Republic of the Marshall Islands

Papjelmae:

Planning and preparing for unforeseen and unexpected future events

RMI Statement of Intent on Adaptation

Our Survival Plan
Our Future

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Introduction

Our Statement of Intent on Adaptation presents the latest information on climate change projections and its impacts and risks for our country. This paper also discusses the planning framework, in particular the adaptation pathways and options available to our country and highlights the challenges we are facing. It also presents our key messages on climate change adaptation and its linkages to the Loss and Damages approach.

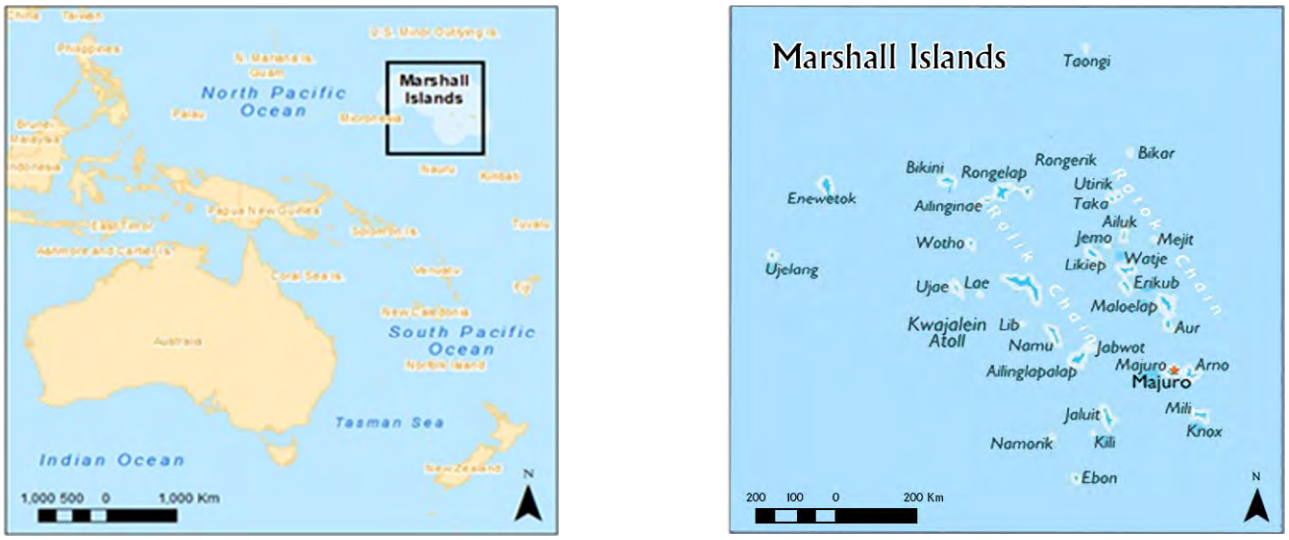

Figure A.1: Maps of the RMI

The Republic of the Marshall Islands (the RMI) is an archipelago of 34 atolls and islands comprising 70 sq miles of land mass within 770,000 sq miles of ocean (Figure 1). With land representing less than 0.01% of its territory and a current population of around 43,000, the RMI is a small island, large ocean-state, facing acute threats directly linked to climate change, and resulting in an increase in droughts, devastating economic impacts, and a range of serious health issues.

Of these, sea level rise is expected to be the most profound, affecting the low-lying Marshall Islands through wave inundation and extreme events such as king tides and ocean swells. The impact will be seen in water and food insecurity, leading to islands becoming uninhabitable without massive investment in protective measures.

To prepare for and adapt to these impacts, we are developing our National Adaptation Plan (NAP) in close consultation with communities at the atoll/island level. The NAP is merging the best available science with the traditional and local knowledge of our people. Its development is on-going and recognizes the importance of ecological and socioeconomic resilience as the backbone of long-term resilience.

This future planning is crucial for ensuring the delivery of an effective "National Survival Plan" that can be practically implemented but is also able to protect the best interests of all Marshallese people. The adaptation planning process has considered a range of adaptation pathways, all of which clearly indicate that the **RMI is in a situation of threat as a nation-state**. Indeed, a practicable National Adaptation Pathway for the RMI is still being

sought. This statement of intent sets out the situation and planning implications as understood at this point in time. Work is on-going to identify a practicable pathway which will be reported on in the NAP by October 2023.

