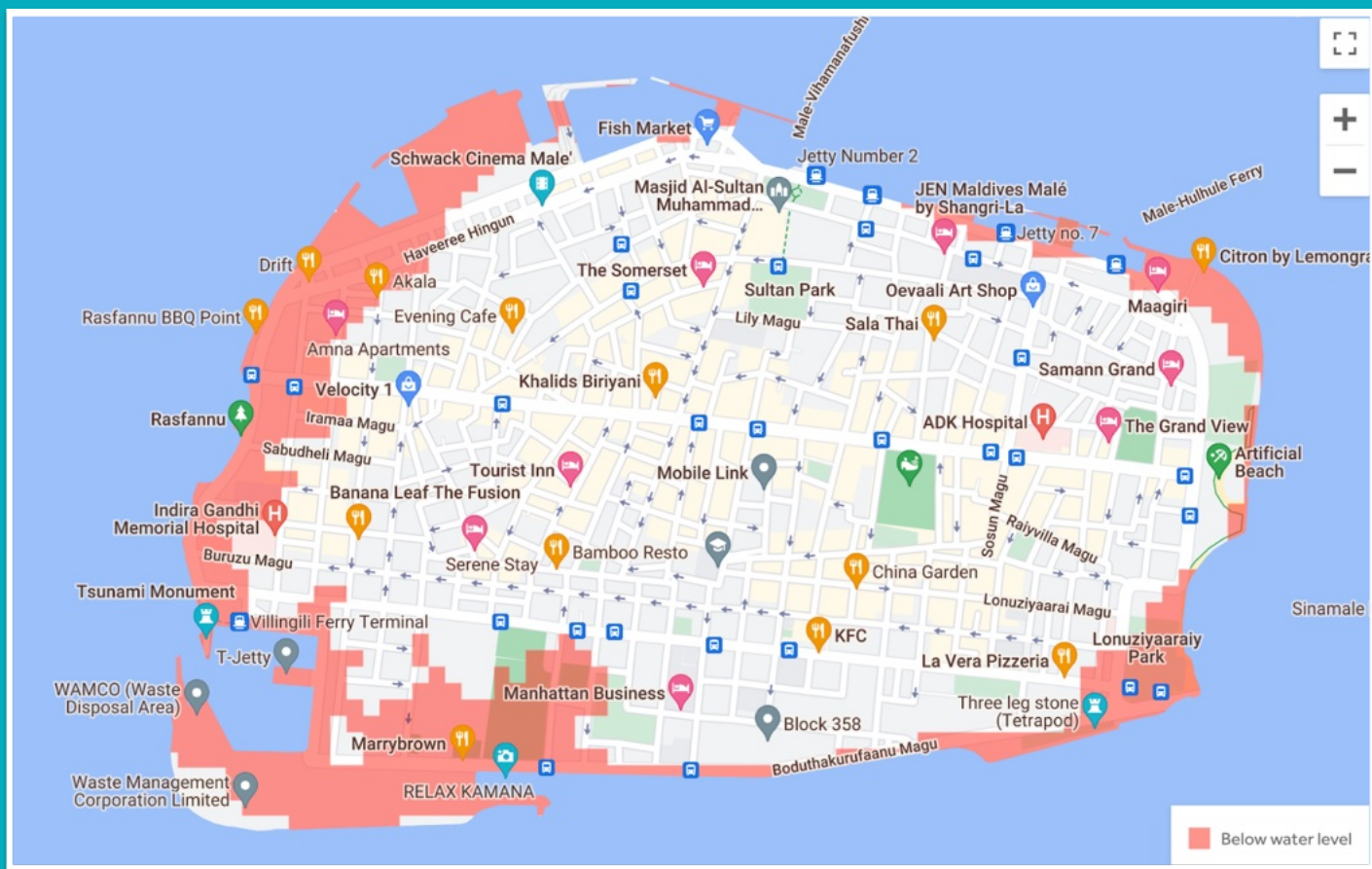


Figure 7(2b): Male Inundation in scenario RCP 8.5, year 2100  
Male Inundation in scenario RCP 2.6, year 2200 (Similar Projection)

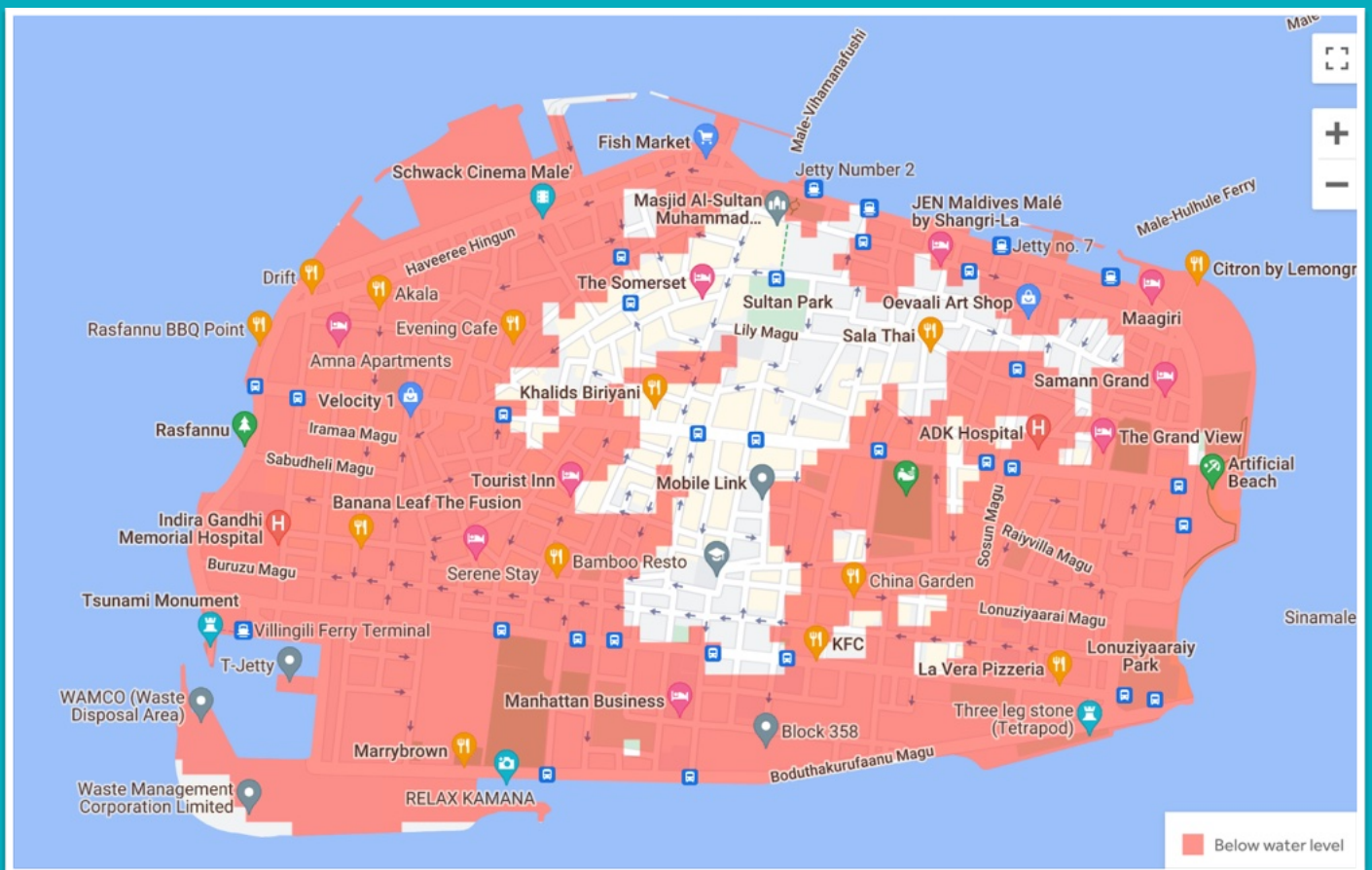


Figure 7(3b): Male Inundation in scenario RCP 8.5, year 2200

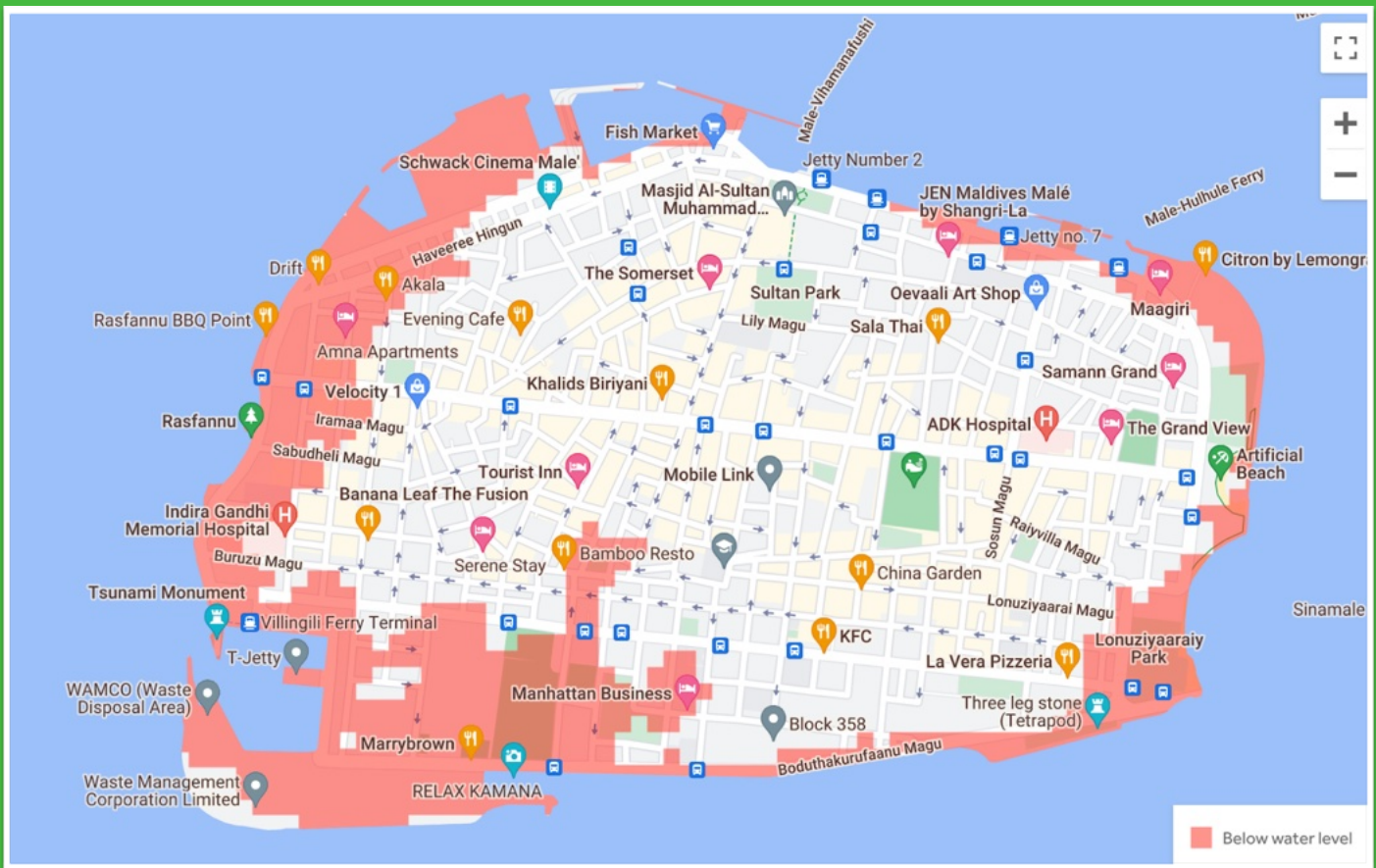


Figure 7(4a): Male Inundation in scenario RCP 2.6, year 2300

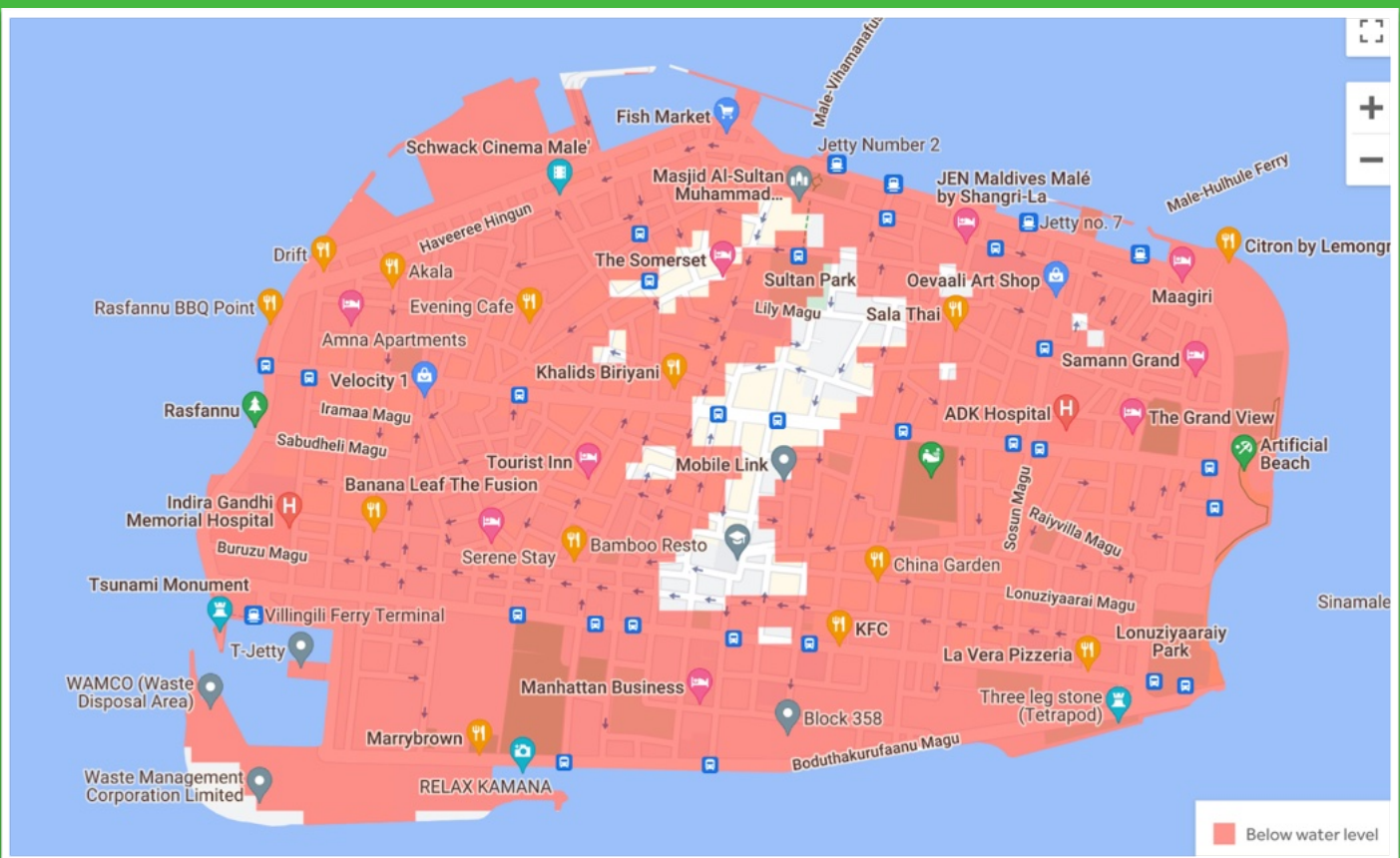


Figure 7(4b): Male Inundation in scenario RCP 8.5, year 2300

Regional differences are likely to become the main stresser in the short run. On the global level, higher risks exist in areas near upper thermal limits of species, coastlines, and regions associated with ice or seasonal rivers. And such variation tends to promote urbanization, especially in developing countries<sup>8</sup>. The urbanization process could exacerbate these impacts, especially where energy, water, and other services are constrained<sup>9</sup>. As an indirect consequence of climate change, global warming amplifies the rural push—impacting agriculture negatively—and the urban pull—creating a greater demand for public goods typically supplied in urban centers. This dynamic encourages rural-to-urban migration. Migration towards urban areas in search of the 'fast money' of wages and salaries and away from the growing uncertainty of agricultural and fisheries income is more frequent as an indirect result of climate change. At the same time, mitigation policies will further encourage rural-urban migration. As a result, the number of people at risk from climate change and biodiversity loss is projected to progressively increase with urbanization.

The mid to long run scenario is represented by RCP4.5 and RCP6.0 at a 2°C - 3°C global warming level by the year 2100. The magnitude and rate of climate change and associated risks depend strongly on near-term mitigation and adaptation actions. Small Island Countries will face higher possibility of coastal inundation (Figure 8). Biodiversity loss, ecosystem degradation, will become significant risks across all regions due to historical compound effects. These risks are anticipated to intensify with each incremental rise in global temperatures.

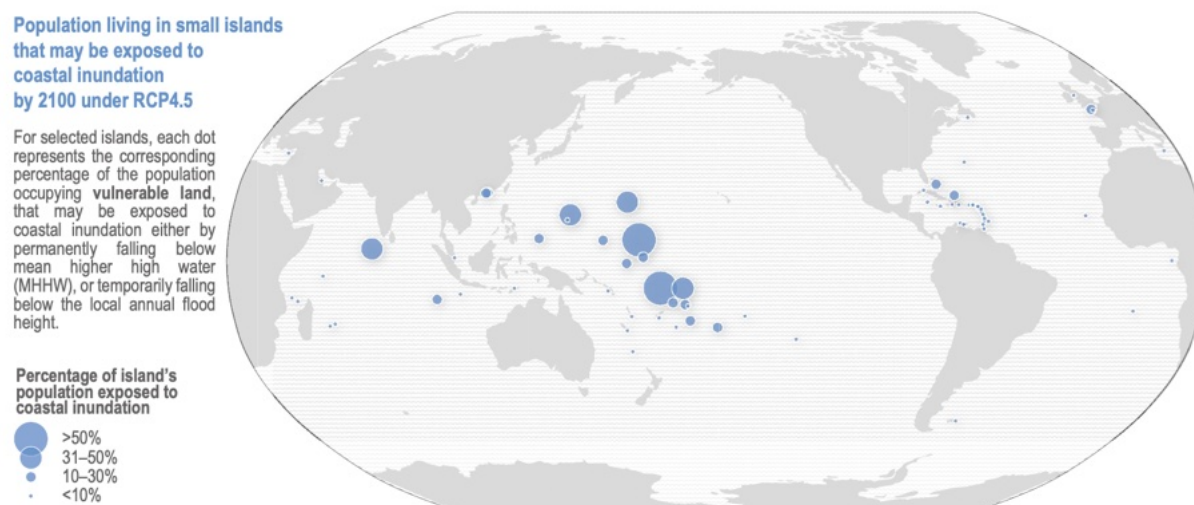


Figure 8: Mid-long Run Coastal Inundation Possibility, year 2100

<sup>8</sup> Cattaneo, C., & Peri, G. (2016). The migration response to increasing temperatures. *Journal of development economics*, 122, 127-146.

<sup>9</sup> Helbling, M., & Meierrieks, D. (2023). Global warming and urbanization. *Journal of Population Economics*, 36(3), 1187-1223.

Among all of the risks, water availability and water-related hazards are expected to escalate across all regions. Global total freshwater reserve loss will increase because of glacier melt. A loss of at least 18% is forecasted to reduce water availability for agriculture, hydropower, and human settlements<sup>10</sup>. Small Islands face a high-confidence threat to groundwater availability. Streamflow changes in magnitude, timing, and associated extremes are projected to negatively affect freshwater ecosystems in many watersheds. Predicted increases in direct flood damages are 1.4 to 2 times higher in the mid-long term scenario compared to the short run. Water management challenges will further intensify under a 4°C global warming scenario because approximately 10% of the global land area is expected to experience simultaneous increases in both extreme high and low river flows, impacting planning for all water use sectors.

The impacts on food security due to climate change are anticipated to be more severe at a 2°C or higher global warming level. This will lead to malnutrition and micronutrient deficiencies, particularly concentrated in Small Island Countries. The progressive warming will undermine soil health and essential ecosystem services like pollination, intensify pressure from pests and diseases, and diminish marine animal biomass, thereby compromising food productivity in numerous regions both on land and in the ocean<sup>11</sup>.

The risks posed by climate change to cities, settlements, and critical infrastructure are expected to escalate rapidly, especially in areas already facing high temperatures, along coastlines. Globally, changes in population dynamics in low-lying cities and settlements are anticipated to result in approximately one billion people being at risk from climate hazards specific to coastal areas, especially in Small Island Countries. Small Island Countries will face an existential threat by the year 2100. The population potentially exposed to a 100-year coastal flood is projected to increase by about 20%<sup>12</sup> with a global mean sea level rise of 0.15 m relative to 2020 levels. This exposed population doubles with a 0.75m rise in mean sea level and triples with a 1.4m rise. In urban areas, costs for maintenance and reconstruction increase significantly and are associated with constant functional disruption.

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<sup>10</sup> Kikstra, J. S., Nicholls, Z. R., Smith, C. J., Lewis, J., Lamboll, R. D., Byers, E., ... & Riahi, K. (2022). The IPCC Sixth Assessment Report WGIII climate assessment of mitigation pathways: from emissions to global temperatures. *Geoscientific Model Development*, 15(24), 9075-9109.

<sup>11</sup> Pörtner, H., Roberts, D. C., Parmesan, C., Adams, H., Adelekan, I., Adler, C., ... & Caretta, M. A. (2023). *IPCC 2022: Technical Summary, Working Group II Impacts, Adaptation and Vulnerability* (Doctoral dissertation, Intergovernmental Panel on Climate Change).

<sup>12</sup> Depsky, N., Bolliger, I., Allen, D., Choi, J. H., Delgado, M., Greenstone, M., ... & Hsiang, S. (2022). DSCIM-Coastal v1. 0: An Open-Source Modeling Platform for Global Impacts of Sea Level Rise. *EGOsphere*, 2022, 1-47.

# Threshold Analysis on Atolls

While the inevitability of rising sea levels in the future appears linked to greenhouse-induced warming of the atmosphere, emerging evidence suggests that the impact will vary across different regions. Historical sea level changes have been shaped by local factors—both climatic and oceanographic—that may undergo variations with the greenhouse effect. Notably, in the case of atoll islands, the characteristics of existing coastlines, whether they are cliffed, sandy, swampy, etc., will also influence the consequences of the greenhouse effect (Figure 10). Maldives is one of the four atoll states that contains 26 atolls, with the capital Male locates in the biggest atoll (Figure 9<sup>13</sup>).

Atoll nation	Population in 2014	Projected to 2050	Urban/rural distribution <sup>c</sup>	Median age <sup>d</sup>	Colonial/Religious affiliation	HDI score
Kiribati	100,786	163,266 <sup>a</sup>	44/56	23.9	British/Christianity	0.607 <sup>e</sup>
Maldives	345,023	474,660 <sup>b</sup>	40/60	27.4	British/Islam	0.698 <sup>e</sup>
Marshall Is.	52,555	61,217 <sup>a</sup>	72/28	22.6	American/Christianity	0.738 <sup>f</sup>
Tuvalu	9,860	13,858 <sup>a</sup>	50/50	25.2	British/Christianity	0.711 <sup>f</sup>

Figure 9: Demographic Information of Atoll States

The current mainstream framework was established by William Alkire in 1978. His framework included the identification of four major indicators—land size, elevation, rainfall, and typhoon frequency, to monitor coral island vegetative growth, food and water security, and thus the habitability. Atolls exhibit limited species diversity, especially when compared to high islands, where a few dominant plant and animal types prevail. The correlation between island size, rainfall, and diversity appears direct. The primary food crops on atolls include coconuts, breadfruit, taro, and pandanus. In more humid conditions, bananas are also cultivated. Given the small size and low elevation of atoll islands, nearly all plants must tolerate salt spray and brackish groundwater conditions. Species like coconut and pandanus display significant resilience to high salt levels and occasional inundation by storm waves. In contrast, swamp taro is more sensitive to changes in salinity. Increased salinity significantly diminishes taro productivity. Although with globalization, main sources of island diet are imported, local agriculture and cultural cuisine are still crucial parts of the cultural and psychological perception of “habitability” of places. Food security, in this sense, contains both the nutrition aspect as well as the culture aspect of local agrarian products availability.<sup>14</sup>

<sup>13</sup> Sources SPC, Maldives (2006), UN (2011), UNDP (2011), UNDP (2013)

<sup>14</sup> Farbotko, C., & Campbell, J. (2022). Who defines atoll ‘uninhabitability’?. *Environmental Science & Policy*, 138, 182-190.