This paper is organized in six parts, each containing specific sections, as summarized below:

> ***The adaptation planning process has considered a range of adaptation pathways all of which clearly indicate that the Republic of the Marshal Islands is in a situation of threat as a nation-state.***

* **Part A - Country Context,** sets the context of our country plus the governance structure to support adaptation and provides summaries of current issues across the sectoral agencies. It also sets out the parameters of a proposed RMI Sea Level Rise Adaptation Policy, derived from recent analyses, to guide on-going development.
* **Part B - The Climate Story**, provides the climate rationale for conducting adaptation in RMI. Part B also raises a range of adaptation issues, vulnerabilities, gaps and challenges.
* **Part C - Adaptation Pathways**, sets the rules for adaptation (objectives / planning / processes / capacity). Importantly, this part introduces the general outline of our National Adaptation Pathway. It also presents the key findings leading to continuing work to identify practicable pathways for the different types of atolls.
* **Part D - The Implementation Plan**, presents draft actions to be implemented to achieve the objectives of the NAP. These adaptation options are ultimately dependent on outcomes from further work and policy decisions. Included are their timeframes and implementation governance arrangements. Costings and a funding strategy are also included.
* **Part E - Monitoring, Evaluation and Reporting**, outlines the process, arrangement, and indicators to monitor and report the progress of the NAP implementation.
* **The Conclusion - Key Messages**, highlight the most important findings for our country at this point and our key messages from the RMI for CoP27.

Part A - Country Context

Introduction

The Republic of the Marshall Islands (the RMI) is a large ocean, small island developing state (SIDS) located near the equator in the Pacific Ocean, about halfway between Hawaii and Australia. Independent since 1986, the RMI is a collection of 29 geographically dispersed coral atolls and 5 islands with a total land area of only 70 sq miles, spread across over 770,000 sq miles of ocean.

The climate is tropical and strongly influenced by the El Niño Southern Oscillation (ENSO), with two distinct seasons, a dry one (November to April) and a wet one (May to October). The rainfall decreases from south to north with the northern atolls in the RMI often affected by droughts.

The RMI is among the 10 smallest states in the world, geographically isolated in the Pacific Ocean. Our population is dispersed on 24 inhabited atolls and islands, most of which are remote and lie, on average, a mere two meters above sea level.

***Table A.1**: Type of atolls, % of population and % of land area for each type of atoll. The % of population is calculated based on the 2010 RMI Census and only inhabited atolls in 2021 were included.*

Type of Atoll	Atolls/Centers	# Atoll / Centers	% Population	% Land Area
Urban Center	Majuro, Ebeye	2	70.5	6.5
Intermediate Center	Ailinglaplap, Arno, Jaluit, Wotje	4	11.6	30.4
Rural Atoll	Ailuk, Aur, Ebon, Enewetak, Jabat, Kili, Kwajalein (without Ebeye), Lae, Lib, Likiep, Maloelap, Mejit, Mili, Namdrik, Namu, Ujae, Utrik, Wotho	18	17.9	63.1

Based on preliminary results from the 2021 Census, the RMI's population was around 43,000 inhabitants, compared to around 53,000 in 2011. More than half of the population live on Majuro Atoll and an additional 20% live in the urban center of Ebeye, on Kwajalein Atoll. Approximately 20% of the population follow a subsistence mode of living.

Over the last 2000 years, RMI society evolved with a cohesive, hierarchical social structure, rooted in rights to their scarce and vulnerable lands. Marshallese culture is one that is rooted in the land and the ocean. A common Marshallese saying is "aelon kein ad rej ad jolet" which loosely translates to "these islands is our most precious gift." For the Marshallese, land "gives you the meaning of life and the role of each individual in society", and "without the land, all shatters"[1].

[1] Marshallese nuclear survivor testimonies from Holly Barker's *Bravo for the Marshallese: Regaining Control in a Post-Nuclear, Post-Colonial World*, 2013

Marshallese people are well known for their voyaging and navigating prowess, as well as for being skilled storytellers, fishermen, canoe builders and weavers. Modern Marshallese culture retains close attachment to such traditions, and also reflects the impact of colonization by Germans and Japanese together with the long post-WWII relationship with the US including the trailing negative legacy of the nuclear testing era.

Following the end of the Trust Territory period, our people chose the option of independence with free association with the USA in 1986 by signing the Compact of Free Association, a treaty that cemented a relationship between the two countries. The country adopted a western style of democratic governance and a constitution which maintained the traditional hierarchical land-based rights and ownership mechanisms through the Council of Iroij.

Men and women traditionally had clear and complementary roles in community activity and decision-making. More recently, however, various influences resulted in the erosion of women's representation and voice in political and economic activity. Despite the election of a female to the office of President (2016-2020), women hold only 6% of positions in the Nitijela (parliament).