John Connell and Peter Roy<sup>15</sup> proposed three primary domains to monitor atoll inhabitability. These encompass: firstly, the infiltration of saltwater into coastal groundwater reserves; secondly, the erosion of coastal areas and submergence of low-lying flat terrain; and thirdly, the impairment of coastal structures through storm-induced damage, including port facilities. During the research interview, John Connell stressed on water availability as a primary threshold. The infiltration of saltwater into groundwater lenses will directly impact both agriculture and the availability of drinking water. Elevated salinity levels will diminish the drinkability of groundwater, a source of considerable significance for most islanders at present. While rainwater is typically the preferred choice, groundwater serves as a secondary source, and its accessibility becomes crucial during drought conditions on every atoll. Importantly, freshwater becomes exceptionally scarce after storm surges or tsunamis inundate islands, salting soils and wells—a situation likely to intensify under the influence of the greenhouse effect.<sup>16</sup> Mitigation methods are limited to address this issue. Constructing improved cisterns may offer a means to minimize or eliminate reliance on groundwater but the costs associated with alternatives such as water purification and desalination are exceedingly high. In some drier atolls, particularly densely populated urban areas, water supply already presents a critical challenge. If and when groundwater becomes non-potable, especially when coupled with any prolonged decline in rainfall, as is conceivable in certain regions, human habitation could effectively become untenable.

Mark Stege pointed out Flood Threshold as a major cap for habitability of atolls. Atoll states have historically faced flooding during high tides, storms, and heavy rainfall. There are three watch-out points:

- ❖ If sea level rise exacerbates these conditions to the extent that “nuisance flooding” exceeds five days per year, the local government would initiate measures outlined in the early stages of the “pathway” to prepare for the retreat of critical infrastructure and residences.
- ❖ A second flood risk threshold would be triggered by the occurrence of two 100-year storms within a single year, prompting the actual relocation to higher ground.
- ❖ The third threshold would be reached with the breach of a barrier dune along the community's coastline, resulting in the permanent inundation of low-lying areas of the town.

Upon reaching this ultimate threshold, adaptive management determined by future generations should be implemented. Nilanjan Ray Chaudhuri<sup>17</sup> also pointed out two ways to monitor flood risk. Firstly, the return rates of various wave-driven flooding

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<sup>15</sup> Roy, P., & Connell, J. (1991). Climatic change and the future of atoll states. *Journal of Coastal Research*, 1057-1075.

<sup>16</sup> Wiens, Herold Jacob. "Atoll environment and ecology." (*No Title*) (1962)

<sup>17</sup> Adhikari, M. D., Maiti, S., Bera, A., & Chaudhury, N. R. (2021). Post-tsunami adjustment of coral reef platform and other morphometric changes in Landfall Island, North Andaman—An integrated field and remote sensing-based approach. *Regional Studies in Marine Science*, 48, 101975.

events will decrease. Secondly, the amplitude and duration of such events will rise, with overtopping flood waters reaching farther inland and high water levels persisting for longer durations. The ability to differentiate between SLR and natural sea level variability is crucial for atoll island communities. The process of making this distinction and applying the acquired knowledge provides a significant opportunity for community participation. With scientific information and thresholds for policy makers to monitor, we clearly see that climate change will have a significant impact on food security, land availability, water supply and biodiversity. Indirect impacts on the social economic system of human societies such as displacement, population growth, social equality and nutrition are also crucial for ensuring human rights and dignity. Future policies need to address the urgency of climate change and especially for coastal communities, atoll states and Small Island Developing Countries. Future policies to secure habitability by tracking scientific thresholds, empirical and evidence-based knowledge systems as well as adding humanist and non-empirical knowledge systems so as to be salient and relevant to displaced peoples.

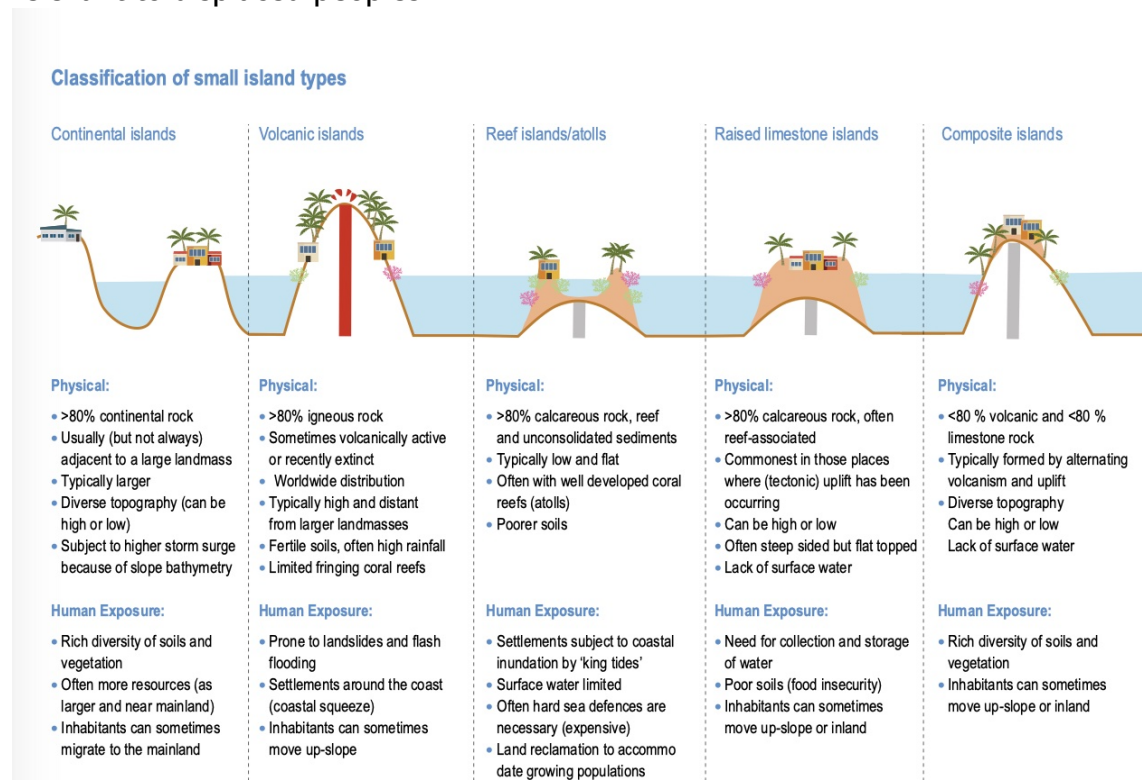


Figure 15.2 | Classification of small island types showing island characteristics and elements of human exposure (based on Nunn et al., 2016; Kumar et al., 2018).

Figure 10: Small Island Types

## Climate Tipping Points

As per the IPCC, a tipping point is defined as a "critical threshold beyond which a system reorganizes, often abruptly and/or irreversibly." Tipping points in the climate

system have the potential to induce a shift from one stable state to another, either globally or regionally. This new state may be considerably less conducive to sustaining human and natural systems. Alternatively, such tipping points can lead to changes that occur nonlinearly and at a faster pace than the anticipated rate of change resulting from climate forcing. The peril of abrupt and/or irreversible changes lies in their occurrence within timeframes that surpass the capability of human societies to adapt to environmental pressures. Crossing climate tipping points, therefore, poses a significant threat, with potential severe and widespread impacts and the prospect of catastrophic consequences for both human and natural systems.

Recent research pointed out 7 planetary-wide tipping points. If one element falls out of whack, it could trigger a domino effect and result in “rapid acceleration of warming until the Earth stabilizes in another state.”<sup>18</sup> Among these 7 tipping points, there are two that are particularly vital for SIDs.

One, the slowing down of Atlantic circulation due to global warming. This could eventually cause the shutdown of Atlantic circulation. This could lead to a cooling of the North Atlantic and potentially causing harsher winters in Europe and North America, increasing extreme weathers, coastal floodings and erosions. A weakened Atlantic Circulation could affect the distribution and migration patterns of marine species, leading to shifts in fish population and impacting fisheries.

Two, bleaching of Coral Reefs. Coral reefs need a fast return of cooler temperature to return coral-feeding plants to their homes. Without these plants, the corals will starve to death and appear to be “bleached”. A robust coral reef typically requires a decade to fifteen years to fully recover from a catastrophic heat event, yet severe bleaching events are currently happening approximately every six years. The Intergovernmental Panel on Climate Change (IPCC) warns that even if global average temperatures stay below 1.5 degrees Celsius (2.7 degrees Fahrenheit) of warming, there is a risk of losing 70 to 90 percent of coral reefs. If temperatures rise by 2 degrees Celsius, nearly all of these reefs, about 99 percent, could ultimately disappear.

This could be catastrophic for the millions of people who depended on reefs around the world. Although they occupy less than 2 percent of the ocean floor, the intricate formations of coral reefs serve as habitats for roughly 25 percent of the Earth's marine species. Additionally, they offer sustenance, livelihoods, and storm shielding to an estimated 500 million individuals. <sup>19</sup>Coral reefs contribute significantly to the economies of many small developing nations through activities such as tourism, fishing, and recreation. Reefs attract divers and snorkelers, providing income for local

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<sup>18</sup> Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., ... & Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 1259855.

<sup>19</sup> Hoegh-Guldberg, O., Mumby, P. J., Hooten, A. J., Steneck, R. S., Greenfield, P., Gomez, E., ... & Hatziolos, M. (2007). Coral reefs under rapid climate change and ocean acidification. *science*, 318(5857), 1737-1742.

businesses and employment opportunities. Coral reefs also act as natural barriers, reducing the impact of waves and storm surges during extreme weather events like hurricanes. They help protect coastal communities and infrastructure from erosion and damage, saving lives and property.

Healthy coral reefs can help buffer the effects of climate change by acting as carbon sinks and reducing ocean acidification. Their conservation can contribute to the overall resilience of coastal ecosystems. Coral reefs are not only valuable locally but also globally. Their health is indicative of the overall state of marine ecosystems and the impacts of climate change. Their conservation is critical for the planet's biodiversity and ecological balance.

The interconnectivity of global biodiversity and ocean suggests that it is imperative to formulate international policies and strategies that take into account these intricate dynamics. This approach can help avert additional harm to these vital systems, safeguard marine ecosystems, and ensure the sustainability of island communities that rely heavily on them. This perspective extends beyond the preservation of biodiversity; it is intrinsically connected to the survival of nations on the front lines of climate change, such as SIDs, which face existential threats due to these transformative shifts.

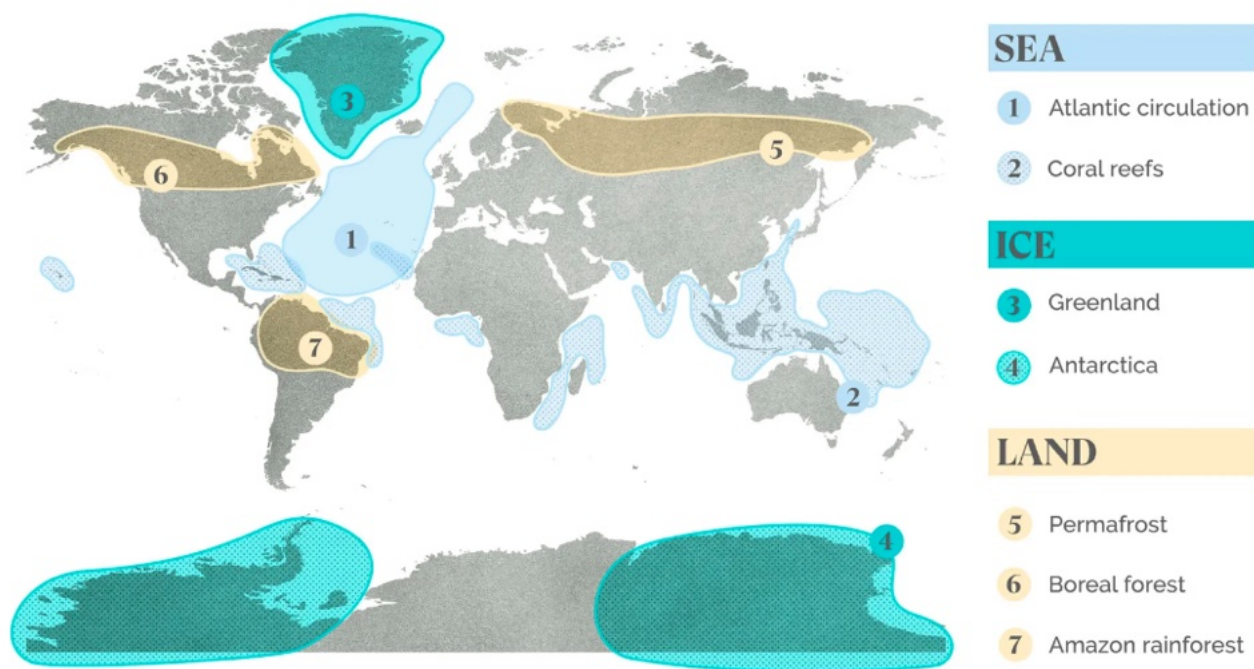


Figure 11: 7 Tipping Points

# Relocations as a Mitigation Strategy



The relocation of communities due to climate-induced threats has evolved into a compelling global issue, vividly illustrated by diverse case studies such as Kandholhudhoo in the Maldives, Gardi Sugdub in Panama, and Newtok in Alaska. These instances shed light on the intricate interplay between environmental vulnerabilities, human adaptation, and the preservation of cultural identity. This exploration delves into the multifaceted narratives of these communities, unraveling the root causes of their displacement, the challenges encountered during relocation, and the lessons learned that can illuminate future endeavors.

From the atolls of the Indian Ocean to the islands off Panama's northern coast and the subarctic Alaskan landscape, each relocation story underscores the urgent need for collaborative, culturally sensitive, and environmentally conscious approaches to address the impacts of climate change on vulnerable communities. The planned permanent relocation of communities, exemplified by Kandholhudhoo, Gardi Sugdub, and Newtok, reflects a poignant reality in the face of escalating climate threats. As a measure of last resort for nations grappling with the profound impacts of climate change, relocation confronts rising sea levels, extreme weather events, and the melting of permafrost, pushing vulnerable communities to the brink. The imperative to ensure the safety and well-being of citizens underscores the complexities of relocation, emblematic of the challenges posed by climate-induced migration. These stories serve as poignant reminders of the urgent need for comprehensive, sustainable, and community-centric solutions in the face of an increasingly uncertain climate future.

## Maldives Relocation Case Study

The planned permanent relocation of the entire population of Kandholhudhoo, an island in the northerly Raa Atoll of the Maldives, to the neighboring Dhuvaafaru is one of the most important relocation case studies in the context of climate-induced movement of communities.

Since the 1980s, the island of Kandholhudhoo has been vulnerable to coastal erosion, which was exacerbated by the sea-level rise, and mined reef for construction materials by residents before the Tsunami of 2004. The island experienced storm surges and regular island floodings, especially during the monsoon season. As a coral island with no beach, it faced direct, and strong waves from the ocean. The island also experienced extreme winds and swell waves, negatively impacting daily life.<sup>20</sup>

Despite being a small island, Kandolhudhoo had a large population of nearly 4,000 people residing in less than nine hectares, leading to congestion issues. The government attempted to address these challenges by reclaiming surrounding areas and building a protective wall. However, these measures proved insufficient due to the island's shallow reef.

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<sup>20</sup> Kothari, U., Arnall, A., & Azfa, A. (2023). Disaster mobilities, temporalities, and recovery: experiences of the tsunami in the Maldives. *Disasters*, 47(4), 1069–1089. <https://doi.org/10.1111/disa.12578>



Raa Atoll, Maldives. Photo: Wikipedia, CC BY-SA 3.0

Kandholhudhoo's irregular settlement pattern, distinct from the grid configuration of most Maldivian islands, intensified the challenges. Discussions and petitions for relocation by members of the community were already underway before the tsunami occurred. A survey was conducted and gathered a deep desire from residents to move, primarily driven by overcrowding and the need for a more sustainable living environment.

"Kandholhudhoo was already a ticking time bomb," said Hassan Hakim, the current Dhuvaaferu- the relocation site- Council President.<sup>21</sup>

However, there was resistance to relocation among Kandholhudhoo's residents, due to strong ties to the island. The proximity to valuable fishing grounds and generational connections made the prospect of leaving difficult for many. Despite these challenges, the recognition of the island's vulnerability and the necessity for relocation were clear. "Even if the tsunami hadn't occurred, the relocation would have taken place," said Hassan Hakim.

## The Boxing Day Tsunami

The Indian Ocean tsunami on December 26, 2004, was one of the most devastating natural disasters to impact the Maldives, a nation comprising around 1,200 coral islands across 26 natural atolls. Triggered by a magnitude 9.3 earthquake, the tsunami caused the displacement of approximately one-third of its population. The Maldives, with an average ground-level elevation of merely 1.5 meters above sea level, is among the world's most susceptible countries to sea-level rise, presenting significant challenges for disaster response and recovery efforts.

Ibrahim Akhir, an impacted resident from Kandholhudhoo island, said that the disaster rendered the island uninhabitable and its residents found themselves dispersed across various

<sup>21</sup> Hassan Hakim Interview, November 11, 2023

other islands, with a significant portion ending up on Ungoofaaru island, forced to live with host families while awaiting the construction of their new dwelling.<sup>22</sup>

Attempts were made to construct temporary housing units on Kandholhudhoo, but the extent of the destruction and the lack of proper sanitation infrastructure made this challenging. The aftermath was a difficult period, marked by the absence of a dedicated disaster management agency. In response, President Mohamed Hussain established the National Disaster Management Centre (NDMC) by decree, requiring all government agencies to collaborate through the NDMC to coordinate disaster management efforts. This marked a crucial step in responding to and recovering from the catastrophic impact of the 2004 tsunami on Kandholhudhoo and the Maldives as a whole.



Kandholhudhoo after the tsunami. Photo: mohamed imad/Flickr

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<sup>22</sup> Ibrahim Akhir Interview, November 11, 2023

## Planned Permanent Relocation

The decision for the planned permanent relocation of the entire population of Kandholhudhoo to the neighboring Dhuvaafaru, a previously uninhabited island that underwent reconstruction, was a direct response to the extensive destruction caused by the 2004 tsunami. The ambitious project to relocate the entire population of Kandholhudhoo was facilitated through a collaboration of several international and intergovernmental organizations like the United States Agency for International Development (USAID). However, the International Federation of Red Cross and Red Crescent Societies (IFRC) and the Maldivian government took the lead role in aiding the construction of over 600 homes. Relocation funds amounted to approximately US \$45 million, with the IFRC contributing US \$32 million.<sup>23</sup>

Dr. Mohamed Shareef, the Former Minister of State for Environment, Climate Change and Technology in Maldives, highlighted the significant international assistance received, particularly from the Red Crescent and the Red Cross. These organizations mobilized expertise from various parts of the world, aiding in the design and garnering support from other donors. The relocation process spanned four years, presenting a considerable challenge to the new administration that came into power in November 2008.<sup>24</sup>

Despite this, the new administration pledged to rehouse the population in Dhuvaafaru within 100 days. The relocation process involved moving people from temporary shelters back to the island, even though certain infrastructural aspects, such as the harbor and schools, were still in progress.

Hisan Hassan, the Chief Executive of the National Disaster Management Authority in Maldives, said that the housing projects received support from various international agencies, including the British Red Cross, IFRC, French Red Cross, and the government of Maldives. Different agencies were assigned housing construction tasks in various atolls.<sup>25</sup>

The funding provided by these agencies was instrumental in alleviating the financial burden on the government. This support allowed for the construction of houses and the realization of the relocation project, showcasing the collaborative efforts between international agencies and the Maldivian government in the aftermath of the 2004 tsunami.

## Temporary Relocation

While initially host families generously welcomed internally displaced persons (IDPs), this arrangement proved unsustainable in the long term. As time passed, tensions emerged as host communities experienced the strain of shared housing and resources, leading to conflicts between IDPs and their hosts.

The initial relocation effort was marred by dissatisfaction and conflict, with the International Federation of Red Cross and Red Crescent Societies (IFRC) noting considerable tension during the period of temporary housing. Some communities were reluctant to accept IDPs into their islands, particularly if the IDPs were from a different island. This hesitancy

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<sup>23</sup> Wong, Alexander. "Comparative Relocation: Case Study and Analysis of Options for Threatened Island Nations." Centre for Climate Change Law, Columbia Law School, August 9, 2011. <https://climate.law.columbia.edu/>.

<sup>24</sup> Dr Mohamed Shareef Interview, November 12, 2023

<sup>25</sup> Hisan Hassan Interview, November 13, 2023

stemmed from a desire to preserve their unique island culture and traditions and suspicion of inter-community relationships and marriages.

Despite these challenges, temporary housing shelters were eventually built on four islands within the atoll, providing an alternative solution to the strain on host communities. The transition to these temporary shelters aimed to address some of the social issues and conflicts that had arisen earlier, offering a more structured and organized approach to housing displaced individuals while respecting the concerns of host communities.

## Consulting IDPs

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After the 2004 tsunami, the immediate challenge was identifying and relocating internally displaced persons (IDPs). The scattered nature of the Maldivian atolls made this a complex task, with difficulties in distinguishing IDPs from their host families. Many residents had left their homes to join family members on other islands or relocate to the capital city, Malé, further complicating the identification process.<sup>26</sup>

Hisan Hassan noted that a separate unit called the Internally Displaced Population (IDP) unit was established under the Disaster Management Center. The unit formulated criteria and guidelines for IDP registration, dispatching teams to visit islands in the north, south, and central atolls to register IDPs living with host families, in empty houses, or in temporary shelters. The registration process, which took more than a year, involved categorizing IDPs based on the extent of house damage. Almost every family was visited by government officials for feedback on the relocation process, and consultations were held with the people, according to Ibrahim Akhir. Despite initial resistance, the majority of residents wanted to move due to Kandholhudhoo's small size. Elders initially wanted to relocate back to Kandholhudhoo due to its cultural significance, but practical considerations, such as the island's location and size, led to a preference for relocation.<sup>27</sup>

Hasan Hakim described the government's approach – conducting town hall meetings for displaced Kandholhudhoo residents to decide on their preferred relocation site. The majority chose Dhuvaafaru based on its location, size, and available land for reclamation. The decision-making process also involved collecting opinions through papers circulated among the displaced population. Dr. Shareef highlighted the consultations with the community during the construction phase. Community members were allowed to visit Dhuvaafaru regularly to observe the construction progress, fostering a sense of ownership. This engagement aimed to ensure that the housing project aligned with the community's needs and preferences.<sup>28</sup>

The community's preferences were considered in the decision-making process. While there was a desire not to be separated into groups, the government offered Dhuvaafaru as a new island for the entire community to move to. Historical considerations were also taken into account during the selection process, according to Dr Shareef. While Dhuvaafaru was an uninhabited island, there was evidence to suggest that the ancestors of dwellers from neighboring islands would frequent the island many years ago on their fishing trips.

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<sup>26</sup> (Croshaw, H. R. (2017). In the Wake of the 2004 Great Indian Ocean Tsunami: Internally Displaced Persons and the Natural Disaster Response in the Maldives. *Journal of Asian Development*. <https://doi.org/10.5296/jad.v3i1.10755>)

<sup>27</sup> Hisan Hassan Interview, November 13, 2023

<sup>28</sup> Hassan Hakim Interview, November 11, 2023

## **IDPs Makeshift Tents**

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After the dispersal of Kandholhudhoo's residents to neighboring islands immediately after the Tsunami, the transition to normalcy proved challenging because of an extended period of waiting and uncertainty before a more permanent relocation to Dhuvaafaru. Initially staying in people's homes, each family was later allocated an International Federation of Red Cross and Red Crescent Societies (IFRC) tent in one of the IDP camps, with the expectation that these camps would provide short-term accommodation. However, the reality was different, and residents remained in these tents for four years.

The extended stay in temporary shelters had lasting consequences for the former residents of Kandholhudhoo, making it difficult for them to rebuild their homes and feel settled. The separation from their original community also posed challenges in restoring their livelihoods, particularly for fishermen who struggled to find enough people to work on the dhonis (boats) due to dispersal across five islands.

According to Hasan Hakim, residents were initially content with the makeshift tents provided by the government in the refugee camps. These tents included essential amenities such as food, electricity, and water. However, as time passed, some were reluctant to relocate, as the temporary shelters already met their basic needs. There was a perception among some that the government was rushing the relocation process to end assistance, while others were content with the move, given the overcrowded and unfit conditions of the tents.<sup>29</sup>

The situation highlighted the complexities involved in managing temporary shelters, addressing the basic needs of the displaced population, and ensuring a smooth transition to more permanent housing. The extended stay in temporary shelters had social, economic, and psychological implications for the former residents of Kandholhudhoo.

## **Selection of Dhuvaafaru**

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During the waiting period, the Ministry of Planning and National Development, in collaboration with island leaders, identified the uninhabited island of Dhuvaafaru as the most suitable new home for Kandholhudhoo's former community. The selection process involved considering several factors, and Dhuvaafaru was deemed an optimal choice for various reasons.

Dhuvaafaru and Kandholhudhoo are located on opposite sides of the same atoll. This geographical proximity facilitated easy access for the relocated community and Dhuvaafaru provided ample space for the community.<sup>30</sup>

Dhuvaafaru's topography and layout played a role in its selection. The island's elevation and positioning in the atoll made it more climate-resilient, reducing its vulnerability to storm surges.

The subsequent development of Dhuvaafaru became the largest single post-tsunami reconstruction project in the Maldives and the largest construction project in the history of the International Federation of Red Cross and Red Crescent Societies (IFRC). The island was laid out in a grid pattern with wide streets, featuring more than 600 houses to accommodate the relocated community.

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<sup>29</sup> Hassan Hakim Interview, November 11, 2023

<sup>30</sup> Dr Mohamed Shareef Interview, November 12, 2023

## Relocation and Resettlement Process

In December 2009, after four years of displacement, the Kandholhudhoo community was once again on the move. This time, the reunification process took place as the community members, who had been scattered across five islands, were brought together and resettled on Dhuvaafaru.

The primary goal during this phase was to reunite the community, bringing together individuals and families who had been living apart for four years. The relocation to Dhuvaafaru marked the beginning of a new chapter for the Kandholhudhoo community, with the promise of a permanent and stable home.

## Challenges

According to Hasan Hakim, there were several issues with the: housing allocation, house design, social and economic disruption, environmental degradation, and an increased dependence on government handouts, during the relocation process to Dhuvaafaru.

### Problems with Housing Allocation

The criteria for housing allocation were set as a three-room house with two bathrooms for a family of six. However, it was reported that during the registration process, many people listed more individuals than were actually part of their immediate families. This led to a mix-up in the allocation process, causing confusion and complications. This manipulation of the criteria contributed to a lack of accuracy in the registration process. The criteria allowed for larger families to receive multiple houses, sometimes up to four houses. This approach, while intended to address overcrowded living conditions, raised concerns about the fair distribution of housing resources.

Challenges emerged regarding the ownership of houses and the registration process. Questions arose about what would happen to the house if the original owner passes away, leading to issues of inheritance and distribution among family members.

The allocation process did not adequately address potential changes in family dynamics, such as divorce. Questions regarding the distribution of houses in the event of divorce, and how it would impact children and inheritance, were not thoroughly considered.<sup>31</sup>

### House Design Layout Process

The design and layout of the new houses in Dhuvaafaru posed significant challenges, particularly in relation to the kitchen area. This became a source of concern for the residents, especially women who were accustomed to specific domestic practices. Traditionally, kitchens were separate areas used for preparing and smoking fish but the integration of kitchens into the main living areas of the house was seen as inconvenient and not aligned with traditional practices. Cooking fish is known for producing strong smells, and the integration of kitchens with the living areas exacerbated this issue.

The design did not account for the need to separate the kitchen from the living spaces to prevent the spread of smells and smoke. Residents, involved in fishing, lacked adequate

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<sup>31</sup> Hassan Hakim Interview, November 11, 2023

space to cook and dry fish. This was a crucial aspect of their livelihood, and the limited space hindered their ability to continue these practices within close proximity to their homes. As a response to these challenges, the council allocated a separate location for fish processing as a temporary solution. The issues with the house design layout contributed to a prolonged sense of discomfort and unsettlement among the residents in their new environment on Dhuvaafaru.<sup>32</sup>

Some residents also expressed dissatisfaction with the lack of outdoor space in the immediate vicinity of their homes which further complicated their domestic practices and daily routines.



An aerial view of Dhuvaafaru after construction. Photo: Hisan Hassan

## Social Disruption

The relocation disrupted traditional family structures, separating family groups that were originally from different islands. This separation had implications for social cohesion and the support networks that families relied on. The larger landmass of Dhuvaafaru required families to travel longer distances to see their relatives. There were reported instances of confusion related to housing. The design of houses led to families from different islands residing in similar or identical houses, creating confusion for some and hindering the sense of individual identity and ownership.

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<sup>32</sup> Hisan Hassan Interview, November 13, 2023

## Economic Disruption

The relocation from Kandholhudhoo to Dhuvaafaru significantly impacted the livelihoods of the residents, particularly in the areas of fishing and tourism. Dhuvaafaru's location in the atoll necessitated fishermen to travel much further to reach good fishing grounds. The proximity of Kandholhudhoo to fishing areas allowed for same-day trips, but the new distance required longer periods at sea. Fishermen spent more time away from their families due to the increased travel distances, leading to challenges to families' support systems. Some residents opted to move to the capital city, Malé, as their traditional livelihoods were no longer viable. Lack of consultation between community councils, island leaders, and government agencies, including the International Federation, resulted in a lack of understanding of the community's specific needs and livelihood practices.

## Environmental Degradation

The development of Dhuvaafaru involved the removal of many trees and deep-rooted vegetation, transforming the landscape from a natural state to a more developed one. However, the process of relocating a significant population to the island necessitated the removal of trees and vegetation. The relocation and construction did not include a comprehensive plan to restore greenery on the island. The removal of trees and the absence of a restoration strategy contributed to the island's transformation into what was described as a "desert." The absence of greenery led to higher temperatures on the island, making living conditions challenging. The lack of shade and green cover contributed to discomfort for residents within their houses.<sup>33</sup>

## Degradation Dependence on Government Handouts

The provision of free basic services to internally displaced persons (IDPs), such as food, electricity, and running water, inadvertently created a situation where people became accustomed to relying on these handouts. The absence of a clear timeline or plan for terminating the provision of free services prolonged the stay of IDPs in temporary housing. The uncertainty about when these services would end might have contributed to a sense of complacency among the displaced population.

## Lessons Learned

The "Resilient Island" approach advocated by the Maldivian government aligns with the policy directive of sustainable and disaster-resilient development. This approach involves creating communities that are better prepared for natural disasters and have safe places to go in times of emergencies.

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<sup>33</sup> Hisan Hassan Interview, November 13, 2023

- ❖ **Community Involvement:** The case study highlights the significance of involving communities in the construction process and maintaining continuous communication. Engaging with the affected community throughout the project helps in addressing their specific needs and concerns.
- ❖ **Addressing Economic and Social Disruptions:** Efforts to address the economic and social disruptions caused by relocation are crucial. Tailoring solutions to meet the unique needs of different communities, such as the lottery system used for house allocation on Dhuvaafaru, can foster social cohesion and mitigate tensions.



Kandholhudhoo after the tsunami. Photo: mohamed imad/Flickr

- ❖ **Lessons on Resilience and Adaptability:** The relocation of Kandholhudhoo to Dhuvaafaru serves as a testament to the resilience and adaptability of communities in the face of disaster. It provides valuable lessons for future disaster response and recovery efforts.
- ❖ **Comprehensive Planning:** Comprehensive planning, considering cultural, social, and economic aspects, is essential for the success of relocation projects. Factors like community livelihoods, cultural practices, and family structures need to be taken into account.
- ❖ **Disaster Management Agency:** Establishing a dedicated disaster management agency to oversee relocations and disaster response contributes to better preparedness and response capabilities at the national level.

- ❖ **National-Level Policies:** The need for national-level policies for future relocations is highlighted. These policies should consider the unique characteristics of each island, including cultural practices, livelihoods, and vulnerabilities.

## Gardi Sugdub, Panama

### Who Are the Guna People?

The Guna people, alternatively referred to as the Kuna or Guna Yala, are an indigenous ethnic community, with origins in Colombia and Panama. The majority of the Guna people reside in three politically autonomous reservations in Panama.<sup>34</sup> The Guna people are celebrated for their traditional way of life, encompassing activities such as fishing, agriculture, and the creation of intricate and colorful handicrafts.<sup>35</sup> The Guna people have established their own system of self-governance within the Guna Yala region and have maintained a strong sense of identity and cultural preservation for over 200 years. As of today, 49 Guna communities exist in the region, with each community governed by its distinct political structure. The Guna people have a long history of actively advocating for indigenous and land rights in Panama and have achieved success in upholding a measure of autonomy within their traditional territories.<sup>36</sup>



Kunas aux San Blas Panama. Photo:Thierry Leclerc 60, CC BY-ND 2.0.

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<sup>34</sup> Atlas of Humanity. (n.d.). Guna People of Panama and Colombia. Retrieved from Atlas of Humanity website: <https://www.atlasofhumanity.org/guna>

<sup>35</sup> Tourism Panama. (n.d.). Guna. Retrieved November 8, 2023, from [www.tourismpanama.com/things-to-do/indigenous-communities/guna/](https://www.tourismpanama.com/things-to-do/indigenous-communities/guna/)

<sup>36</sup> San Blas Dreams. (2018). San Blas Panama | The guna region History. Retrieved from San Blas Dreams website: <https://www.sanblasdreams.com/the-guna-region--history.html>

## Gardi Sugdub & Climate Threats



Gardi Sugdub, Panama, 2019 Photo: Michael Adams/Flickr (Creative Commons Licence CC BY-NC)

Gardi Sugdub, a small and densely populated island with a population of approximately 1,300 individuals, is situated in close proximity to Panama's northern coast.<sup>37</sup> This island is an integral part of the Guna Yala autonomous region and has served as the ancestral homeland of the Guna Indigenous community for more than a century.<sup>38</sup> Historically, Gardi Sugdub provided sanctuary from mainland mosquito-borne diseases and colonial constraints.<sup>39</sup> However, at present, the island is confronting dire climate threats and challenges. Like many islands around the world, Gardi Sugdub is facing rising sea levels, flooding, erosion, overcrowding, inadequate sanitation systems, and much more.<sup>40</sup> All these challenges are impacting the fundamental rights to suitable housing, healthcare, education, and preservation of their cultural heritage.<sup>41</sup>

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<sup>37</sup> Human Rights Watch. (2023, July 31). Panama: Indigenous Community Needs Further Support to Relocate Government Delays the Move Despite Sea Level Rise, Overcrowding. Retrieved from Human Rights Watch website: <https://www.hrw.org/news/2023/07/31/panama-indigenous-community-needs-further-support-relocate>

<sup>38</sup> San Blas Dreams. (2018). San Blas Panama | The guna region History. Retrieved from San Blas Dreams website: <https://www.sanblasdreams.com/the-guna-region--history.html>

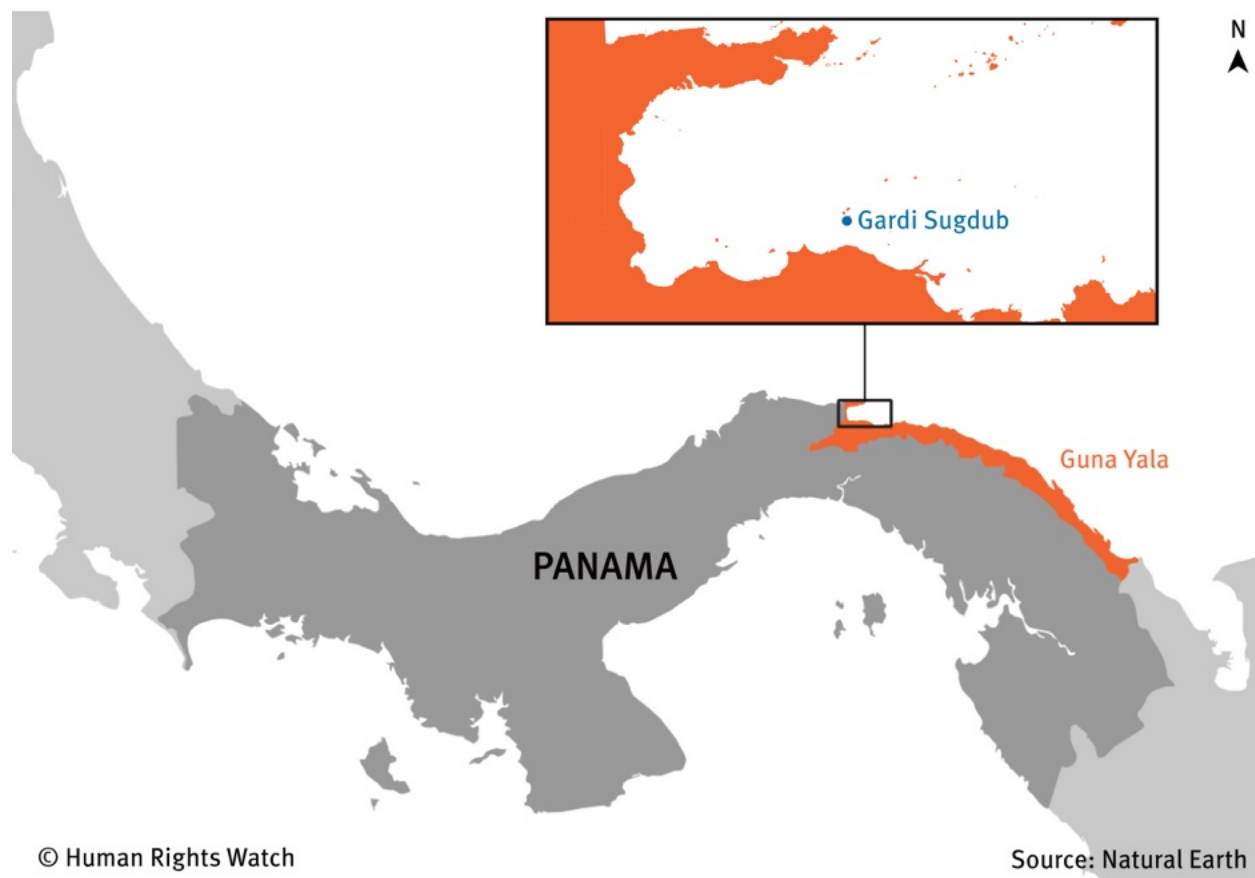
<sup>39</sup> Bower, E. (2023). "The Sea is Eating the Land Below Our Homes." Human Rights Watch. Retrieved from <https://www.hrw.org/report/2023/07/31/sea-eating-land-below-our-homes/indigenous-community-facing-lack-space-and-rising>

<sup>40</sup> Ibid

<sup>41</sup> Human Rights Watch. (2023, July 31). Panama: Indigenous Community Needs Further Support to Relocate Government Delays the Move Despite Sea Level Rise, Overcrowding. Retrieved from Human Rights Watch website: <https://www.hrw.org/news/2023/07/31/panama-indigenous-community-needs-further-support-relocate>

The climate-induced threats the people of Gardi Sugdub are currently experiencing are the following:<sup>42</sup>

- ❖ Panama's Ministry of Environment confirmed that there will be an estimated sea level rise between 0.27 meters in the Caribbean, and 0.19 meters in the Pacific, making the entirety of the Guna Yala region at risk.<sup>43</sup>
- ❖ A combination of rising sea levels, the intensification of extreme weather events, saline intrusion, ocean acidification, and coastal erosion has led to, and will continue to magnify, land loss, particularly on smaller islands where Guna communities are situated.<sup>44</sup>



<sup>42</sup> Bower, E. (2023). "The Sea is Eating the Land Below Our Homes." Human Rights Watch. Retrieved from <https://www.hrw.org/report/2023/07/31/sea-eating-land-below-our-homes/indigenous-community-facing-lack-space-and-rising>

<sup>43</sup> Panama Ministry of Environment . (2023, January 27). Panamá presenta resultados de estudio sobre proyección de ascenso del nivel del mar - MiAmbiente. Retrieved November 11, 2023, from <https://www.miambiente.gob.pa/panama-presenta-resultados-de-estudio-sobre-proyeccion-de-ascenso-del-nivel-del-mar/>

<sup>44</sup> Intergovernmental Panel on Climate Change (IPCC). (n.d.). FAQ 4: How are people adapting to the effects of climate change and what are the known limits to adaptation? Retrieved November 8, 2023, from [www.ipcc.ch website: https://www.ipcc.ch/report/ar6/wg2/about/frequently-asked-questions/keyfaq4](https://www.ipcc.ch/report/ar6/wg2/about/frequently-asked-questions/keyfaq4)

- ❖ Sanitation challenges on the island include the absence of a septic or sewage system due to limited space. As a result, using toilets located on piers over the oceans can expose children to floating feces, and during storms and floods, accessing these facilities can be perilous.<sup>45</sup>
- ❖ Water supply on Gardi Sugdub is unreliable. The island relies on an underwater pipe connecting to a mainland source, but its capacity and pressure vary with the seasons. In cases of water shortages, pipe damage, or saltwater intrusion, families must undertake a two-hour round trip by boat to the Gardi river, which can be particularly challenging during adverse weather or strong currents.<sup>46</sup>
- ❖ Due to the diminishing amount of land, everyone on the island lives in close living conditions and has limited space for physical activity. These factors, combined with difficulties in accessing health facilities, collectively contribute to an environment where the spread of diseases and the prevalence of health problems are elevated, posing significant health risks to the people of Gardi Sugdub.<sup>47</sup>



Photo: 2023 Pamela Vacacurva for Human Rights Watch, CC BY-NC-ND 3.0

<sup>45</sup> Bower, E. (2023). "The Sea is Eating the Land Below Our Homes." Human Rights Watch. Retrieved from <https://www.hrw.org/report/2023/07/31/sea-eating-land-below-our-homes/indigenous-community-facing-lack-space-and-rising>

<sup>46</sup> Ibid

<sup>47</sup> Bower, E. (2023). "The Sea is Eating the Land Below Our Homes." Human Rights Watch. Retrieved from <https://www.hrw.org/report/2023/07/31/sea-eating-land-below-our-homes/indigenous-community-facing-lack-space-and-rising>

- ❖ Overcrowding is a result of a growing population on diminishing land, which threatens adequate standards of living.<sup>48</sup>
- ❖ There isn't proper access to education on the island due to the lack of space. In order to address classroom limitations, the school utilizes a dual-phase schedule: younger grades gather in the mornings, and older grades assemble in the afternoons. This arrangement results in a constrained time frame for all students to engage in academic activities. Classes are also canceled often due to severe weather and flooding<sup>49</sup>
- ❖ Fishing, which is a vital part of the Guna people's culture and livelihood, is becoming increasingly difficult due to the vanishing coral reefs that previously fostered an abundant ecosystem of fish, lobster, sardines, and more.<sup>50</sup>

The Guna people have been actively involved in climate adaptation and mitigation efforts, within their communities and through collaboration with the Panamanian government. They continue to lead efforts to preserve their traditional knowledge and practices, which contribute to climate resilience.

## Relocation to the Mainland

The relocation planning was initiated by the Guna people in the 1990s due to sea level rise concerns, but formally began in partnership with the government in 2010. Erica Bower, a lead researcher on Climate Displacement in the Environment and Human Rights Division at Human Rights Watch and subject matter expert, states that the community of Gardi Sugdub have "an amazing community of biologists, sociologists, and activists [who have been] concerned about their future."<sup>51</sup> The chosen mainland site was selected for its availability, safer elevation, and proximity to services. Arianne Orillac, a Collective Climate and Impact Officer at the Health Equity Collective, joined lead researcher Erica Bower from Human Rights Watch for interviews on Gardi Sugdub. In an interview with Arianne Orillac, she states that some community members donated land they owned and used for crops on the mainland to the relocation project.<sup>52</sup> Erica Bower states that Panama does not have a formal governance framework or national relocation policy.<sup>53</sup> Panama doesn't have "a trust fund with money that they can apply for instead, [funding is] ad hoc."<sup>54</sup> The government decided to support Gardi

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<sup>48</sup> Bower, E. (2023). "The Sea is Eating the Land Below Our Homes." Human Rights Watch. Retrieved from <https://www.hrw.org/report/2023/07/31/sea-eating-land-below-our-homes/indigenous-community-facing-lack-space-and-rising>

<sup>49</sup> Ibid

<sup>50</sup> Ibid

<sup>51</sup> Erica Bower, Interview. November 9th, 2023

<sup>52</sup> Arianne Orillac, Interview. November 1st, 2023

<sup>53</sup> Erica Bower, Interview. November 9th, 2023

<sup>54</sup> Ibid



New site under construction. Photo: Enrique Linares. Human Rights Watch, CC BY-NC-ND 3.0  
 Sugdub because they had a lot of connections and was also being supported by the Inter American Development Bank (IDB) with technical assistance.<sup>55</sup>

The funding for the project was a mixture of government funding allocated across several ministries and money raised from the community itself. Arianne Orillac states that the community initially wanted to manage the entirety of the relocation themselves from funding to construction, but they didn't have enough funds to do so, which forced them to rely on the government.<sup>56</sup> The Ministry of Housing committed to constructing 300 homes, through a government housing program that builds low-cost homes, called "Techos de Esperanza," providing services at the relocation site in 2017, with construction beginning in 2019. However, homes were not properly insulated. Arianne Orillac states that the community was concerned about the heat because there's no vegetation around the houses and had much preferred their homes be made of sticks for ventilation.<sup>57</sup> Culturally, the Guna people sleep in hammocks but there are no hammock hooks in the houses.

Two parallel projects also emerged at the same time: a school and a hospital. They were constructed near the new community site but also remain incomplete to this day. The hospital

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<sup>55</sup> Erica Bower, Interview. November 9th, 2023

<sup>56</sup> Arianne Orillac, Interview. November 1st, 2023

<sup>57</sup> Ibid

has been abandoned, and the school still lacks basic infrastructure and educational resources.<sup>58</sup> Despite initial delays in fulfilling this pledge, the President of Panama had frequently assured that the new site would be prepared by September 25, 2023. However, the anticipated timeline was extended to February 29, 2024,<sup>59</sup> due to the COVID-19 pandemic and lockdowns which caused construction delays.