The RMI is a lower-middle income country, with a 2021 GDP per capita of US$4,171[2]. The economy is service-based with a dominant public sector largely driven by a blend of US Government finance provided through the Compact of Free Association and development assistance funding from a range of donors. This stands in contrast to comparatively limited private sector activity which reflects both the small size of the domestic market and the remoteness of RMI from potential export markets. Economic opportunities do exist, with high hopes for meaningful possibilities in the 'blue economy'. Meanwhile, enhancements to the enabling environment, land tenure arrangements, and supply of services will all help stimulate higher levels of private sector activity, and enhance the nation's capacity to implement the extensive climate change adaptation measures being considered.

In addition to public financing, the Compact provides free access for Marshallese to reside and work in the US. Although a third of the population have taken up this option and it steadily continues, the notion of a nation-state to return home to or visit is fundamentally important to our culture and identity.

The impact of climate change is already observed in the RMI and projections foreshadow major impacts over the next 50 to 100 years. To adapt to them, fundamental discussions around policy and adjustments to practice are needed to reflect the aspirations of our people and to enable implementation of the NAP. These will center on what is needed to prepare for adaptation and will include issues around land, planned relocation, re-allocation of rights, decision-making, and economic sustainability.

NAP Development Process

We are preparing our National Adaptation Plan (NAP) as our 'Survival Plan' to guide our approach to adaptation to the impact of climate change on its atolls and islands. The process to formulate and implement the RMI NAP was initiated in 2019 and was established under the United Nations Framework Convention on Climate Change (UNFCCC) in 2010 as part of the Cancun Adaptation Framework. The agreed objectives of the NAP process are:

* to reduce vulnerability to the impact of climate change by building adaptive capacity and resilience;
* to facilitate the integration of climate change adaptation, in a coherent manner, into new and existing policies, programs and activities,

[2] World Bank, 2021

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with particular attention to the development planning processes and strategies, within all sectors and at different levels, as appropriate; and

* to identify practicable adaptation measures and priorities at the national and strategic level for application through the sectors and atolls.

The Reimaanlok[3] approach accumulated a large amount of information to support the NAP process. It is a bottom-up national consultation process focusing on community-based natural resource management, conservation area planning and management. It embodies self-determination and embraces all atolls/islands making up the RMI. The Reimaanlok process provides a good example of the inclusive and deliberative approaches we have endeavored to use to develop the NAP.

The "Survival Plan for RMI" (The NAP) is specifically founded on the principles of protection of every citizen's right to remain in the RMI, and self-determination – supported by observation, knowledge and science. Self-determination is a practical internal concept and reflects a commitment to obtaining and responding to local viewpoints from national and local government, traditional leadership, and remote and urban communities. **This ensures the NAP will be locally derived for local consumption and not formed by global expectations and formats**.

Alongside this have been a number of technical assessments of coastal vulnerabilities and protection measures which have identified a range of pathway options outlined in Part C of this paper. Recent further analysis has shown these pathways are excessively expensive and lack practicable application for many of the narrow low-lying atolls and islands of RMI which lack depth for set-backs or tiered protection solutions.

This is particularly the case for the heavily urbanized locations of the RMI. It is evident that further refinement of options is required to find a practicable pathway. The parameters for this are set out in this report, along with a summary of policy issues and key messages to inform the way forward. The further work required will be presented in the NAP by October 2023.

[3] The purpose of Reimaanlok is to foster collaboration and consultation between agencies involved in conservation in the Marshall Islands and other stakeholders including communities and traditional and elected leaders. Reimaanlok is supported by the Marshall Islands Marine Resources Authority (MIMRA).

Institutional Arrangements

The RMI NAP process commenced after the 2050 Climate Strategy for RMI was published in September 2018. The 2018 Nationally Determined Contribution also called for the urgent development of a NAP. This reflected a desire to promote a balanced dialogue on our priorities for mitigation (for reducing emissions) and adaptation (for addressing the potentially critical impacts of climate change).

In 2019, an ad hoc NAP Working Group was formed and chaired by the Chief Secretary and supported by a Technical Support Team. An initial Internal Dialogue workshop was held with our stakeholders to introduce the NAP discussion to a wider group of stakeholders. It was clear the issues facing the RMI were compelling and that major decisions would need to be addressed through the 2025 to 2030 period.