While most community members express a desire to move, a minority remain undecided or intend to stay due to their recent inheritance of homes and a deep attachment to the land. The Panamanian government assumes that everyone will relocate, but the community plans to maintain a connection between the island and the mainland. Their hope is to create two connected but separately functioning communities. The government's take on the relocation process does not include this idea of two conjoined communities. However, the community of Gardi Sugdub plans to adapt their new homes. Arianne states that the community plans to build patios, expand their homes where they can, build a cultural museum, assembly hall, and

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<sup>58</sup> Bower, E. (2023). "The Sea is Eating the Land Below Our Homes." Human Rights Watch. Retrieved from <https://www.hrw.org/report/2023/07/31/sea-eating-land-below-our-homes/indigenous-community-facing-lack-space-and-rising>

<sup>59</sup> Human Rights Watch. (2023, July 31). Panama: Indigenous Community Needs Further Support to Relocate Government Delays the Move Despite Sea Level Rise, Overcrowding. Retrieved from Human Rights Watch website: <https://www.hrw.org/news/2023/07/31/panama-indigenous-community-needs-further-support-relocate>

ceremonial hall.<sup>60</sup> However, Erica Bower states, “not every family will have the resources that are required to expand or re-adapt homes [...] there's some equity issues there.”<sup>61</sup> These



Deteriorating hospital building. Photos: Enrique Linares & Erica Bower/Human Rights Watch, CC BY-NC-ND 3.0



Cultural and historical museums on Gardi Sugdub. Photos: Erica Bower/Human Rights Watch, CC BY-NC-ND 3.0

constructions will help the community adapt to their new way of life, while maintaining their cultural identity. The challenges faced by Gardi Sugdub underscore the complexities of planned relocations. It is important to evaluate approaches that safeguard human rights in the face of

## Challenges

The relocation of Gardi Sugdub community members face a series of challenges, primarily centered around: delays and uncertainties, fear of the relocation itself, lack of community involvement in government decision making, lack of environmental risk analysis, lack of water supplies in new community, the introduction of diseases, and preserving traditional knowledge and livelihoods.

<sup>60</sup> Arianne Orillac, Interview. November 1st, 2023

<sup>61</sup> Erica Bower, Interview. November 9th, 2023

- ❖ **Delays & Uncertainties:** Initially promised for September 25, 2023 by President Laurentino Cortizo, the new site's readiness has been repeatedly postponed, with the most recent date set for February 2024. This pattern of unfulfilled promises extends to previous commitments, including a partially constructed and now abandoned hospital, slow progress on building a school, and a pledge for 300 houses, all initiated but left incomplete. The lack of a comprehensive explanation for these delays has left community members seeking greater transparency, particularly regarding timelines and budgetary changes.<sup>62</sup>
- ❖ **Fear Surrounding Relocation:** Notably, not all members of the Gardi Sugdub community are eager to relocate. Some wish to remain on the island, necessitating continued access to basic services, including healthcare, education, and electricity. Others, for livelihood and cultural reasons, plan to commute regularly between the island and the mainland, highlighting the need for improved transportation options.
- ❖ **Lack of Community Involvement in Decision-Making:** Despite community leadership, there is a perception that government officials have not consistently integrated community views meaningfully into the relocation decision-making process. While local-level decisions involve consultation and meaningful participation, external meetings with government officials are seen as more information than genuinely inclusive.<sup>63</sup> Additionally, there is a call for the integration of local and indigenous perspectives at all stages of the relocation planning process.
- ❖ **Lack of Environmental Risk Assessments:** Environmental concerns add another layer of complexity. While an environmental impact assessment was conducted in 2017,



<sup>63</sup> Bower, E. (2023). "The Sea is Eating the Land Below Our Homes." Human Rights Watch. Retrieved from <https://www.hrw.org/report/2023/07/31/sea-eating-land-below-our-homes/indigenous-community-facing-lack-space-and-rising>

it lacked a comprehensive evaluation of hazard risks at the new site and was not based on original fieldwork. Visibly, there is evidence of flooding, erosion, and small landslides.<sup>64</sup> Community members express frustration that risks were an afterthought rather than an integral part of the relocation planning process, particularly for planned relocations aimed at protecting people and supporting climate adaptation.

- ❖ **Water Supply:** Water supply and sustainability are also significant concerns for the community. The new site reportedly lacks an adequate water supply for drinking, sanitation, and subsistence agriculture.<sup>65</sup> Although there is one existing well and plans for the construction of two others, the timeline remains uncertain.<sup>66</sup> A recent evaluation from the community indicates that the groundwater supply will be limited to one to two years, creating fears around the long-term sustainability of the new site.
- ❖ **The Introduction of Diseases:** While the relocation is expected to address some health concerns, such as overcrowded living conditions and limited space for physical activity, it also introduces new challenges. The higher risk of malaria, given the prevalence of carrier mosquitoes on the mainland, is a notable concern.<sup>67</sup> The new school is generally seen as an improvement, offering better education and mitigating flooding concerns. However, the school lacks a water supply, waste disposal system, and plans for providing food for students.<sup>68</sup> There is also a shortage of teachers for the anticipated new high school programs, raising additional logistical challenges.<sup>69</sup>
- ❖ **Preserving Traditional Knowledge and Livelihoods:** Beyond these practical concerns, the relocation entails fundamental changes to subsistence ways of life. Fisherfolk anticipate longer commutes and increased fuel costs to access traditional fishing grounds, posing economic challenges.<sup>70</sup> Preserving Guna culture and language is recognized as important, with the new school including a dedicated classroom for traditional knowledge. However, proactive planning is vital to mitigate potential cultural losses among the broader changes. Erica Bower believes it is difficult to know about long-term success and sustainability between the new site and the existing Gardi Sugdub. There is uncertainty on whether the Guna people will even like their new homes, “which they fought for, for so long.”<sup>71</sup>

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<sup>64</sup> Bower, E. (2023). “The Sea is Eating the Land Below Our Homes.” Human Rights Watch. Retrieved from <https://www.hrw.org/report/2023/07/31/sea-eating-land-below-our-homes/indigenous-community-facing-lack-space-and-rising>

<sup>65</sup> Ibid

<sup>66</sup> Ibid

<sup>67</sup> Ibid

<sup>68</sup> Ibid

<sup>69</sup> Ibid

<sup>70</sup> Ibid

<sup>71</sup> Erica Bower, Interview. November 9th, 2023

## Lessons Learned

The success of the relocation of the Guna people from Gardi Sugdub to the mainland remains uncertain, creating a complex narrative of anticipation and challenges. As the community has yet to make the move, questions loom over the functionality of the new homes and community infrastructure. The adaptation of livelihoods and preservation of cultural identity in this novel setting further add layers of uncertainty to the long-term success of the relocation. The variety of factors make it difficult to gauge the ultimate success of this significant transition. However, this case study highlights several best practices that can inform future initiatives globally and specifically in regions like the Maldives.

- ❖ **Community Engagement and Government Transparency:** Transparent communication, thorough planning, and community engagement are crucial elements for successful relocation efforts. The Guna people's active involvement in decision-making, combined with their unique system of self-governance, underscores the significance of integrating community lead and local-rooted responses to relocation. Erica Bower states that, "all evidence suggests that when relocations are initiated by community members themselves, better outcomes ensue. So it's important that governments don't take a top down approach and assume they know."<sup>72</sup>
- ❖ **Risk Analysis and Evaluation Prior to Relocation:** Addressing environmental concerns and conducting comprehensive hazard risk evaluations during the planning phase. This ensures the long-term sustainability and resilience of new relocation sites, especially in the face of climate-induced threats such as rising sea levels and extreme weather events.
- ❖ **Equitable and Inclusive Practices:** The challenges experienced by Gardi Sugdub also highlight the need for equitable and inclusive relocation practices. Economic disparities and concerns about cultural preservation underscore the importance of considering the specific needs of each community, especially regarding housing design and cultural identity. Erica Bower suggests creating government structures that allow communities to approach them and allowing the community to define "what is habitable" and when that habitability has been crossed.<sup>73</sup> This allows the community to choose and lead the relocation rather than the top down.<sup>74</sup>
- ❖ **Community Led Responses to Relocation:** The community's initial intention to manage the relocation independently sheds light on the necessity for flexible funding mechanisms. Future relocation initiatives should explore funding models that empower communities and allow them greater control over the process while ensuring adequate financial support for successful implementation.

The Guna people's journey offers valuable insights for shaping future relocation efforts. By prioritizing community engagement, environmental considerations, cultural preservation, and equitable resource allocation, policymakers and stakeholders can enhance the effectiveness and sustainability of relocation initiatives, both globally and in areas facing similar challenges.

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<sup>72</sup> Erica Bower, Interview. November 9th, 2023

<sup>73</sup> Ibid

<sup>74</sup> Ibid

## Newtok, Alaska

### Who are the Yup'ik people?

The Yup'ik people, residing in the western and southwestern parts of Alaska in the United States, form one of the largest Eskimo ethnic groups with a profound cultural heritage.<sup>75</sup> Traditionally, they embraced a subsistence lifestyle, relying on hunting, fishing, and gathering for sustenance.<sup>76</sup> Proficient hunters, the Yup'ik pursue a diverse array of game, including moose, caribou, whale, walrus, seal, and sea lions. They harvest salmon and other fish from rivers like the Yukon, Kuskokwim, and Nushagak. Complementing their diet, they gather bird eggs, berries, and roots throughout the year.<sup>77</sup> Yup'ik communities, often situated in small villages along the Alaskan coast and rivers, embody a way of life intricately linked to the natural environment. Traditional activities involve fishing for salmon, hunting marine mammals, and gathering berries, showcasing a profound connection to the land and sea.<sup>78</sup> The Yup'ik people, with their unique Yup'ik language belonging to the Eskimo-Aleut language family, navigate a balance between traditional practices and adapting to modern life. Despite facing challenges such as the impact of climate change, they tenaciously uphold and celebrate their cultural identity.<sup>79</sup> A notable feature of Yup'ik culture is their extensive history of relocation and nomadic way of life. Families travel together in groups, following food sources across different locations during spring, summer, and fall.<sup>80</sup> This nomadic lifestyle reflects their enduring connection to the land and resourceful adaptation to the seasonal availability of



Nunivak Cup'ig mother and child Photo: Edward S. Curtis/Wikipedia.

<sup>75</sup> New World Encyclopedia. (2019). Yupik. Retrieved from New World Encyclopedia website: <https://www.newworldencyclopedia.org/entry/Yupik>

<sup>76</sup> Alaskan Nature. (n.d.). Alaskan People: Alaska Yupik Tribe. Retrieved November 12, 2023, from [www.alaskannature.com website: https://www.alaskannature.com/yupik.htm](https://www.alaskannature.com/yupik.htm)

<sup>77</sup> Ibid

<sup>78</sup> New World Encyclopedia. (2019). Yupik. Retrieved from New World Encyclopedia website: <https://www.newworldencyclopedia.org/entry/Yupik>

<sup>79</sup> Ibid

<sup>80</sup> Ibid



Photo: Stanley Tom  
food.

## The Newtok Community & Climate Threats

Situated on the edge of the Ninglick River, Newtok, a community of about 400 people within the ancestral lands of the Yup'ik people in subarctic Alaska, faced destabilization due to climate change.<sup>81</sup> As global temperatures rise, the Newtok and other Alaskan eskimo tribes are at risk as the permafrost on which they live melts. Permafrost is a type of permanently frozen soil that remains frozen for at least two consecutive years.<sup>82</sup> This permafrost holds an immense amount of carbon, totaling 1,400 billion metric tons, surpassing the carbon released by human activities like fossil fuel combustion. Much of this permafrost has been frozen for several thousand to hundreds of thousands of years. Nevertheless, with climate warming, the thawing of permafrost poses a significant risk as it could release substantial amounts of carbon dioxide and methane into the atmosphere, both potent greenhouse gasses. For Newtok, the permafrost is situated near rivers and the coast. Thawing will create floods and landslides, as homes are built on top of the permafrost.<sup>83</sup>

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<sup>81</sup> Beaumont, H. (2022, December 15). Alaska Native community relocates as climate crisis ravages homes. Retrieved November 12, 2023, from [www.aljazeera.com website: https://www.aljazeera.com/news/2022/12/15/alaska-native-community-relocates-as-climate-crisis-ravages-homes](https://www.aljazeera.com/news/2022/12/15/alaska-native-community-relocates-as-climate-crisis-ravages-homes)

<sup>82</sup> United States Geological Survey (USGS). (2022, July 19). A disappearing act in Alaska . Retrieved from [www.usgs.gov website: https://www.usgs.gov/news/featured-story/a-disappearing-act-alaska#:~:text=Underneath%20much%20of%20Alaska](https://www.usgs.gov/news/featured-story/a-disappearing-act-alaska#:~:text=Underneath%20much%20of%20Alaska)

<sup>83</sup> Ibid



Photo: Romy Cadiente

The Newtok are also experiencing the following issues as the permafrost melts:

- ❖ The community, situated near the Pacific Ocean and the Ninglick River, is susceptible to erosion as the thawing permafrost contributes to the loss of land. This erosion jeopardizes homes, facilities, and essential infrastructure.<sup>84</sup>
- ❖ Buildings, roads, and other structures in Newtok are at risk of damage due to the shifting and sinking of the ground caused by permafrost thaw. This poses a significant challenge to the community's sustainability.<sup>85</sup>
- ❖ Newtok faces significant infrastructure challenges, lacking running water and sewer systems. Homes use honey buckets for sanitation, and the power plant is in poor condition. The absence of laundry facilities further adds to the community's difficulties.
- ❖ The community has 65 houses accommodating almost 400 people, resulting in over six people per house. These single-room houses lack running water and sewer, emphasizing the cramped living conditions.<sup>86</sup>
- ❖ Flooding contributes to waterlogged homes, creating a breeding ground for black mold. The resultant high incidence of influenza and respiratory ailments is directly linked to exposure to black mold, emphasizing the serious health consequences faced by the community.<sup>87</sup>

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<sup>84</sup> Beaumont, H. (2022, December 15). Alaska Native community relocates as climate crisis ravages homes. Retrieved November 12, 2023, from [www.aljazeera.com](https://www.aljazeera.com/news/2022/12/15/alaska-native-community-relocates-as-climate-crisis-ravages-homes) website: <https://www.aljazeera.com/news/2022/12/15/alaska-native-community-relocates-as-climate-crisis-ravages-homes>

<sup>85</sup> Ibid

<sup>86</sup> Simonelli, I. S. (2018, December 1). Newtok to Mertarvik. Retrieved November 12, 2023, from Alaska Business Magazine website: <https://www.akbizmag.com/industry/construction/newtok-to-mertarvik/>

<sup>87</sup> Ibid

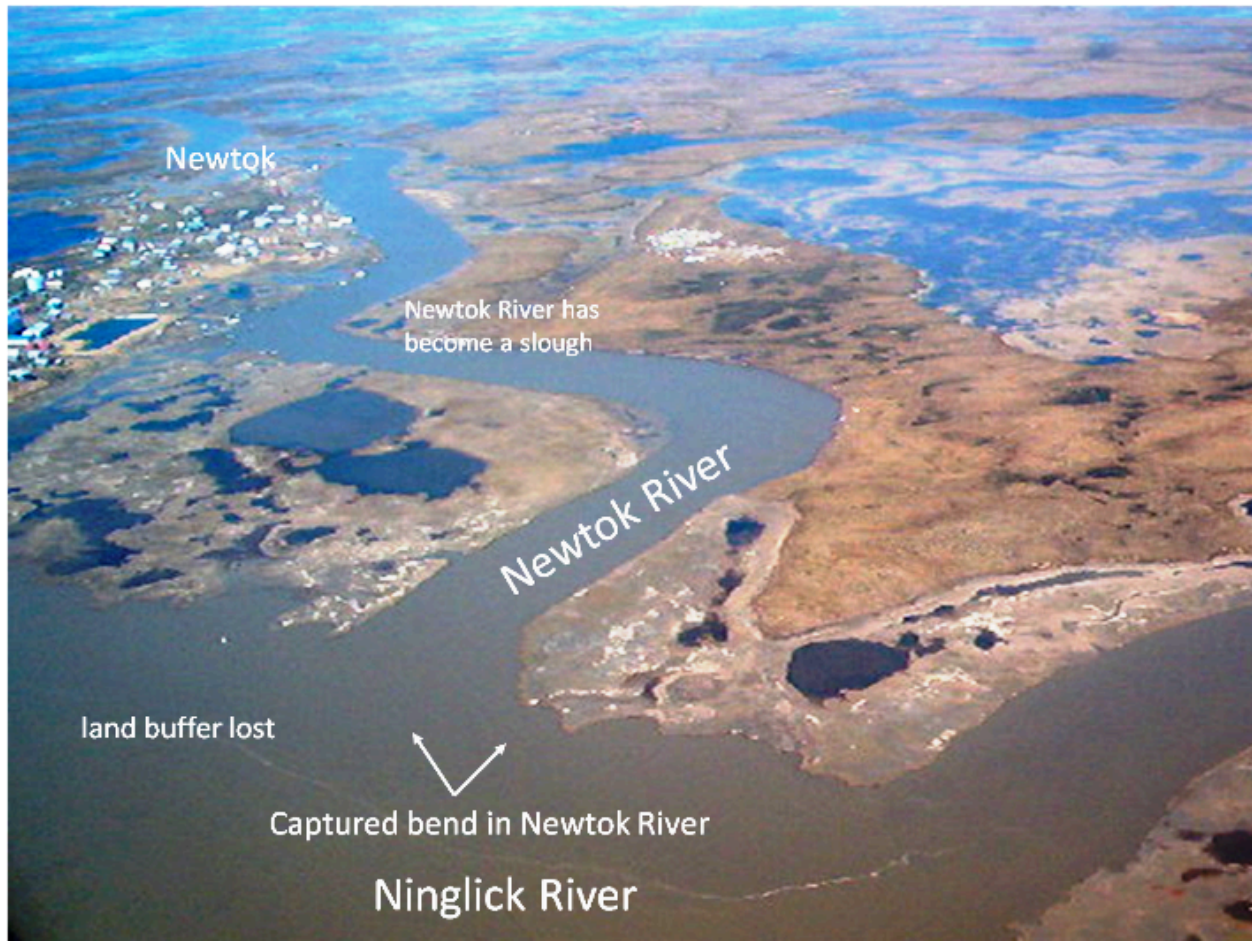


Photo: U.S. Army Corps of Engineers

These threats prompted the Newtok community to pioneer a collective relocation effort, distinguishing it as one of the first U.S. communities to respond to climate-induced threats.<sup>88</sup> The relocation formally began in October of 2019, although the community had been planning for decades. Given the fragility and dangers of the Newtok buildings, the community constructed new homes in Mertarvik.<sup>89</sup> About one-third of Newtok's population has already moved to Mertarvik, located on Nelson Island, strategically chosen for its resistance to erosion.<sup>90</sup>

<sup>88</sup> Simonelli, I. S. (2018, December 1). Newtok to Mertarvik. Retrieved November 12, 2023, from Alaska Business Magazine website: <https://www.akbizmag.com/industry/construction/newtok-to-mertarvik/>

<sup>89</sup> Beaumont, H. (2022, December 15). Alaska Native community relocates as climate crisis ravages homes. Retrieved November 12, 2023, from www.aljazeera.com website: <https://www.aljazeera.com/news/2022/12/15/alaska-native-community-relocates-as-climate-crisis-ravages-homes>

<sup>90</sup> Welch, C. (2019, October 22). For this Alaska village, time has finally run out. Retrieved November 12, 2023, from National Geographic website: <https://www.nationalgeographic.com/science/article/climate-change-finally-caught-up-to-this-alaska-village>



Newtok Flood - September 22, 2005. Photo: U.S. Army Corps of Engineers



Newtok Flood - September 22, 2005. Photo: Stanley Tom

## Relocation to Mertarvik, Alaska

As Indigenous communities lead the way in demonstrating effective community planning, their locally-led, community-scale relocation not only addresses climate threats but also safeguards cultural ties, illustrating the intricate balance between preserving tradition and adapting to environmental challenges. For the Yup'ik people of Newtok, their relocation process began with the formation of the Newtok Planning Group in May of 2006. During this time the community partnered with representatives from both state and federal agencies, as well as NGOs to coordinate the relocation of the community to Mertarvik, located on Nelson Island.<sup>91</sup> The Alaska Department of Environmental Conservation's Village Safe Water Program (VSW) also initiated a Community Layout Planning (CLP) for Newtok. The community was inspired by architect Douglas Cardinal's work in designing an indigenous community in Quebec.<sup>92</sup> Community members of Newtok engaged in a variety of meetings to develop the new design and favored a concept involving centrally-located community buildings with housing surrounding a core area.<sup>93</sup>

The layout is situated with community facilities centrally, and housing placed uphill near the southeast and southwest corners. The layout informed the placement of the first water well in Mertarvik, emphasizing cost-effective water and sanitary sewer systems. It also includes an evacuation center that later transforms into a community center.<sup>94</sup> The community layout plan took a few key considerations, which included utilizing naturally flat terrain to reduce building costs, integrated a mix of single-family and multi-family residences with communal structures such as tribal offices, a community center, and a clinic, arranged in a circular layout at the heart of the community.<sup>95</sup> This strategic planning aims to address the community's specific needs and optimize the use of resources for long-term sustainability.

In 2009, there was a new decision to relocate the Newtok community closer to the water. This was based on several factors such as a future runway, geotechnical information, the future evacuation center's location, and the preliminary design of the access road from the barge landing to the evacuation center.<sup>96</sup> The final layout incorporated additional engineering analysis and funding considerations, with community input shaping the arrangement of homes and infrastructure at the new village site. This layout was approved by the Newtok Village Council in May 2017, and it prioritized: technical feasibility, cost-effectiveness, affordability of

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<sup>91</sup> The Alaska Department of Commerce, Community and Economic Development. (2023, March 1). Newtok Planning Group, Planning & Land Management, Division of Community and Regional Affairs. Retrieved November 12, 2023, from [www.commerce.alaska.gov](https://www.commerce.alaska.gov/web/dcra/planninglandmanagement/newtokplanninggroup.aspx) website: <https://www.commerce.alaska.gov/web/dcra/planninglandmanagement/newtokplanninggroup.aspx>

<sup>92</sup> Cardinal, D. (n.d.). Oujé-Bougoumou Village. Retrieved November 13, 2023, from [www.djcarchitect.com](https://www.djcarchitect.com/work/masterplans/ouje-bougoumou-village) website: <https://www.djcarchitect.com/work/masterplans/ouje-bougoumou-village>

<sup>93</sup> Cardinal, D. (n.d.). Oujé-Bougoumou Village. Retrieved November 13, 2023, from [www.djcarchitect.com](https://www.djcarchitect.com/work/masterplans/ouje-bougoumou-village) website: <https://www.djcarchitect.com/work/masterplans/ouje-bougoumou-village>

<sup>94</sup> Ibid

<sup>95</sup> Ibid

<sup>96</sup> The Alaska Department of Commerce, Community and Economic Development. (2015). Community Layout Planning, Newtok, Planning & Land Management, Division of Community and Regional Affairs. Retrieved November 13, 2023, from [Alaska.gov](https://www.commerce.alaska.gov/web/dcra/PlanningLandManagement/NewtokPlanningGroup/CommunityLayoutPlanning.aspx) website: <https://www.commerce.alaska.gov/web/dcra/PlanningLandManagement/NewtokPlanningGroup/CommunityLayoutPlanning.aspx>



Mertarvik, 2019. Photo: Ukpeagvik Iñupiat Corporation (UIC)

operations, integration of subsistence activities and traditional values, and adherence to an innovative approach to relocation. Planning requirements encompassed centralizing community facilities, accommodating alternative energy sources, placing a water treatment plant near the power plant for waste heat utilization, allowing for 63 single-family housing units with expansion potential, and ensuring access to the barge landing, airport, gravel source, and fish camp.<sup>97</sup>

While enhancing basic utilities is a crucial aspect of the relocation process for improved quality of life, the decision on the new location for the Newtok community was significantly influenced by their food sources and eating habits. An early subsistence map guided the relocation, considering the proximity of resources vital to the community's traditional way of life.<sup>98</sup> The new village site offers closer access to muskox hunting, increased berry picking opportunities, and improved access to inland water resources like pike, black fish, white fish, and salmon.<sup>99</sup> This choice aligns with Newtok's traditional seasonal rotation of tracking subsistence resources. Additionally, the Mertarvik site, boasts a year-round natural spring from an island aquifer, providing a vast and unfiltered freshwater supply. This abundant water source is crucial not only for sustaining the community's livelihood but also addressing health concerns, making it a valuable asset for Mertarvik's long-term viability.<sup>100</sup>

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<sup>97</sup> The Alaska Department of Commerce, Community and Economic Development. (2015). Community Layout Planning, Newtok, Planning & Land Management, Division of Community and Regional Affairs. Retrieved November 13, 2023, from Alaska.gov website: <https://www.commerce.alaska.gov/web/dcra/PlanningLandManagement/NewtokPlanningGroup/CommunityLayoutPlanning.aspx>

<sup>98</sup> Simonelli, I. S. (2018, December 1). Newtok to Mertarvik. Retrieved November 12, 2023, from Alaska Business Magazine website: <https://www.akbizmag.com/industry/construction/newtok-to-mertarvik/>

<sup>99</sup> Ibid

<sup>100</sup> Ibid



Mertarvik. Photo: Lemay Engineering; Labels: Sally Russell Cox

## Challenges

In Alaska, the battle against climate-induced challenges is amplified by a lack of official disaster recognition for gradual impacts. FEMA's focus on immediate events, coupled with complex grant application processes, hinders communities from obtaining essential funding. The result is an urgent need for streamlined support to address the ongoing vulnerabilities and infrastructure demands faced by at-risk communities in the region.

- ❖ **Funding Challenges:** Over the years, the State of Alaska has played a vital role, supporting Newtok through legislative initiatives. However, Casey Brayton, a Marine Geology and Geophysics PhD student at Columbia University, states that the most pressing challenge to climate-induced relocation in Alaska is funding. Addressing infrastructure challenges faced by communities in Alaska, stems from the fact that climate change is not officially acknowledged as a disaster, therefore making it difficult to fund under federal guidelines. This critical issue impacts the funding process, predominantly facilitated by organizations like FEMA, which primarily respond to specific events like storms or typhoons.<sup>101</sup>
- ❖ **Limited Scope of FEMA:** FEMA's scope is limited, focusing on immediate infrastructure damage rather than the gradual impacts of climate change, such as erosion, tidal flooding, and the ongoing threat of permafrost thaw. Casey states that a prevalent issue in Alaska, leads to infrastructure damage, including sinking boardwalks and shifting houses.<sup>102</sup> The absence of a recognition of these continuous events as disasters means there is no corresponding support from FEMA. Communities facing the necessity to

<sup>101</sup> The U.S. Federal Emergency Management Agency (FEMA). (2022, September 29). Flood Mitigation Assistance Grant Program. Retrieved November 18, 2023, from [www.fema.gov website: https://www.fema.gov/grants/mitigation/flood-mitigation-assistance](https://www.fema.gov/grants/mitigation/flood-mitigation-assistance)

<sup>102</sup> Casey Brayton, Interview. October 19th, 2023

relocate encounter additional challenges in obtaining funding for repairing existing infrastructure.

- ❖ **Complexities in Funding Processes:** The U.S. government often questions the justification for investing in repairs when a community has decided to relocate. Casey states that in Alaska, where many communities lack connections to external road systems and rely on boardwalks, these challenges are compounded. The decision to relocate is not always unanimous among community members, reflecting the complexities introduced by funding dynamics and the difficulties associated with obtaining support for relocation. Casey worked for the Alaska Native Tribal Consortium, which provide a number of services to indigenous communities and support the relocation of these communities in Alaska. There she was responsible for applying to federal grants, which would be used for community relocation projects or protecting in place.<sup>103</sup> However, Casey states that the application process has many complex steps and rigorous post-funding reporting requirements. The bureaucratic nature of these obligations and strict deadlines make it difficult to fund projects related to relocation. Many communities find themselves ill-equipped to handle these demands due to their focus on immediate life priorities. Casey states that communities are balancing responsibilities such as employment, family matters, and health concerns leaving them with limited resources and time to effectively manage the bureaucratic intricacies associated with grant applications.<sup>104</sup>

Overall, the funding process for climate-related challenges in Alaska faces substantial limitations, impacting the ability to address the ongoing vulnerabilities and infrastructure needs of at-risk communities.

## Lessons Learned

Communities in Alaska grappling with the complexities of relocation face a multifaceted process that demands strategic planning and community collaboration, but the Newtok relocation process can offer us several best practices that should be considered for small communities around the globe and in the Maldives facing relocation.

- ❖ **Community Led Responses:** Local leadership plays a pivotal role in spearheading the planning efforts, bringing together community members, state and federal representatives, and non-governmental organizations to ensure a comprehensive and culturally sensitive approach.
- ❖ **Food Mapping:** Early subsistence or food mapping can guide the relocation process when considering the proximity of essential resources crucial to the community's deeply rooted traditional lifestyle.
- ❖ **Cultural Preservation:** Like Casey states, "the actual act of relocating is cultural preservation."<sup>105</sup> Cultural preservation should be a priority in the design and layout of

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<sup>103</sup> Casey Brayton, Interview. October 19th, 2023

<sup>104</sup> Ibid

<sup>105</sup> Ibid

any new community, emphasizing traditional values by centralizing local facilities and incorporating tribal offices, and community centers.

- ❖ **Optimizing Land to Cut Costs:** The optimization of natural terrain can be vital in reducing costs and the inclusion of alternative energy sources underscores a commitment to long-term sustainability, acknowledging the importance of minimizing environmental impact.
- ❖ **Cost and Technical Feasibility:** Technical feasibility, cost-effectiveness, and affordability are paramount considerations in the planning process. This involves an innovative approach that addresses the community's specific needs while ensuring a practical and realistic execution of the relocation plan.
- ❖ **Health and Environmental Factors:** Health concerns and environmental factors should be carefully factored into the decision-making process, with a focus on selecting a relocation site that provides reliable resources such as food and water supply.
- ❖ **Funding and Streamlining Bureaucratic Processes:** Securing adequate funding emerges as a critical challenge, necessitating advocacy efforts to gain support from federal agencies, and other governmental bodies. The community must learn to navigate bureaucratic processes associated with grant applications and post-funding reporting requirements.
- ❖ **Flexible Timelines:** Building flexibility into relocation plans is recognized as a pragmatic approach to accommodate unforeseen challenges and changes in the community's needs over time.
- ❖ **Documenting the Process:** Success stories and lessons learned throughout the relocation journey are meticulously documented and shared within a knowledge-sharing network, providing valuable insights for other communities facing similar challenges.

Through these detailed and comprehensive best practices, communities in Alaska can approach the intricacies of relocation with a nuanced and well-informed strategy, fostering a successful transition to new environments while preserving their cultural identity.

# Adapting to Change: Navigating Climate-Induced Relocation

The stories of Kandholhudhoo, Gardi Sugdub in Panama, and Newtok in Alaska underscore the urgent reality of climate change as an existential threat, compelling communities to grapple with the intricate process of relocation. These narratives emphasize the pivotal role of community-led responses, cultural preservation, and strategic planning in safeguarding lives and heritage amid the escalating challenges of climate-induced migration. Key lessons emerge from these diverse experiences. The practice of food mapping in Newtok, aligning relocation sites with essential resources, proves crucial for maintaining the community's traditional lifestyle. Cultural preservation, exemplified in Gardi Sugdub, becomes a priority in designing new communities, acknowledging that relocation itself can be an act of cultural preservation.

The amalgamation of insights from Kandholhudhoo in the Maldives, Gardi Sugdub in Panama, and Newtok in Alaska forms a compendium of best practices for navigating the challenges of climate-induced migration. The "Resilient Island" approach in the Maldives exemplifies commitment to sustainable development, emphasizing community involvement as a cornerstone for addressing specific needs and concerns. Addressing economic and social disruptions, as seen in innovative solutions like the lottery system on Dhuvaafaru and community-led efforts in Panama and Alaska, proves crucial for fostering social cohesion during relocation. The Kandholhudhoo-Dhuvaafaru case provides valuable insights into community resilience and adaptability, transcending individual disasters to inform future global disaster response and recovery efforts.

Comprehensive planning, integrating cultural, social, and economic considerations, emerges as a universal best practice. The establishment of dedicated disaster management agencies in the Maldives and Alaska enhances national-level preparedness and response capabilities. Advocacy for national-level policies, as seen in the Maldives, underscores the need for nuanced approaches that consider unique community characteristics. In synthesizing these best practices, these case studies offer a roadmap for crafting inclusive, resilient, and sustainable relocation strategies globally. Prioritizing sustainability, cultural sensitivity, and collaboration between local and international entities becomes imperative in navigating the intricate journey of relocation with empathy and foresight. These case studies serve as beacons, illuminating a path toward resilient, adaptable, and community-centric solutions for a world facing the uncertainties of climate change.

# Existing Legal Frameworks



# How does climate change contribute to increased displacement?

Climate change can displace people in a number of ways, including through more frequent and intense weather events. This can lead to internal displacement, but also to external displacement, as in some cases, the impacts of climate change may make entire countries uninhabitable.

Climate disasters have displaced over 376 million people since 2008, equivalent to one person per second or the entire population of Australia being forced to abandon their homes every year. In 2022 alone, 36.2 million people were displaced by natural disasters linked to climate change, with some forced abroad. The International Federation of Red Cross and Red Crescent Societies (IFRC) projects that the number of people affected will double by 2050.<sup>106</sup>

## The 1951 Refugee Convention

The 1951 Refugee Convention<sup>107</sup> is the main international treaty concerning refugee protection. It was adopted in July 1951 and defines a refugee as someone who "owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country."

The 1951 convention and its 1967 protocol set out a number of rights for refugees:

- ❖ The right to seek asylum
- ❖ The right to non-refoulement
- ❖ The right to basic human rights: Refugees have the right to all of the basic human rights that are guaranteed by international law. This includes the right to life, the right to security of the person, the right to freedom of thought, conscience, and religion, and the right to education.

The 1951 Refugee Convention also sets out a number of other freedoms for refugees, including the right to work, the right to housing, and the right to education. It was drafted in the aftermath of World War II, when the international community was focused on protecting people who were fleeing violence and persecution. Climate change was not a major concern at the time, and its potential to displace people was not fully understood. Persecution is a narrow concept that requires a refugee to be at risk of serious harm. This harm is mostly recognised in the physical sense, such as violence or torture. While climate change can lead to a variety of harms, such as displacement, poverty, and food insecurity, it is not always clear that these harms amount to persecution.

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<sup>106</sup> European Parliament (2023). The concept of 'climate refugee': Towards a possible definition. Retrieved from [https://www.europarl.europa.eu/thinktank/en/document/EPRS\\_BRI\(2021\)698753](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2021)698753)

<sup>107</sup> UNHCR (1951). Convention and Protocol Relating to the Status of Refugees. Retrieved from <https://www.unhcr.org/media/convention-and-protocol-relating-status-refugees>

## Disturbances to Public Order: The OAU 1969 Convention & 1984 Cartagena Declaration

The Organization of African Unity (OAU) Convention Governing the Specific Aspects of Refugee Problems in Africa, adopted in 1969, stands as a pivotal document in the realm of international refugee law. The convention aimed to address the unique challenges faced by the continent concerning refugee issues.

In many respects, the OAU Convention mirrors the 1951 Refugee Convention and its 1967 Protocol. It defines a refugee as an individual compelled to leave their habitual residence due to external aggression, occupation and foreign domination. The convention upholds the fundamental principle of non-refoulement, preventing the forced return of refugees to territories where their safety is at risk.

A notable departure from the 1951 Convention is the explicit inclusion of disturbances to public order as a reason for refugee status. This provision related to disturbances to public order holds particular relevance in the context of climate-induced displacement. As the impacts of climate change intensify, leading to environmental degradation, resource scarcity, and increased frequency of extreme weather events, communities may experience disturbances to public order as a result.<sup>108</sup>

Much like its African counterpart, The Cartagena Declaration on Refugees<sup>109</sup>, adopted in 1984 addressed refugee challenges in Latin America. It expands the definition of refugees beyond the confines of the 1951 Convention to include people fleeing their countries due to "other circumstances which have seriously disturbed public order." The Cartagena Declaration has been signed by 17 countries in Central and South America, and it has been influential in shaping refugee protection policies in the region.

## What is a Climate Refugee?

The main challenge is that there is no single, specific and accepted definition of what a climate refugee is.

A number of different definitions of a "climate refugee" have been proposed by academics and policymakers. Some of these definitions focus on the direct causes of displacement, such as sea level rise or extreme weather events. Others focus on the indirect causes of displacement, such as food insecurity or conflict. Importantly, there needs to be a focus on differentiating between temporary and permanent displacement due to climate change.

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<sup>108</sup> OAU (1969). Convention Governing the Specific Aspects of Refugee Problems in Africa, adopted by the Assembly of Heads of State and Government at its Sixth Ordinary Session, Addis-Ababa. Retrieved from: <https://www.unhcr.org/us/media/oau-convention-governing-specific-aspects-refugee-problems-africa-adopted-assembly-heads>

<sup>109</sup> Colloquium on the International Protection of Refugees in Central America (1984). Cartagena Declaration on Refugees, adopted by the Colloquium on the International Protection of Refugees in Central America, Mexico and Panama, Cartagena de Indias, Colombia. Retrieved from: <https://www.unhcr.org/us/media/cartagena-declaration-refugees-adopted-colloquium-international-protection-refugees-central>

Some of the most notable proposed definitions are:

- ❖ Norman Myers (2005): "A climate refugee is a person who has been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardizes their continued existence and/or seriously affects the quality of their life."<sup>110</sup>
- ❖ United Nations Environment Programme (UNEP) (2008): "A person who has been forced to leave their habitual place of residence, temporarily or permanently, because of a sudden or gradual onset of environmental change that adversely affects their lives or living conditions to the extent that they are unable to secure their basic needs as provided for under international law."<sup>111</sup>
- ❖ Intergovernmental Panel on Climate Change (IPCC) (2014): "People who have been forced to leave their homes or places of habitual residence, temporarily or permanently, because, inter alia, of climate change-related hazards and their impacts, including extreme weather events, sea level rise, and changes in average temperatures."<sup>112</sup>



Photo:Visible Hand/Flickr. CC BY 2.0

- ❖ Global Migration Group (GMG) (2015): "Persons who are displaced internally or across an international border, temporarily or permanently, because of climate change-related events or processes, including sea level rise, storm surges, coastal erosion, saltwater

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<sup>110</sup> Myers, N. (2005) Environmental Refugees: An Emergent Security Issue. Retrieved from [https://www.scrip.org/\(S\(351jmbntvnsjt1aadkposzje\)\)/reference/ReferencesPapers.aspx?ReferenceID=1323525](https://www.scrip.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=1323525)

<sup>111</sup> Hinnawi, Essam E. UNEP. (1985) Environmental Refugees. Retrieved from: <https://digitallibrary.un.org/record/121267?ln=en>

<sup>112</sup> IPCC. (2014). AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability. Retrieved from: <https://www.ipcc.ch/report/ar5/wg2/>

intrusion, temperature extremes, droughts, floods, landslides, glacier retreat, and desertification, and who are unable or unwilling to return to their homes or places of habitual residence."

The lack of a single, universally accepted definition of a climate refugee is a major challenge in addressing the issue of climate displacement. It makes it difficult to determine who is eligible for protection and assistance, and it hinders the development and amendment of legal frameworks and policies.

## The Existing International Refugee System

In 2022, the number of forcibly displaced people worldwide reached a record high of 103 million. Of these, 27.1 million were refugees and 59.1 million were internally displaced persons. The existing international refugee system is already under strain, and it is unclear whether it is equipped to cope with the additional challenges posed by climate change displacement.<sup>113</sup> There is a concern that if climate change displacement were explicitly included in the convention, it could lead to a flood of asylum claims. This increase in number of claimants would have to be met by increased acceptance, capacity and most importantly funding.

## Guiding Principles on Internal Displacement

The 1998 Guiding Principles on Internal Displacement<sup>114</sup>, comprising 30 standards, are a seminal framework outlining protections available to internally displaced persons (IDPs). Originating in response to the escalating challenges faced by IDPs in the 1990s due to armed conflict, ethnic strife, and human rights abuses, these principles were introduced by M. Francis Deng, the then Representative of the UN Secretary General on IDPs. Unlike refugees, IDPs lacked a specific international treaty, making the Guiding Principles a milestone in establishing a normative framework for their protection.

Structured around the phases of displacement, the principles encompass protection against displacement, safeguards during displacement, a humanitarian assistance framework, and protection during return, local integration, or resettlement. They reflect international human rights, humanitarian, and refugee law, interpreting and applying existing norms to the situation of displaced persons. While not legally binding, the principles have gained considerable authority since their adoption, recognized by the UN General Assembly as a crucial international framework for IDP protection.

These principles emphasize that IDPs are entitled to the same rights and freedoms as other citizens without discrimination based on displacement or other factors. They articulate the right not to be arbitrarily displaced, explicitly prohibiting displacement on ethnic, religious, or racial grounds.

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<sup>113</sup> UNHCR (2022) Global Trends Report. Retrieved from <https://www.unhcr.org/global-trends-report-2022>

<sup>114</sup> United Nations (1998). Guiding Principles on Internal Displacement. Retrieved From <https://www.unhcr.org/us/media/guiding-principles-internal-displacement>

These principles do not explicitly address the slow-onset nature of climate-induced displacement, focusing primarily on sudden-onset events. The complex interplay of environmental, social, and economic factors contributing to climate-induced displacement is not adequately recognized, and the emphasis on voluntary return and local integration may not align with the realities of inhospitable environmental conditions or displacement across borders. Additionally, the principles' focus on immediate response and durable solutions may not fully address the protracted and evolving nature of displacement caused by climate change. As climate-induced displacement becomes more prevalent, there is a need for an evolving legal framework that explicitly considers and accommodates the unique challenges posed by this form of displacement.

Furthermore, in June 2022, the United Nations' secretary general issued an Action Agenda on Internal Displacement<sup>115</sup>. The Action Agenda on Internal Displacement outlines three interconnected objectives: finding durable solutions for displaced persons, preventing future displacement crises, and providing effective protection and assistance to those currently displaced. These goals are mutually reinforcing. Without addressing past crises, prevention efforts will be ineffective. Sustainable solutions cannot be achieved if new crises are imminent. And assistance will be inadequate if the underlying causes of displacement persist.

## The Kampala Convention

The Kampala Convention, also known as the African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa<sup>116</sup>, is a landmark legal instrument that provides a comprehensive framework for the protection and assistance of internally displaced persons (IDPs) in Africa. The convention was adopted in 2009 and entered into force in 2012.

The Kampala Convention explicitly recognizes the role of climate change as a driver of displacement. Article 2 of the convention defines an IDP as any person who has been "forced or obliged to flee or to leave their home or place of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, natural or human-made disasters, and internal disturbances, and who has not crossed an internationally recognized state border."

The Kampala Convention obliges state parties to take a number of measures to protect and assist climate-displaced persons. These measures include:

- ❖ Prevention: States are required to take measures to prevent displacement. Some interpretations of the convention are that this includes addressing the root causes of climate change and building resilience to climate change impacts.

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<sup>115</sup> United Nations (2022). The United Nations Secretary-General's Action Agenda on Internal Displacement Follow-Up to the Report of the UN Secretary-General's High-Level Panel on Internal Displacement. Retrieved from <https://www.un.org/en/content/action-agenda-on-internal-displacement/>

<sup>116</sup> African Union (2009). African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa. Retrieved from <https://www.unhcr.org/us/media/african-union-convention-protection-and-assistance-internally-displaced-persons-africa>

- ❖ Protection: States are required to protect IDPs from harm, including from violence, discrimination, and exploitation. They are also required to provide IDPs with access to essential services such as food, water, shelter, and healthcare.
- ❖ Assistance: States are required to provide IDPs with assistance to meet their basic needs and to help them recover from displacement. This assistance may include access to education, employment, and housing.
- ❖ Durable solutions: States are required to provide IDPs with durable solutions, such as voluntary return, resettlement, or integration into the local community.

The Kampala Convention is a vital tool for protecting and assisting climate-displaced persons in Africa. However, it is important to note that the convention is not legally binding on all African states. As of November 2023, only 38 African states have ratified the convention.

## Current Discussions & Progress on Addressing Climate Change Displacement

Although a binding legal framework addressing climate change displacement is not yet in place. There have been several discussions and initiatives surrounding the topic and highlighting its importance.

The 2018 Global Compact on Refugees<sup>117</sup> is a non-binding agreement that provides a framework for international cooperation on refugee issues. It was adopted by the United Nations General Assembly in December 2018 after two years of consultations. In its second objective to enhance refugee self-reliance, The GCR recognizes that climate change is a major driver of displacement. It calls for states to cooperate to address the root causes of climate change displacement, and to provide assistance to climate-displaced refugees.

The Nansen Initiative<sup>118</sup> led by the governments of Norway and Switzerland was a significant step forward in the international community's efforts to address the challenges of climate change displacement. It produced a number of important recommendations, including:

- ❖ The need to develop a broader definition of a "refugee" to include people displaced by climate change.
- ❖ The need to strengthen the international refugee system to cope with the additional challenges posed by climate change displacement.
- ❖ The need to develop new and innovative ways to assist and protect climate-displaced people.

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<sup>117</sup> United Nations (2018). The 2018 Global Compact on Refugees. <https://www.unhcr.org/media/global-compact-refugees-booklet>

<sup>118</sup> The Nansen Initiative | Environmental Migration Portal. (n.d.). Retrieved from <https://environmentalmigration.iom.int/nansen-initiative>

In October 2020 UNHCR published their Legal Considerations regarding claims for international protection<sup>119</sup> made in the context of the adverse effects of climate change and disasters. Although this reiterated that climate change alone is still not considered a legal reason to be considered a refugee, it did set out ways in which climate change with a combination of other factors can result in refugee status: limiting access to land, resources, and livelihoods, and by increasing the risk of persecution. The fact that many or all members of a community are affected by climate change and disasters does not undermine the validity of an individual's claim for refugee status.

In recent years there have been many organizations that raise the profile of climate change displacement. One organization - Climate Refugees<sup>120</sup> - specifically stands out. They are a human rights organization that advocate for the protection and rights of people displaced by climate change. The organization works to educate the public about climate displacement, document cases of climate-induced displacement, and identify gaps and solutions in existing policies. Climate Refugees also work to advocate for the inclusion of communities and policies that protect those impacted by climate change.

The importance of the nexus between climate change-induced disasters and displacement is widely recognized, but the need to create a special status for climate-displaced persons has not been yet adequately addressed. Given the risks posed by climate change, the international community is running out of time. This is particularly true for countries at risk of statelessness, who might see their entire populations relocated or forcibly displaced.

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<sup>119</sup> UN High Commissioner for Refugees (UNHCR), *International Protection Considerations with Regard to People Fleeing Somalia*, September 2022, HCR/IPC/SOM/2022/01, available at: <https://www.refworld.org/docid/6308b1844.html>

<sup>120</sup> "Climate Refugees." *Climate Refugees*, [www.climate-refugees.org/](http://www.climate-refugees.org/) Accessed 6 Dec. 2023.

# Addressing Possible Statelessness



Small Island Developing States (SIDS) are on the frontlines of an existential crisis driven by climate change, a threat that emerges from far beyond their limited geographical boundaries. With rising sea levels threatening to engulf their territories, these nations are confronted with a perilous predicament, challenging the core principle of statehood<sup>121</sup> itself. The impending catastrophe, often referred to as the "statelessness threat," presents a formidable and pressing challenge to the international legal system, one that is both unprecedented and dire. Additionally, the emphasis on territorial loss as the key signal of a state's vanishing may also miss the mark, as small island nations like Kiribati and Tuvalu are likely to become uninhabitable well before their actual physical disappearance<sup>122</sup>.

The potential complete disappearance of island nations, whether through the loss of land caused by rising sea levels or mass displacement leading to the absence of an entire state's people on its original land, should be a major focal point of concern for the global community regarding the impacts of climate change. The loss of states leads immediately to the creation of new stateless populations. According to the 1954 Convention Relating to the Status of Stateless Persons, a stateless individual is someone who, under the jurisdiction of any state's laws, is not recognized as a national. Statelessness constitutes a breach of globally acknowledged standards and rights. According to Article 15<sup>123</sup> of the United Nations Universal Declaration of Human Rights (UDHR), "everyone has the right to a nationality" and should not be "arbitrarily deprived of [their] nationality, nor prevented from obtaining a new one." Since in the current nation-state centric model, a state ensures basic rights and freedoms to their citizens, Hannah Arendt suggested "statelessness became equated with rightlessness." Therefore, there is a direct link between climate change, the disappearance of SIDS, and the rapid increase of sizable "rightless" human populations.

This section analyzes critical issues faced by SIDS as they grapple with this crisis, emphasizing the notable absence of comprehensive legal frameworks to safeguard their statehood as seas rise to engulf them or climate change progresses to make their lands uninhabitable forcing the entire population to relocate. This section discusses the solutions that have been proposed to address this issue and then lists an array of models that have been attempted in select island states through case studies. Finally the section ends with proposing an integrated framework hinged on regional solidarities to offer solutions to confront this impending crisis, securing the continued existence of these vulnerable nations, and the rights of their human populations, in the face of rapid climate change.

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<sup>121</sup> IPCC. 2022. "15.3 Observed Impacts and Projected Risks of Climate Change". <https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-15/>

<sup>122</sup> [https://i.unu.edu/media/ehs.unu.edu/news/11747/RZ\\_Pacific\\_EHS\\_ESCAP\\_151201.pdf](https://i.unu.edu/media/ehs.unu.edu/news/11747/RZ_Pacific_EHS_ESCAP_151201.pdf)

<sup>123</sup> UN. 1948. "Universal Declaration of Human Rights". <https://www.un.org/en/about-us/universal-declaration-of-human-rights#:~:text=Article%2015,right%20to%20change%20his%20nationality>.

SIDS find themselves in a unique confluence of environmental and legal challenges resulting from climate change. As global temperatures continue their upward trajectory, the consequences of this warming are acutely felt by SIDS, who bear a disproportionate burden for global environmental damage despite contributing minimally to the problem. Their perilous situation centers around a dual challenge that includes not only ensuring the survival of themselves as nations and their people having access to rights, but also preserving their international recognition as sovereign entities. This looming crisis forces a reevaluation of the international legal system's ability to adapt to challenges that transcend conventional territorial boundaries and necessitates innovative strategies for preserving statehood in the face of unprecedented environmental upheaval.

This section explores existing legal frameworks, or the lack thereof, designed to protect statehood amidst territorial loss caused by climate change. It underscores the inherent inadequacies within current international law to effectively address this novel and multifaceted challenge. By delving into the various models that select island nations have already experimented with and proposing fresh approaches informed by expert insights, this section illuminates the avenues that could pave the way for the protection of SIDS statehood. It contributes to the ongoing global discourse regarding the urgent need for legal innovation in response to the challenges of climate change. This, in turn, aims to ensure that the sovereignty of SIDS remains resilient, sustainable, and well-defended in the face of an uncertain environmental future.

## Defining Statehood

The question of statehood, as defined in international legal frameworks, is a fundamental concept that forms the basis for a nation's recognition and participation in the international community. The principles of statehood have been established through various international laws and agreements, with the Montevideo Convention on the Rights and Duties of States being a prominent reference point.

The Montevideo Convention, held in 1933 in Uruguay, sought to codify the customary international law principles governing statehood. Its most well-known provision, found in Article 1, outlines the four essential criteria for a political entity to be considered a state: a permanent population, a defined territory, government, and the capacity to enter into relations with other states. The following criteria have become widely accepted as customary international law and serve as a foundational framework for determining statehood:

- ❖ **Permanent Population:** The presence of a stable and continuous population is a vital element of statehood. A state must have a group of people who reside within its defined territory on an ongoing basis. This criterion ensures that a state is not merely a transient entity but a long-term political community.
- ❖ **Defined Territory:** A state must possess a specific geographic area with recognized borders. A well-defined territory is essential for distinguishing one state from another and forms the basis for the state's territorial sovereignty.
- ❖ **Government:** The existence of a government that can exercise effective control over the state's territory and population is a core element of statehood. This government must have the ability to make and enforce laws, maintain order, and represent the state in international affairs.
- ❖ **Capacity to Enter into Relations:** A state must have the capacity to engage in diplomatic and international relations with other states. This criterion highlights the importance of sovereignty, indicating that the state has the independence to interact with other states on an equal footing.

These criteria provide a clear and widely accepted framework for assessing statehood within international law<sup>124</sup>.

However, the Montevideo criteria and related frameworks that make up the international order related to states are pressed and challenged by the realities of SIDS grappling with the impact of climate change. Especially in the context of climate change, which was not a reality envisioned in 1933, the question of statehood remains a dynamic and evolving field within international law, requiring adaptability and

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<sup>124</sup> United Nations Office of Legal Affairs. 1933. "No. 3802. Convention on Rights and Duties of States adopted by the Seventh International Conference of American States". <https://doi.org/10.18356/57a42223-en-fr>.

innovation to address complex, contemporary challenges while upholding the traditional principles. When addressing the repercussions of climate change on statelessness for SIDS, the primary considerations are the initial two, perhaps most existential criteria: population and territory that in turn challenge conventional notions of the government.

## Limitations of Applying this Definition to SIDS

The Montevideo Conference's definition of statehood, based on its four criteria, encounters notable challenges when applied to SIDS in the context of climate change. While the Montevideo criteria has served as a foundational framework for assessing statehood for many decades, they do not adequately address the unique circumstances faced by SIDS. One of the fundamental challenges is the criterion of a **"defined territory."** In the case of SIDS, rising sea levels due to climate change threaten to engulf and submerge their territories, shaking the traditional concept of territorial sovereignty. This evolving environmental challenge, beyond the control of SIDS, directly impacts their capacity to meet the Montevideo criteria, as the defined territory becomes increasingly fluid.

Furthermore, the criterion of "government" poses difficulties for SIDS as they struggle to maintain effective governance and control over their territories in the face of environmental upheaval. Climate change-induced natural hazards, such as cyclones and coastal erosion, can disrupt governance structures and render governments incapable of providing essential services and enforcing laws. This challenges the stability and effectiveness of government because it vastly diminishes vertical social cohesion. And it calls into question the applicability of the Montevideo criteria, which presupposes a stable and functional governmental authority.

As nations lose their land to rising sea levels, and populations are relocated the concept of maintaining an elected government becomes complex and less feasible, given that the population to be governed resides across borders following their relocation. (relocated- phrased the sentence a bit differently, but also responded to your comment)

Finally, it is worth noting that although having a "defined territory" is one aspect of statehood, the likelihood is higher that the other markers of statehood, such as a stable population, a functional government, and the ability to engage with other states, will face challenges even prior to the physical disappearance of territory due to rising sea levels. The dynamic nature of climate change and its consequences on SIDS reveal the limitations of the traditional statehood framework, prompting a need for innovative legal responses to address the pressing issue of statelessness faced by these vulnerable nations.

# Case Study I: The Republic of Kiribati - Navigating the Rising Tides of Climate-Induced Statelessness

## Introduction

The Republic of Kiribati, a SIDS in the central Pacific Ocean, has become an emblematic case in the discourse surrounding climate-induced statelessness. As rising sea levels and coastal erosion threaten to submerge Kiribati's low-lying atolls, its government has been compelled to explore innovative legal and policy solutions to address the imminent challenges to the nation's statehood. This case study examines the unique predicament faced by Kiribati and the diverse range of suggestions and ideas that have been considered to grapple with the issue of statelessness in the context of climate change.

### Background

Kiribati, comprising 33 coral atolls and reef islands, faces an existential threat from climate change. With an average elevation of just a few meters above sea level, it is particularly vulnerable to the effects of rising sea levels and extreme weather events. As the encroachment of the ocean threatens to inundate its territory, Kiribati's very statehood is at stake<sup>125</sup>.

### Suggested Solutions and Ideas:

- ❖ **Climate Refugee and Displaced Persons Framework:** In response to the impending displacement of its citizens due to climate change, Kiribati has advocated for the recognition of "climate refugees" and has sought international support for a legal framework that addresses their rights and protection. This approach emphasizes the preservation of the citizenship status of Kiribati's displaced population while seeking mechanisms for their resettlement and the preservation of their culture<sup>126</sup>.
- ❖ **Bilateral and Multilateral Agreements:** Kiribati has engaged in bilateral and multilateral agreements with countries willing to provide land for its citizens in case of displacement. New Zealand, for instance, has offered a "climate change visa" to Kiribati citizens, allowing them to migrate as environmental refugees.

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<sup>125</sup> Hydro International. 2023. "Navigating the rising tide". <https://www.hydro-international.com/content/article/navigating-the-rising-tide>

<sup>126</sup> Goins, Samantha. 2018. "Sea-Level Rise and Climate Migration: The Story of Kiribati". <https://www.eli.org/vibrant-environment-blog/sea-level-rise-and-climate-migration-story-kiribati>

Such agreements provide a potential avenue for preserving the rights and statehood of Kiribati's people<sup>127</sup>.

- ❖ **Advocacy for Environmental Sovereignty:** Kiribati has been an outspoken advocate for the concept of "environmental sovereignty": recognition of SIDS' unique role as environmental stewards. Kiribati has actively participated in international climate negotiations to emphasize its rights and responsibilities in the face of climate change<sup>128</sup>.
- ❖ **Adaptation and Relocation Strategies:** Kiribati's government has been working on climate adaptation measures, including the construction of seawalls and raising the land surface in some areas. Relocation strategies within the country are being explored to ensure the survival of the state and its culture.

## Challenges and Future Outlook

Kiribati's case illustrates the pressing need for legal innovation and international collaboration to safeguard statehood in the face of climate change. However, it also highlights the challenges associated with these solutions. While the recognition of climate refugees and bilateral agreements offer hope, they are not comprehensive answers to the complex issue of statelessness. Kiribati's continued existence as a state, and the resultant rights of its citizens, remains contingent on international solidarity and proactive climate mitigation efforts.

The case of Kiribati serves as a stark reminder of the urgent need to rethink and adapt international legal frameworks to accommodate the evolving challenges presented by climate change. It underscores the necessity for a global commitment to climate action, as well as creative legal solutions to protect the sovereignty and rights of Small Island Developing States grappling with the existential threat of climate-induced statelessness.

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<sup>127</sup> Dempster, Helen and Kayly Ober. 2020. "New Zealand's "Climate Refugee" Visas: Lessons for the Rest of the World". <https://reliefweb.int/report/world/new-zealands-climate-refugee-visas-lessons-rest-world#:~:text=In%20October%202017%2C%20New%20Zealand's,a%20year%20to%20New%20Zealand>.

<sup>128</sup> Juvelier, Ben. "When the levee breaks: Climate change, rising seas, and the loss of island nation statehood." *Denv. J. Int'l L. & Pol'y* 46 (2017): 21.

# Case Study 2: Tuvalu - Navigating the Tides of Climate Change and Statelessness

## Introduction

Tuvalu, a low-lying atoll nation in the Pacific, faces a unique and imminent threat to its statehood due to the impacts of climate change, particularly rising sea levels. This case study examines the challenges Tuvalu confronts in preserving its statehood and the various suggestions and ideas that have been proposed to address the threat of statelessness caused by environmental factors<sup>129</sup>.

## Background

Tuvalu, comprising nine coral atolls, stands at the forefront of climate change vulnerability. With an average elevation of just a few meters above sea level, the nation is highly susceptible to the adverse effects of climate change, including more frequent and severe storm surges and saltwater intrusion. The potential submergence of Tuvalu's landmass raises critical questions about the continuity of its statehood.

Suggested Solutions and Ideas:

- ❖ **Environmental Sovereignty and Climate Diplomacy:** Tuvalu has been a vocal proponent of the concept of "environmental sovereignty." This approach emphasizes the responsibility of nations, particularly industrialized countries, in mitigating climate change. Tuvalu has actively engaged in international climate diplomacy, advocating for stronger commitments to reduce greenhouse gas emissions and protect the interests of vulnerable states<sup>130</sup>.
- ❖ **International Legal Recognition of Climate Refugees:** Tuvalu has sought international legal recognition of its citizens as climate refugees, emphasizing the involuntary nature of their displacement due to climate change. This would involve establishing legal frameworks to protect the rights of Tuvaluans forced to relocate and addressing potential statelessness<sup>131</sup>.
- ❖ **Innovative Adaptation Measures:** Tuvalu has explored innovative adaptation measures to mitigate the impacts of rising sea levels. This includes experimenting with floating platforms, artificial islands, and other technologies

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<sup>129</sup> BBC. 2013. "Kiribati island: Sinking into the sea?" <https://www.bbc.com/news/science-environment-25086963>.

<sup>130</sup> University of Wollongong, Tuvalu, sovereignty and climate change: considering fenua, the archipelago and emigration. 2013. <https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1868&context=smhpapers#:~:text=Tuvalu%20is%20a%20Pacific%20atoll,reframing%20how%20sovereignty%20is%20conceived>.

<sup>131</sup> <https://www.colorado.edu/law/sites/default/files/Mayer%20%28Corrected%29-S.pdf>

designed to elevate habitable spaces above the reach of encroaching waters, thus preserving territorial integrity<sup>132</sup>.

- ❖ **Bilateral and Multilateral Agreements for Relocation:** Tuvalu has engaged in discussions with other nations to explore potential relocation options for its citizens in the event of territorial submergence. Bilateral and multilateral agreements are being considered to ensure the preservation of Tuvaluans' citizenship rights and cultural identity in host countries<sup>133</sup>.
- ❖ **Community-Based Solutions and Traditional Knowledge:** Tuvalu emphasizes community-based solutions rooted in traditional knowledge and practices. This involves incorporating indigenous wisdom into adaptation strategies, such as sustainable land use and resource management, to enhance resilience and mitigate the risk of displacement.

## Challenges and Future Outlook

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The case of Tuvalu exemplifies the intricate interplay between environmental threats and the preservation of statehood. While the international community acknowledges the vulnerability of Tuvalu and similar nations, translating this awareness into effective legal mechanisms and concrete solutions remains a complex challenge.

The future outlook for Tuvalu hinges on the success of global efforts to mitigate climate change and the nation's ability to adapt to evolving environmental conditions. The case underscores the need for international cooperation, legal innovation, and sustainable development practices to address the unique challenges faced by Tuvalu and other Small Island Developing States. The resolution of Tuvalu's predicament requires a combination of climate advocacy, legal frameworks, and community-driven adaptation strategies to ensure the continued existence and statehood of this vulnerable nation.

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<sup>132</sup> Rising Tides, Rising Solutions. Tuvalu's Innovative Climate Adaptation Strategies. 2023. The Diplomat. <https://thediplomat.com/2023/11/rising-tides-rising-solutions-tuvalu-innovative-climate-adaptation-strategies/#:~:text=One%20of%20Tuvalu%27s%20adaptation%20strategies,to%20construct%20the%20reclaimed%20land>.

<sup>133</sup> Tuvalu residency and security treaty: what is it and why is Australia doing it?. 2023. The Guardian. <https://www.theguardian.com/australia-news/2023/nov/10/tuvalu-residency-and-security-treaty-what-is-it-and-why-is-australia-doing-it>

# Proposed Framework to Address Climate-Change Induced Statelessness

The above section outlines two case studies in which states are attempting to address statelessness triggered by climate change. In order to advance innovation and construct sustainable impacts on these dire challenges, the following section outlines a new proposed integrated Framework for confronting these challenges. The integrated Framework comprises governance and multilateral agreements suggestions intended to protect sovereignty, integrity, rights, and regional solidarities for individual states who are threatened by climate change.

## A. Multilateral Resettlement Agreements: Collaboration with Neighboring Countries

Engaging in multilateral agreements with neighboring countries is the first component of this proposed Framework. The affected SIDS would initiate collaborative partnerships, related to population resettlement, with two or three neighboring countries within the same region<sup>134</sup>.

Multilateral Re-Settlement Agreements draw on successful practices in regional collaborations, including in the EU, ASEAN, and BRICS, in which neighboring nations work together on shared regional challenges. Best practices from such existing structures can inform the structure and dynamics of the proposed bilateral or trilateral agreements. Emphasizing collaboration supports a shared understanding of the challenges and a common commitment to addressing climate-induced displacement, enhancing the effectiveness of the agreements<sup>135</sup>.

The agreements crafted between a threatened SIDS and neighboring countries should outline specific responsibilities for each party. These responsibilities include themes such as providing infrastructure, healthcare, education, and legal support for the displaced population.

### Insights

Examples of successful international collaborations, such as refugee resettlement programs<sup>136</sup>, highlight the necessity of outlining responsibilities comprehensively to ensure the well-being and integration of displaced communities. By emphasizing the integration of displaced populations into host communities, the proposed Framework aligns with global practices that focus on fostering inclusivity and minimizing the impact on host nations.

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<sup>134</sup> This ensures geographical proximity to the home country of the displaced and provides backing of other regional organizations and the agreements thereof, that these countries are a part of

<sup>135</sup> The UNHCR mandate can be offered to engage with different countries or regions and set agreements in place.

<sup>136</sup> UNHCR. 2022. “The U.S. Refugee Resettlement Program Explained.” <https://www.unrefugees.org/news/the-us-refugee-resettlement-program-explained/>

## B. Regional Governance Hub

In this central component of the Framework, the establishment of a Regional Governance Hub is proposed. The Governance Hub would be made up of official representatives from each key stakeholder:

1. representatives of the government of the displaced nation
2. representatives from each of the states in which people displaced by climate change have been resettled.
3. representatives of any existing relevant regional organization

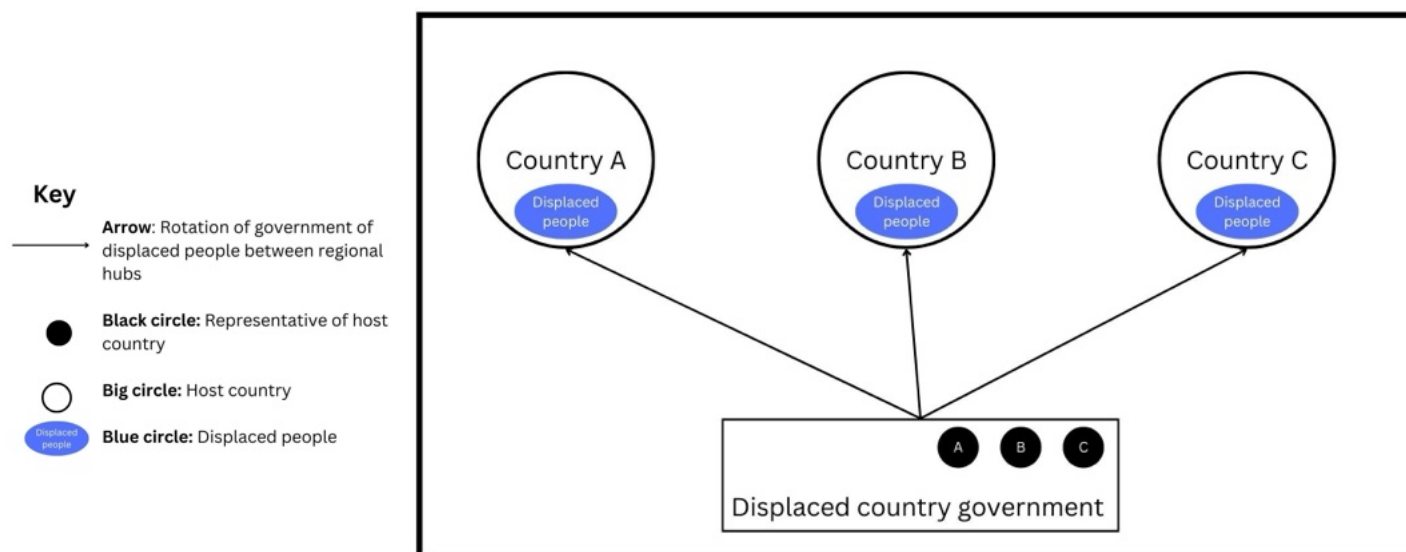
Success of this effort hinges on the capacity of the shared, “horizontal governance<sup>137</sup>” structure to understand and respond to the needs, realities and aspirations of the displaced populations in each of the hosting nations. Therefore, the structure would be “**rotational**”. For example, each of the states receiving displaced people would host the Regional Governance Hub for one calendar year. The location would then rotate to another member state of the Governance Hub for the second year, and then on to the third receiving state for the third year. In the following year, hosting of the Governance Hub would return to the initial member state, and the rotation would begin again.

The “rotational” aspect of this mechanism will allow for direct interactions between displaced populations in each state and the Governance Hub, at least once every three years. This increases the governing capacity of the displaced state and displaced people’s ability to comprehensively access their rights. It also offers more integration between the different states involved in the process, enhances vertical social cohesion even in the absence of a traditional geographically bounded state, and enhances regional cooperation and solidarity.

The concept of a rotational Regional Hub draws inspiration from successful international collaborations where shared governance structures have been established. For instance, the EU provides a strong precedent demonstrating how countries may work together on intra-European governance and development issues. Rotational governance hubs can enhance transparency, facilitate the exchange of best practices, and foster a sense of shared responsibility among participating nations.

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<sup>137</sup> A governance structure in which the government is in one place, the citizens are in another place and the territory governed is in a different place. This is in contrast with a vertical government structure where there is a territory, people on that territory and a government ruling on their people on the same territory.



## C. Resources: Management of Maritime Resources and Fund Transparency

In this component of the Framework, the Regional Hub would be entrusted with managing funds generated from the maritime resources of the climate-impacted country. This would include revenue from activities such as fisheries or other marine resources.

Lessons learned from successful regional resource management programs, such as those implemented by transboundary river basin organizations, emphasize the need for transparency in fund management. These insights inform the proposed model's emphasis on equitable distribution to support the displaced population and promote sustainable development.

Drawing from examples of successful regional resource governance, the proposed Framework ensures that the maritime resources are managed responsibly and sustainably, supporting the ongoing efforts to mitigate biodiversity loss and climate risks, and ensuring the long-term resilience and sustainability of displaced communities. Transparency in fund management is a key principle to ensure equitable distribution and optimal utilization for the well-being of displaced populations.

## D. Citizenship: Dual Citizenship Framework

A legal framework will be developed to allow displaced individuals to hold dual citizenship, fostering a sense of belonging to both their original country and the host country. Stakeholders can collaborate with international bodies to standardize dual citizenship regulations.

There are examples of autonomous structures within existing state structures, such as indigenous populations in the US (see Annex 1 for more information).

## Initiatives to Facilitate Effective Implementation of the Integrated Framework

To facilitate effective implementation of the Integrated Framework described above, the below Mechanisms are proposed.

- ❖ **Rehabilitation and Resettlement Fund:** The Framework would be supported through the creation of a dedicated Fund to support resettlement and rehabilitation efforts and provide financial incentives for host countries. Contributions from international organizations, donor countries, and private sector partners will be encouraged. These funds will provide support for the host country to scale-up services to adapt to the population growth associated with an influx of climate refugees. Sustainable development projects can be prioritized, to mitigate future climate-related challenges.

### E. Institutional Support

Multinational institutions will play a critical role in lending expertise and technical support to all stakeholders associated with the Framework. Key institutions would include:

- International Organization for Migration (IOM)<sup>138</sup>: Collaborate with IOM to leverage their expertise in migration governance, capacity-building, and policy development.
- United Nations Framework Convention on Climate Change (UNFCCC)<sup>139</sup>: Engage with the UNFCCC to integrate the proposed model into global climate resilience and adaptation frameworks.
- World Bank and International Monetary Fund (IMF): Seek financial and technical support from the World Bank and IMF to establish and sustain the Rehabilitation and Resettlement Fund.

- ❖ **Loss and Damage Fund for Statelessness<sup>140</sup>:** In the current early stages of ideation of the Loss and Damage Fund, there is an opportunity to consider the creation of a subsidiary mechanism dedicated specifically to addressing the impending issue of statelessness that Small Island Developing States (SIDS) face. This strategic initiative aims to allocate funds directly to the displaced countries, offering an additional layer of financial support to mitigate the

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<sup>138</sup> <https://www.iom.int>

<sup>139</sup> <https://unfccc.int>

<sup>140</sup> Fifth meeting of the Transitional Committee on the operationalization of the new funding arrangements for responding to loss and damage and the fund established in paragraph 3 of decisions 2/CP.27 and 2/CMA.4. [https://unfccc.int/sites/default/files/resource/TC5\\_4\\_Cochairs%20draft%20text\\_Rev1.pdf](https://unfccc.int/sites/default/files/resource/TC5_4_Cochairs%20draft%20text_Rev1.pdf)

challenges associated with climate-induced displacement. By proactively addressing this aspect within the evolving framework of the Loss and Damage Fund, timely and targeted assistance to the affected nations may be ensured, aligning with the fund's overarching objectives.

- ❖ **Training Initiatives with Host Governments:** Collaboration will be fostered between the host nations and the affected states by initiating training and capacity building efforts. This capacity building will provide targeted training to local government officials, empowering them with the understanding of the unique challenges and needs of displaced populations. This proactive measure would establish a foundation for a well-coordinated response.
  - **Awareness Programs for Local Populations:** Understanding, empathy, and collaboration will be fostered by conducting awareness sessions for local populations. These sessions are vital in promoting a sense of unity and community integration, mitigating potential challenges related to cultural differences and displacement stigma. Local communities of the host countries will also be encouraged to actively participate in the rehabilitation process of the displaced people, ensuring that the arrival of displaced populations is met with support and inclusivity.
  - **Educational Institution Training:** The integration of displaced children into host country's academic systems will be supported through implementation of training programs for host countries' educational institutions. This includes integrating incoming populations' languages into the curriculum. Additionally, it will be important to equip teachers and administrators with cultural sensitivity training to create an inclusive and supportive learning environment, recognizing and respecting the diversity brought by the displaced population.
  - **Economic Systems Establishment:** Economic systems to generate livelihood opportunities for displaced people will be established and scaled-up. This may involve collaboration with local businesses, industries, and entrepreneurial initiatives. Economic systems should be designed to be sustainable, and contribute to the long-term resilience of both the displaced population and the host community.
  - **Strategic Planning and Implementation:** comprehensive strategy that aligns with the specific needs and aspirations of both the displaced population and the host community will be developed. This includes strategic planning for housing, employment, healthcare, and community infrastructure. It will require the involvement of all stakeholders, including local communities, governmental bodies, and representatives of the displaced population, in decision-making processes to foster a sense of shared responsibility and ownership.

➤ Through investment in these initiatives, host countries can proactively prepare their systems and institutions for the arrival of displaced populations. This approach not only ensures a smooth and harmonious transition for those forced to relocate, but also

promotes the long-term socio-economic well-being of both the displaced and host communities.

## Existing Initiatives and Approaches

While the proposed model is innovative, aspects of it align with existing initiatives, including:

### **1. The Pacific Climate Change Migration and Human Security<sup>141</sup> (PCCMHS):**

- ❖ Collaborative Approaches:
  - The PCCMHS initiative showcases the importance of collaborative regional approaches in addressing climate-induced migration. The proposed model, which involves agreements between Small Island Developing States (SIDS) and neighboring countries within the same regional organization, draws inspiration from this regional collaboration.
  - Insights from the PCCMHS suggest that involving multiple stakeholders within a regional context can enhance the effectiveness of responses to climate-induced displacement. The proposed model's emphasis on regional governance hubs aligns with the collaborative spirit of PCCMHS.

### **2. United Nations High Commissioner for Refugees (UNHCR):**

- ❖ Governance Structures and Legal Frameworks:
  - The UNHCR's vast experience in managing displaced populations globally offers valuable insights into establishing governance structures and legal frameworks. The proposed model, with its rotational regional office for the government of the displaced nation, benefits from the UNHCR's emphasis on structured governance in managing displaced communities.
  - Insights from the UNHCR highlight the importance of legal frameworks that protect the rights and well-being of displaced populations. The proposed model's focus on dual citizenship aligns with the UNHCR's emphasis on providing legal solutions that support the affected individuals.

These examples provide critical insights into collaborative approaches and governance structures for managing climate-induced displacement. By drawing inspiration from ongoing initiatives like PCCMHS and leveraging the experience of organizations like UNHCR, the proposed model has a foundation rooted in real-world practices. This ensures that the model not only innovates but also learns from

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<sup>141</sup> “[PCCMHS] Enhancing Protection and Empowerment of Migrants and | Environmental Migration Portal.” [environmentalmigration.iom.int](https://environmentalmigration.iom.int), [environmentalmigration.iom.int/pccmhs-enhancing-protection-and-empowerment-migrants-and-communities-affected-climate-change-and-disasters-pacific-region](https://environmentalmigration.iom.int/pccmhs-enhancing-protection-and-empowerment-migrants-and-communities-affected-climate-change-and-disasters-pacific-region).

successful strategies in addressing the complex challenges of climate-induced statelessness.

## Examples of Autonomy Within Existing State Structures

Tribal sovereignty in the United States is a concept that recognizes the self-governing authority of Native American tribes within the U.S. borders. This sovereignty is rooted in historical treaties, court decisions, and legislation that acknowledge the unique status of Native American tribes as distinct political entities. Here are examples illustrating tribal sovereignty:

1. **Legal Jurisdiction:** Tribes have the authority to establish and enforce laws within their territories. For example, the Navajo Nation has its legal system that handles civil and criminal matters within its jurisdiction.
2. **Governmental Structure:** Each tribe has its own form of government, with elected leaders and tribal councils responsible for making decisions on behalf of their communities. The Cherokee Nation, for instance, has a constitution that outlines its government structure.
3. **Resource Management:** Tribes have the right to manage and regulate their natural resources. The Confederated Salish and Kootenai Tribes in Montana, for instance, have their natural resource department overseeing environmental and conservation issues.

Now, drawing a parallel to the model proposed for Small Island Developing States (SIDS) facing statelessness:

The proposed model for SIDS could draw inspiration from tribal sovereignty to address the challenges of displaced people from these vulnerable nations in the following ways:

1. **Legal Autonomy:** Displaced populations from SIDS could be granted a degree of legal autonomy in the host countries. This autonomy would allow them to establish their own legal systems, respecting their cultural norms and values. This could be similar to the legal jurisdiction exercised by Native American tribes within the U.S.
2. **Self-Governance:** The model could involve creating structures that allow displaced communities to govern themselves. This may include elected leaders or councils representing the interests of the displaced population, reminiscent of tribal governmental structures.
3. **Cultural Recognition:** Similar to the recognition of Native American tribes' unique cultural identities, the model could prioritize the preservation of the cultural heritage of displaced populations. This might involve supporting cultural institutions, language preservation efforts, and community initiatives.

4. **Resource Management:** The model could empower displaced communities to manage their resources within the host country, whether those are economic, environmental, or social resources. This reflects the tribal right to manage natural resources within their territories.

By adopting a model that draws on the principles of tribal sovereignty, the displaced populations from SIDS can maintain a sense of identity and autonomy within the host countries. This approach respects the unique circumstances of SIDS and recognizes the importance of allowing displaced communities to actively participate in decision-making processes that affect their lives, echoing the principles of tribal sovereignty in the U.S.

## Conclusion

This proposal attempts to outline a holistic solution model that addresses climate-induced statelessness in SIDS through regional cooperation, sustainable funding mechanisms, and innovative governance structures. By learning from existing initiatives, collaborating with international organizations, and leveraging institutional support, the proposed model aims to provide a blueprint for a resilient and inclusive response to the challenges posed by climate-induced displacement.

# **Leveraging Technology to Deal With Statelessness in SIDs**



As a Small Island Developing State (SIDS), the Maldives faces the threat of statelessness due to climate change impact. In 2009, President Mohammed Nasheed emphasized the climate change impact on the Maldives through diving underwater and making commitments to make the country carbon neutral in the near future.<sup>142</sup> The Maldives faces challenges such as rising sea levels, storm surges, infrastructure damage, coastal degradation, and beach erosion. As a response, climate change adaptation plans and resettlement schemes are being established. The vulnerability of SIDS to global warming impacts and its disproportionate effects on their economic and social development is of utmost concern.



Maldives holds the world's first underwater Cabinet meeting. Photo: The President's Office Republic of Maldives.

The Maldives is facing a significant issue of statelessness, and it is essential to explore innovative solutions to address this problem. One potential approach is to draw insights from other independent atoll island nations that have faced similar challenges and implemented successful strategies to tackle statelessness. Tuvalu, Kiribati, and the Marshall Islands are unique nations in that they are the world's only independent atoll island nations. These island chains exist almost exclusively in the Pacific and Indian Oceans and are characterized by a ring-shaped coral reef island or series of islets surrounding a lagoon. The lagoon usually rests above the ring of an extinct volcano or seamount, remaining at a shallow depth that allows the coral to continue growing and forming reefs.<sup>143</sup> Atoll islands flourish only in tropical and subtropical waters, making them particularly vulnerable to the effects of climate change, such as rising sea levels and coral bleaching.<sup>144</sup>



A small atoll in the Maldives. Credit: Wikipedia Commons/CC Public Domain.

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<sup>142</sup> Cabinet makes splash with underwater meeting. (2009, October 17). Retrieved November 20, 2023, from NBC News website: <https://www.nbcnews.com/id/wbna33354627>

<sup>143</sup> Evers, J., & Emdash. (2023, October 19). Atoll | National Geographic Society. Retrieved November 22, 2023, from National Geographic website: <https://education.nationalgeographic.org/resource/atoll/>

<sup>144</sup> Tatum, M. (2023, October 9). What is an Atoll? (with pictures). Retrieved November 22, 2023, from All Things Nature website: <https://www.allthingsnature.org/what-is-an-atoll.htm>

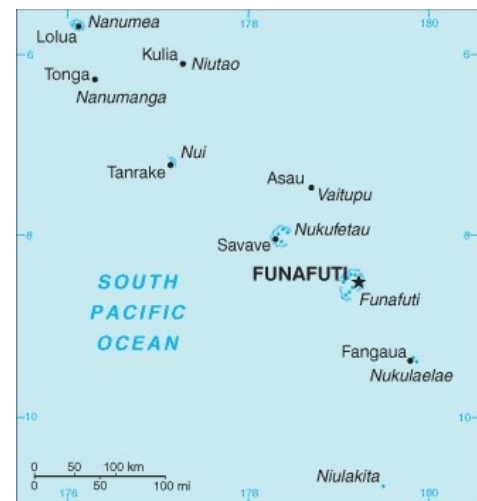
These independent atoll island nations face the strong possibility of being unable to support their population or, in worst-case scenarios, literally sinking beneath the rising seas. The unique geography of atoll islands makes them particularly susceptible to the impacts of climate change, which threaten their very existence. As independent atoll island nations, the Maldives, Tuvalu, Kiribati, and the Marshall Islands have implemented innovative approaches to address the challenges posed by their vulnerable status.

## Tuvalu

Tuvalu is an island country located in the west-central Pacific Ocean, comprising a chain of nine small coral islands. The islands are low-lying and surrounded by coral reefs, making them particularly vulnerable to the impacts of climate change, such as rising sea levels and coral bleaching.<sup>145</sup> This vulnerability has led Tuvalu to become a global leader in addressing the challenges posed by climate change, including issues related to statelessness.

Tuvalu's experiences offer valuable insights into innovative approaches to addressing statelessness caused by climate change. The government of Tuvalu has implemented various initiatives aimed at promoting social inclusion and environmental sustainability, such as the Tuvalu National Adaptation Program of Action (NAPAs)<sup>146</sup>, which focuses on climate change adaptation and disaster risk reduction. The government has also prioritized the preservation of its culture and traditional practices, emphasizing the importance of community resilience and empowerment.

One potential model that the Maldives could draw from Tuvalu is its concept of becoming the world's first digital nation. This initiative aims to leverage technology to enhance governance, connectivity, and service delivery for its citizens. By digitizing various aspects of governance and public services, Tuvalu has been able to overcome challenges posed by its remote location and limited resources. The digital nation concept has not only improved efficiency and transparency but has also



A map of Tuvalu. Credit: Wikipedia Commons/CC Public Domain.

<sup>145</sup> Macdonald, B. K. (2019). Tuvalu | Culture, History, People, & Facts. In Encyclopædia Britannica. Retrieved from <https://www.britannica.com/place/Tuvalu>

<sup>146</sup> Tuvalu National Adaptation Programme of Action (NAPA) | UNDP Climate Change Adaptation. (2011). Retrieved from Adaptation-undp.org website: <https://www.adaptation-undp.org/projects/tuvalu-napa>

empowered citizens by providing them with greater access to information and participation in decision-making processes.<sup>147</sup>

To fight their possible disappearance, the solution proposed by the island nation of Tuvalu is to replicate itself in the metaverse to safeguard its culture and sovereignty and preserve its physical land sites through virtual twins. The article “The First Digital Nation” by author Lilian Bernhardt discusses how the island country of Tuvalu is building a digital nation due to the climate change crisis that is likely to make their low-lying islands uninhabitable by 2100.<sup>148</sup> The government of Tuvalu has taken innovative steps to preserve its physical landscapes and cultural heritage. One such initiative is the use of virtual twins to preserve the physical landscapes of the islands. This involves creating digital models of the islands that can be used to monitor changes in sea levels and assess the impacts of climate change on the islands. The first place to undergo this process is Te Afualiku, a small islet in Tuvalu that is at risk of being submerged due to rising sea levels.

In addition to preserving the physical landscapes of the islands, Tuvalu is also taking steps to preserve its cultural heritage. The government is cataloging and digitizing traditional songs, historical documents, and recorded cultural practices to ensure that they are not lost to future generations. This initiative reflects Tuvalu’s commitment to preserving its unique cultural identity and traditions in the face of environmental challenges.



A Tuvaluan dancer at Auckland's Pasifika Festival. Credit: Wikipedia Commons/CC

The use of virtual twins and the preservation of cultural heritage are two examples of Tuvalu’s innovative approaches to addressing the challenges posed by climate change. These initiatives could serve as potential models for other island nations facing similar challenges, such as the Maldives. By leveraging technology and preserving cultural heritage, island nations can not only protect their physical landscapes and cultural identity but also promote social inclusion and environmental sustainability.

The Maldives could potentially adopt a similar approach to enhance its governance framework and overcome challenges related to statelessness caused by climate change. By leveraging technology and digital solutions, the Maldives could improve access to citizenship and public services for its citizens while also promoting social inclusion and environmental sustainability. Tuvalu’s experiences offer valuable

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<sup>147</sup> Lepitak, S. (2023, September 5). The Award-Winning Metaverse Project That’s Saving a Nation. Retrieved November 22, 2023, from [www.adweek.com website: https://www.adweek.com/creativity/metaverse-project-first-digital-nation-tuvalu-gerety-awards/](https://www.adweek.com/creativity/metaverse-project-first-digital-nation-tuvalu-gerety-awards/)

<sup>148</sup> Bernhardt, L. (2023, January 25). The First Digital Nation. Retrieved from Long Now website: <https://longnow.org/ideas/the-first-digital-nation/>

insights into innovative approaches to addressing statelessness caused by climate change. By drawing on Tuvalu's experiences, the Maldives could potentially develop effective solutions to its challenges while also contributing to global efforts to address these critical issues.

## Kiribati

Kiribati, an island country located in the central Pacific Ocean, comprises 33 islands, with only 20 of them being inhabited.<sup>149</sup> Despite its relatively small land area, the islands are widely dispersed, presenting unique geographical challenges. Most notably, Kiribati consists predominantly of low-lying atolls, characterized by ring-shaped coral reefs.<sup>150</sup> Additionally, Kiribati is renowned for being home to the largest marine reserve in the South Pacific.

As an independent atoll island nation in the Pacific Ocean, Kiribati has implemented innovative strategies to address the statelessness issue caused by climate change. Its sustainable development strategies focus on enhancing community resilience, adaptation programs, coastal management, and water resource management. These strategies have helped Kiribati to mitigate the impacts of climate change on its people and preserve its cultural heritage.

Beneath the serene beauty and ecological richness of Kiribati lies a pressing concern: the statelessness issue caused by climate change. As the impacts of climate change intensify, the rising sea levels, coastal erosion, and other environmental challenges faced by Kiribati threaten the very existence of its people and their cultural heritage.<sup>151</sup> These challenges have forced many Kiribati residents to leave their homes, resulting in statelessness.

The statelessness issue caused by climate change in Kiribati is not an isolated phenomenon but rather a growing concern shared by other island nations, including the Maldives. The unique geographical characteristics of these island nations make them particularly vulnerable to the adverse effects of climate change.<sup>152</sup> As such, it becomes crucial to examine the case of Kiribati as a potential model for addressing statelessness caused by climate change and to draw insights that can be applied to other similarly affected regions.

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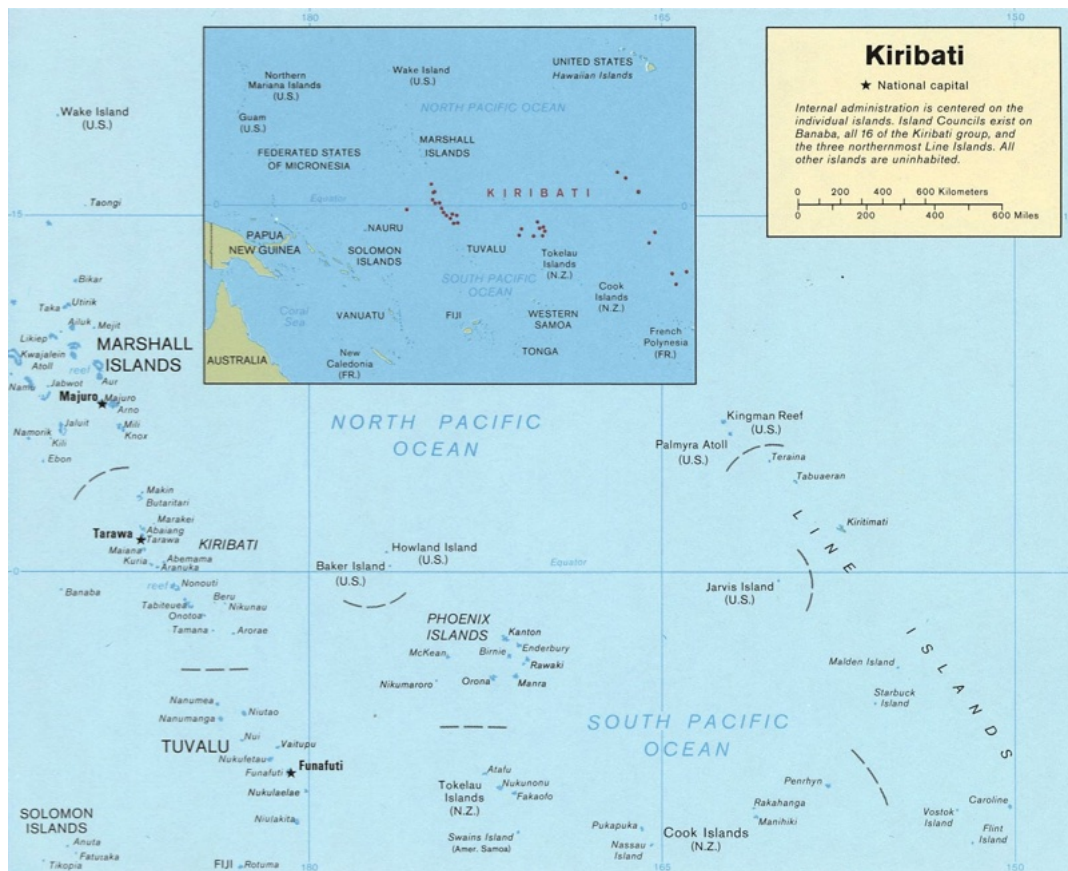
<sup>149</sup> Site designed and built by Hydrant (<http://www.hydrant.co.uk>. (2017). Kiribati | The Commonwealth. Retrieved from Thecommonwealth.org website: <https://thecommonwealth.org/our-member-countries/kiribati>

<sup>150</sup> Site designed and built by Hydrant (<http://www.hydrant.co.uk>. (2017). Kiribati | The Commonwealth. Retrieved from Thecommonwealth.org website: <https://thecommonwealth.org/our-member-countries/kiribati>

<sup>151</sup> Heritage of the Pacific Islands and Climate Change. (n.d.). Retrieved from [https://assets.nationbuilder.com/erc/pages/1871/attachments/original/1646013352/the\\_Heritage\\_of\\_Pacific\\_Islands.pdf?1646013352](https://assets.nationbuilder.com/erc/pages/1871/attachments/original/1646013352/the_Heritage_of_Pacific_Islands.pdf?1646013352)

<sup>152</sup> Keating, J. (2018, July 26). This is what happens when climate change forces an entire country to seek higher ground. The Washington Post. Retrieved from <https://www.washingtonpost.com/news/posteverything/wp/2018/07/26/feature/this-is-what-happens-when-climate-change-forces-an-entire-country-to-seek-higher-ground/>

According to ISPNews, "The Role of Mobile Kiribati in Strengthening Cultural Preservation and Identity," demonstrates the impact of Mobile Kiribati in strengthening cultural preservation and identity is evident in its innovative use of mobile technology to empower the people of Kiribati in documenting and sharing their cultural heritage.<sup>153</sup> The project addresses the unique challenges faced by SIDS in preserving their traditions and identity in the face of the statelessness issue, including the potential disappearance of atoll island nations like Kiribati and the Maldives.



A Map of Kiribati. Photo: Wikipedia Commons/CC Public Domain.

Mobile Kiribati leverages mobile applications to enable individuals to record and upload videos, photos, and audio clips of cultural events, dances, songs, and storytelling sessions. This digital documentation ensures that valuable cultural practices are not lost to time, providing a means for future generations to access and share this rich cultural heritage. The creation of a digital archive serves as a comprehensive repository, offering accessibility for researchers, scholars, and anyone interested in learning about Kiribati's cultural traditions.

The significance of Mobile Kiribati extends beyond documentation, as it plays a crucial role in strengthening the sense of identity among the Kiribati people. In a world

<sup>153</sup> The Role of Mobile Kiribati in Strengthening Cultural Preservation and Identity. (2023, July 9). Retrieved November 22, 2023, from isp.page website: <https://isp.page/news/the-role-of-mobile-kiribati-in-strengthening-cultural-preservation-and-identity/#gsc.tab=0>

where cultural homogenization is a concern, the project allows individuals to connect with their cultural roots and share experiences with others who share their heritage. Through virtual exchanges facilitated by mobile applications, a sense of belonging and pride in one's cultural identity is fostered, emphasizing that individuals are part of a larger community that values and cherishes their traditions.

Mobile Kiribati goes beyond virtual exchanges by organizing cultural events and workshops, providing a platform for intergenerational knowledge transfer. Elders actively participate in passing down their wisdom and skills to the younger generation, further deepening the connection to heritage. The active engagement in cultural activities contributes to a profound understanding of one's place in the world.

The use of mobile technology for documentation and the creation of digital archives can serve as a resilient strategy for preserving cultural heritage even in the absence of physical landscapes. The emphasis on fostering a sense of identity and community through virtual exchanges is particularly relevant in the face of globalization.

Moreover, the organization of cultural events and workshops, as demonstrated by Mobile Kiribati, provides a framework for intergenerational knowledge transfer that could prove invaluable in the Maldivian context.<sup>154</sup> The collaborative nature of such initiatives helps build a collective understanding of cultural traditions and strengthens the resilience of cultural identity.

The Mobile Kiribati project could be a potential solution for the Maldives in preserving culture and language, especially if these atoll island nations face challenges such as disappearance due to climate change. By adapting and incorporating elements of the Mobile Kiribati approach, the Maldives can develop strategies to safeguard its cultural heritage, foster a sense of identity among its people, and create a resilient framework for the preservation of traditions in the midst of environmental uncertainties.

## Marshall Islands

The Marshall Islands, an enchanting nation nestled in the vast Pacific, face an existential threat that starkly contrasts with the beauty of its coral atolls and islands. Comprising 29 coral atolls and 5 single coral islands, the nation is uniquely formed by two parallel chains. However, this captivating landscape belies a profound vulnerability, the average height of the land above sea level is a mere 2 meters.<sup>155</sup>

The islands, encompassing a vast expanse of over 1,942,491 sq. km, stand in stark contrast to their modest landmass of about 181 sq. km.<sup>156</sup> The fragility of the Marshall Islands becomes evident as sea-level rise, wave formation, and high tides pose an imminent threat to

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<sup>154</sup> The Role of Mobile Kiribati in Strengthening Cultural Preservation and Identity. (2023, July 9). Retrieved November 22, 2023, from isp.page website: <https://isp.page/news/the-role-of-mobile-kiribati-in-strengthening-cultural-preservation-and-identity/#gsc.tab=0>

<sup>155</sup> The Role of Mobile Kiribati in Strengthening Cultural Preservation and Identity,. (2016, March 30). Retrieved from isp.today website: <https://pirca.org/marshall-islands/>

<sup>156</sup> The Role of Mobile Kiribati in Strengthening Cultural Preservation and Identity,. (2016, March 30). Retrieved from isp.today website: <https://pirca.org/marshall-islands/>

human communities, property, infrastructure, fresh water supplies, and ecosystems. With more than two-thirds of the population concentrated in the capital of Majuro and the densely populated urban center of Ebeye, the vulnerability is not just environmental but also extends to the socio-economic fabric of the nation. The Marshall Islands grapple with the urgent challenges posed by climate change, where the relentless rise of the seas threatens the very existence of this unique and culturally rich island nation.



A Map of the Marshall Islands. Photo:Wikipedia Commons/CC Public Domain.

The author Kausea Natano mentions the criteria for determining statehood and the challenges experienced by SIDS due to the climate crisis. She emphasizes the importance of social organization and cultural connections in defining a community's identity and right to self-determination.<sup>157</sup> Kausea also mentions Tuvalu and Marshall Island's Rising Nations Initiative to address the gaps in awareness, legal frameworks, and political commitment towards the challenges faced by other SIDS. She highlights the need for a global settlement that guarantees the permanent existence, cultural integrity, and sovereignty of SIDS like the Maldives, including the relocation plans while preserving their cultural heritage and economic sustainability.

In 2022, the Rising Nations Initiative (RNI) was initiated during a crucial event at the UN General Assembly by the Prime Minister of Tuvalu, Kausea Natano, and the President of the Marshall Islands, David Kabua.<sup>158</sup> The RNI was announced on the sidelines of the UN General Assembly, representing a critical step by Pacific Island nations—Tuvalu, Kiribati, and the Marshall Islands—in addressing the profound challenges posed by the escalating climate crisis. With early support from countries like Germany, the United States, and Canada, the initiative responds to the unique challenges faced by Pacific Island nations due to the climate crisis.

<sup>157</sup> Natano, K. (2022, September 28). The Climate Crisis Is Making the Pacific Islands Unlivable. Retrieved from Time website: <https://time.com/6217104/climate-crisis-pacific-islands-uninhabitable/>

<sup>158</sup> Pacific atoll nations launch a global plan to preserve heritage. (2022, September 21). Retrieved November 22, 2023, from France 24 website: <https://www.france24.com/en/live-news/20220921-pacific-atoll-nations-launch-global-plan-to-preserve-heritage>

Despite contributing just 3% of global emissions, these nations are on the verge of losing considerable territory in this century, and some face the prospect of becoming uninhabitable.<sup>159</sup>

Prime Minister Natano highlighted the paradox faced by Pacific Island nations, where the climate crisis, while creating an increasingly uncertain future for much of the world, is rendering the future of the Pacific increasingly certain, albeit in a disconcerting manner. Rising sea levels, intensified storms, saltwater contamination of aquifers, and coral reef bleaching are already impacting the habitability, livelihoods, and cultural heritage of these atolls.

The RNI presents a four-point plan as a collective response to the imminent challenges<sup>160</sup>:

- ❖ It reaffirms the international community's commitment to preserving the sovereignty of Tuvalu, Kiribati, and the Marshall Islands.
- ❖ It launches an adaptation program to increase resilience and protect livelihoods, recognizing the necessity of immediate action.
- ❖ The initiative emphasizes the creation of a repository for the islands' cultural heritage, acknowledging the intrinsic link between cultural identity and environmental sustainability.
- ❖ The RNI supports these nations in acquiring UNESCO World Heritage Status, a crucial step in garnering global recognition and protection for their unique heritage.

The RNI comprises diverse programs tailored to address the complex challenges posed by climate change. The Heritage Programme takes center stage in preserving culture and heritage, providing practical support for collection, digitalization, and preservation. This initiative aims to create a Heritage and Cultural repository, fostering global recognition through platforms like the UNESCO World Heritage Convention.<sup>161</sup> Simultaneously, the Digital Nation State Programme seeks to build a resilient digital ecosystem, ensuring strengthened governance and connectivity structures to uphold the connection between citizens and their country. The Knowledge & Futures Programme fosters greater partnership and collaboration to deepen the knowledge base, supporting effective adaptation plans and informed policymaking. The Youth Programme establishes a Rising Nations Youth Forum, empowering Pacific youth stakeholders to actively engage in global discussions and contribute to advocacy campaigns.<sup>162</sup>

The RNI exemplifies a holistic and collaborative approach to address the multifaceted challenges confronting island nations. Its commitment to preserving cultural heritage and identity provides valuable insights for potential applications in regions like the Maldives, grappling with the complex intersection of statelessness and climate change. As initiatives like

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<sup>159</sup> Pacific atoll nations launch a global plan to preserve heritage. (2022, September 21). Retrieved November 22, 2023, from France 24 website: <https://www.france24.com/en/live-news/20220921-pacific-atoll-nations-launch-global-plan-to-preserve-heritage>

<sup>160</sup> Rising Nations Initiative. (n.d.). Retrieved November 22, 2023, from Global Centre for Climate Mobility website: <https://climatemobility.org/initiatives/rising-nations/>

<sup>161</sup> Rising Nations Initiative. (n.d.). Retrieved November 22, 2023, from Global Centre for Climate Mobility website: <https://climatemobility.org/initiatives/rising-nations/>

<sup>162</sup> Rising Nations Initiative. (n.d.). Retrieved November 22, 2023, from Global Centre for Climate Mobility website: <https://climatemobility.org/initiatives/rising-nations/>

the RNI continue to evolve, there is hope for the sustainable development and resilience of atoll island nations in the face of an uncertain future.

## Maldives' Digitalization

Inspired by these atoll island nations, the technology of digital preservation works as an important method to preserve cultural heritage sites in the Maldives. The author Reka Vasszi's case study "Digitally preserving Hukuru Miskiy" shows the advantage of using laser scanning technology in surveying and documenting heritage sites in the Maldives.<sup>163</sup> The digital dataset of Hukuru Miskiy could be well-managed by heritage professionals as needed. The virtual maps and 3D models obtained from the survey can be used for future restoration and rehabilitation projects. The project not only contributes to the physical preservation of the heritage site but also showcases huge benefits of digital preservation for cultural purposes including Maldivian craftsmanship, traditional culture and practices, historical architectures.

The author further mentions the efforts to digitally preserve the Malé Hukuru Miskiy, also known as the Friday Mosque, in the Maldives. The mosque is a significant heritage site and is included in the UNESCO World Heritage tentative list. The Department of Heritage of the Maldives enlisted the help of Water Solutions Pvt Ltd. to capture and document the mosque complex in 3D using advanced surveying technologies such as laser scanning, total station, and GNSS RTK rover.<sup>164</sup>

The detailed digital survey and 3D documentation of Hukuru Miskiy are crucial for its preservation, conservation, and potential inclusion in the final World Heritage list. The project aims to capture the complex design and construction of the mosque, which lacks surviving information or drawings. The use of Leica Geosystems equipment, including the imaging laser scanner, robotic total station, and a rover,



Water Solutions captured and georeferenced Hukuru Miskiy using a combination of Leica Geosystems solutions as Photo: Wikipedia Commons/CC BY-SA 2.0 fr.

<sup>163</sup> Vasszi, R. (n.d.). Digitally preserving Hukuru Miskiy. Retrieved November 22, 2023, from leica-geosystems.com website: <https://leica-geosystems.com/en-us/case-studies/reality-capture/digitally-preserving-hukuru-miskiy>

<sup>164</sup> Vasszi, R. (n.d.). Digitally preserving Hukuru Miskiy. Retrieved November 22, 2023, from leica-geosystems.com website: <https://leica-geosystems.com/en-us/case-studies/reality-capture/digitally-preserving-hukuru-miskiy>

has enabled precise data collection and the creation of detailed 3D models.<sup>165</sup>

By preserving the digital dataset of Hukuru Miskiy, heritage professionals can manage, renew, and maintain the site effectively. The as-built map obtained from the survey can be used for future restoration and rehabilitation projects. Additionally, the 3D models can be utilized for educational purposes, teaching students about Maldivian history, craftsmanship, traditional architecture, and ancient construction techniques.



The creation of this digital dataset can help preserve this more than 350-year-old heritage site and the detailed as-built map can be used in the rehabilitation of the roof structure and as a baseline map for future restoration. Photo: Creative Commons.

The project not only contributes to the physical preservation of the heritage site but also showcases the potential of laser scanning technology in surveying and documenting heritage sites in the Maldives. It highlights the importance of leveraging advanced technologies to safeguard cultural heritage and strengthen relationships with clients and stakeholders.

Divehi (Dhivehi) is the official language and indigenous language of the Maldives. It is an Indo-Iranian-European language spoken by the people of Maldives.<sup>166</sup> It holds great cultural significance since it is not only a means of communication but also a repository of traditions, customs, and oral histories that have shaped the identity of the Maldivian people. Dhivehi has its own writing system called Thaana, which is written

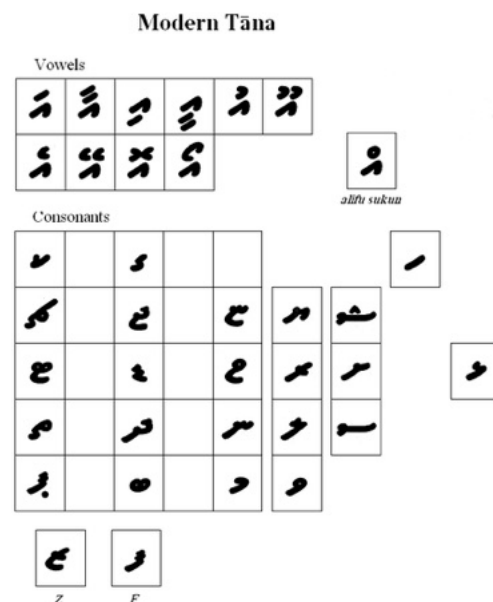
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<sup>165</sup> Vasszi, R. (n.d.). Digitally preserving Hukuru Miskiy. Retrieved November 22, 2023, from leica-geosystems.com website: <https://leica-geosystems.com/en-us/case-studies/reality-capture/digitally-preserving-hukuru-miskiy>

<sup>166</sup> Hays, J. (n.d.). *Languages of the Maldives: Divehi, its history and written form and English*. Facts and Details. [https://factsanddetails.com/south-asia/Maldives/People\\_and\\_Life\\_Maldives/entry-8038.html](https://factsanddetails.com/south-asia/Maldives/People_and_Life_Maldives/entry-8038.html)

from right to left and contains many elements derived from Arabic, as well as some Indic influence.<sup>167</sup>

In an effort to preserve the indigenous language of Maldives, various methods and initiatives have been implemented. One notable approach is the establishment of language revitalization programs. For instance, in 2016, the Civil Service Commission (CSC) and the Dhivehi Language Academy have signed an agreement to promote the use of Dhivehi, the national language, as per the National Language (Priority) Act.<sup>168</sup> Under the agreement, the CSC will ensure compliance with Dhivehi language usage rules and guidelines in all communications. They will also conduct Dhivehi language training programs through the Civil Service Training Institute. The agreement aims to protect, develop, preserve, and promote Dhivehi. The Dhivehi Language Academy will assist the commission in promoting the language. The National Language (Priority)



The written script of Tāna. Credit: Wikipedia Commons/CC Public Domain.

Act requires State communications to be in Dhivehi, while allowing the use of other languages when communicating with non-Dhivehi speakers. The agreement signifies a joint effort to uphold and promote Dhivehi within the civil service sector.

In 2022, the Ministry of Education of the Maldives received funding from the World Bank and initiated the project called Maldives Learning Advancement and Measurement Project (LAMP) with the title Procurement of books in Dhivehi language for the improvement of Dhivehi language of students.<sup>169</sup> These programs aim to promote the use and learning of the indigenous language among both younger generations and adults.

Another method employed is the documentation and recording of the indigenous language. For instance, the National Archives of Maldives was established under the Archives Act in 2012. It is utilized to archive national official documents, photos, videos, charts, and other related information.<sup>170</sup> Native speakers are encouraged to share their knowledge and stories through oral history projects, audio recordings, and written materials. These efforts help preserve the linguistic and cultural heritage associated with the language, ensuring that future generations have access to valuable resources for language learning and research.

<sup>167</sup> byLM, P. (2020, July 22). *What language do they speak in the Maldives?*. Unusual Languages of the World. <https://unusuallanguagesoftheworld.home.blog/2020/04/28/what-language-do-they-speak-in-the-maldives/>

<sup>168</sup> CSC & DLA agree on promoting Dhivehi language. PSMnews.mv. (n.d.). <https://psmnews.mv/en/15899>

<sup>169</sup> The President's Office, M. (n.d.). ޖުމްހޫރިއްޔާ. Gazette. <https://gazette.gov.mv/iulaan/198304>

<sup>170</sup> National Archives of Maldives. (n.d.). <https://archives.gov.mv/en>

Furthermore, digital preservation has played a significant role in language preservation in Maldives. Initiatives like Majalla.mv, a virtual library platform, and Kamana a.i, a solution for language accessibility, utilize digital technology to promote and preserve the Dhivehi language.<sup>171</sup> Majalla.mv serves as a digital repository, reviving old and lost Maldivian magazines and books. By digitizing and making these resources accessible online, it ensures that valuable Dhivehi literature is preserved and available to students, researchers, teachers, and readers free of charge. This digital preservation effort allows the older documents to be reborn into the 21st century, making them searchable and user-friendly for modern users.

Kamana a.i focuses on language accessibility through translation and speech-to-text features. By encouraging the use of Dhivehi language in digital devices, it aims to make information accessible for people with disabilities. Real-time translation capabilities and speech-to-text technology enable individuals with disabilities to interact with digital devices on an equal footing, fostering inclusivity in society and providing them with opportunities to participate in the workplace.<sup>172</sup> Technology is utilized to create online resources, mobile applications, and interactive platforms that provide language learning materials and opportunities for practice. Digital archives and repositories have been established to store and disseminate linguistic and cultural resources, making them easily accessible to a wider audience. This approach leverages the reach and convenience of digital platforms to promote the endangered language and engage learners beyond physical boundaries.

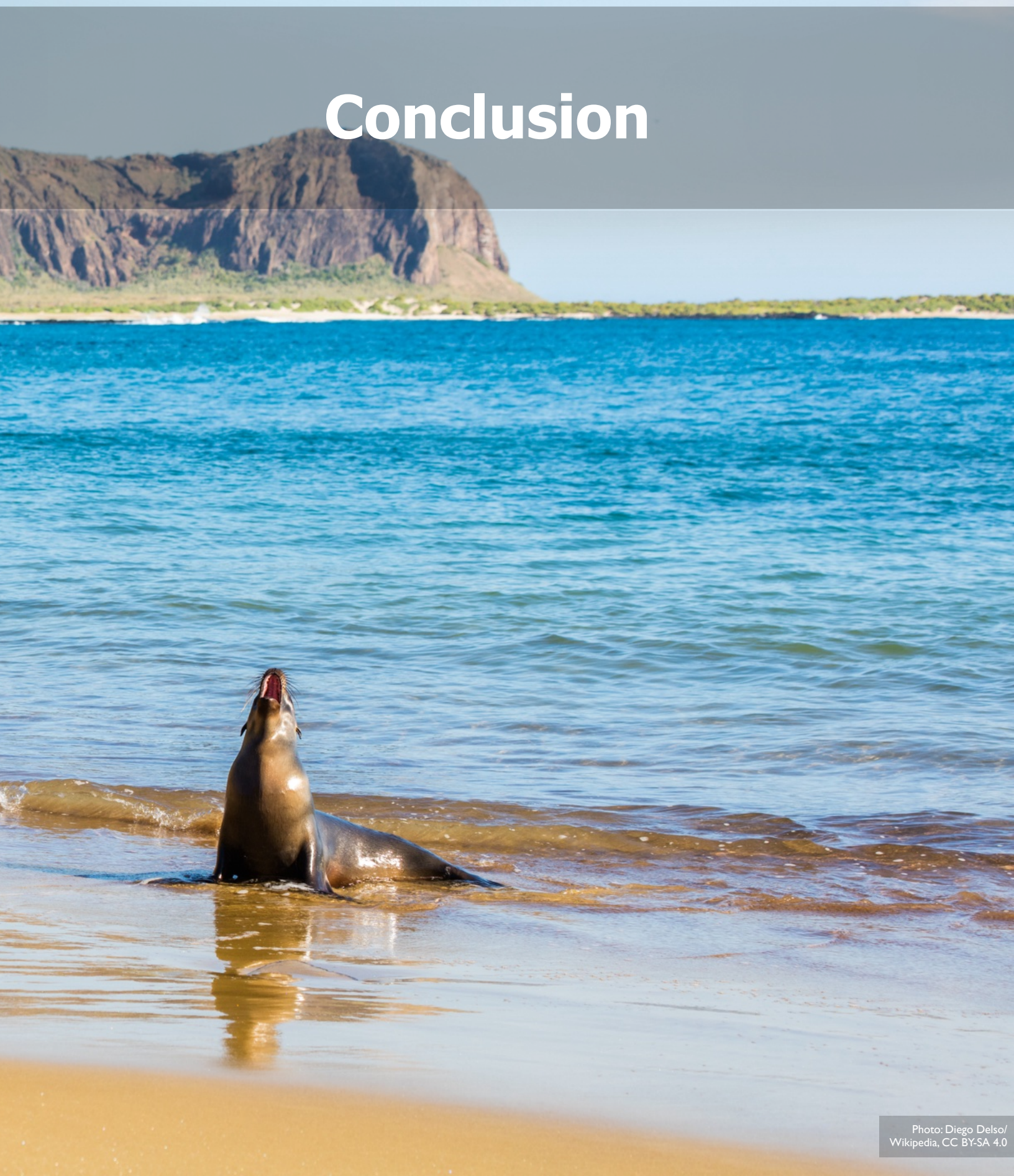
While the Maldives faces significant challenges due to climate change, there are potential solutions available that can help prevent some of the impacts of potential statelessness and preserve its unique cultural heritage. These solutions require global cooperation, innovative thinking, and a commitment to justice and equity.

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<sup>171</sup> *Innovative solutions: Towards a better future by UNDP Maldives on exposure*. Exposure. (n.d.). <https://undpmv.exposure.co/innovative-solutions-towards-a-better-futurenbsp>

<sup>172</sup> *Innovative solutions: Towards a better future by UNDP Maldives on exposure*. Exposure. (n.d.). <https://undpmv.exposure.co/innovative-solutions-towards-a-better-futurenbsp>

# Conclusion



This report underscores the intricate challenges faced by the Maldives and other Small Island Developing States (SIDs) in the wake of climate change. The synthesis of our key findings reveals a pressing need for collective action and innovative solutions to address the multifaceted issues confronting these vulnerable nations.

**Analysis of Key Findings:** Throughout the report, we have delved into the vulnerabilities of SIDs, emphasizing the profound impact of rising sea levels, displacement, and the intricacies of statelessness induced by climate change. Our exploration has shed light on the interconnected challenges, from the degradation of habitats to the displacement of communities, and the urgent need for comprehensive strategies to address these issues.

**Reinforcing Urgency and Global Significance:** The urgency of these challenges cannot be overstated, with implications extending far beyond the borders of SIDs. The interconnectedness of our global community necessitates a unified response to climate change, recognizing its implications for justice, equity, and the well-being of our shared planet.

**Highlighting Innovative Solutions:** This report has presented innovative legal approaches, including revised territorial criteria, environmental sovereignty, and collective statehood. These solutions offer a pathway toward safeguarding the rights and statehood of SIDs in the face of climate-induced threats, providing a foundation for further exploration and implementation.

**Stressing Community Involvement:** A recurring theme has been the significance of involving communities in decision-making processes, particularly in the context of relocation projects. Community-centric approaches are essential for ensuring the success, sustainability, and cultural sensitivity of initiatives aimed at mitigating the impacts of climate change.

**Call for International Cooperation:** Our findings stress the imperative for increased international cooperation and collaboration. To effectively address climate-induced displacement and statelessness, a shared responsibility among nations and a commitment to inclusive, global discussions are paramount.

**Addressing Potential Challenges:** Acknowledging potential criticisms and challenges demonstrates our commitment to a nuanced understanding of the complexities involved, further reinforcing the credibility of our conclusions.

**Call to Action:** In conclusion, we passionately appeal to policymakers, international organizations, and the global community to heed the call for action. Concrete steps, policies, and initiatives are required to meet the challenges head-on and contribute to the resilience and sustainability of SIDs in the face of the evolving climate landscape. Our findings align with key Sustainable Development Goals, emphasizing the need to integrate climate action with broader global development objectives for a harmonious and sustainable future.

As we close this report, we envision a future where the lessons learned from SIDs guide our collective efforts toward building resilience, fostering sustainability, and ensuring a brighter, more secure future for all in the face of climate uncertainty.