The Tile Til Eo Committee (TTEC) has been tasked to oversee all climate change related matters including the development of the RMI NAP through the Pacific Resilience Project – Phase II (PREP II) funded by the World Bank and Green Climate Fund (GCF). There are three TTEC Working Groups for Mitigation, Adaptation and the NDC-Partnership for addressing cross-cutting issues. The Adaptation Working Group (AWG) focuses on the development of the NAP. Its work is closely coordinated with the work of the NDC Partnership Group (NDCP), which coordinates inputs to the NAP on cross-cutting issues in four areas: gender and human rights, climate finance management, health and global advocacy.

The work of the TTEC and AWG is managed through the Climate Change Directorate (CCD of the Ministry of Environment). The CCD functions and partners are presented in Figure A.2.

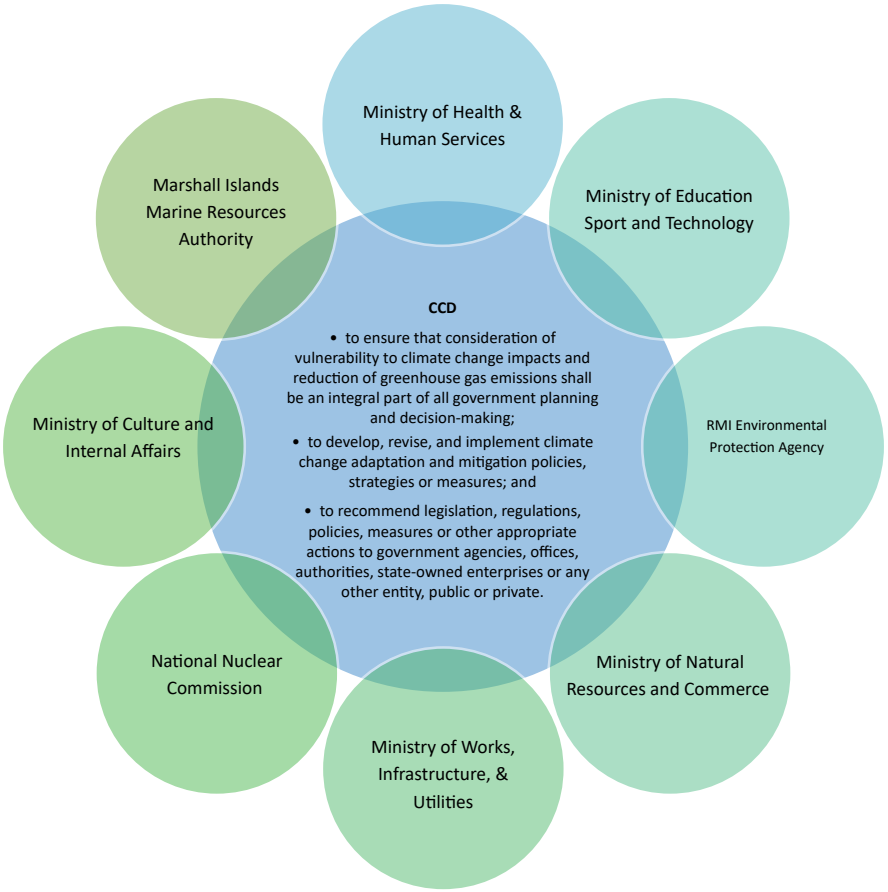

***Figure A.2**: Roles and partners of the Climate Change Directorate*

Legislation, Policies and Plans

The RMI NAP is not a stand-alone plan, it is part of the RMI policy environment. It is aligned with other national policies and strategies relevant to the RMI's adaptation response to climate change and in particular, the National Strategic Plan (NSP) 2020-2030 in which Adaptation to Climate Change and Sea-Level Rise is identified as a critically important issue across all sectors.

Before the NSP 2020-2030, other plans and strategies recognized the importance for the RMI to adapt to climate change. These include Vision 2018 (2001); the 2011 National Climate Change Policy Framework (NCCPF); the Water and Sanitation Policy and Proposed Action Plan (2016); The National Strategic Plan 2015 – 2017 (NSP); the National Oceans Policy (NOP) and Implementation Plan (2017); the Tile Til Eo 2050 Climate Strategy: Lighting the Way (2018); and the Nationally Determined Contributions (2018).

The visions, policies, strategies, and plans for action over the past 20 years have achieved some success in terms of follow-through and implementation. However, to avoid being overwhelmed by the scale and complexity of near- and longer-term issues associated with climate change, a more effective and far better resourced approach needs to be adopted to strengthen our enabling environment for climate change adaptation, including policy development, and governance for the implementation of the NAP.

The difficulties and expense of protecting the low-lying atolls of RMI against sea level rise are colossal, with 20 in (0.5 m) of sea level rise expected between 2070 and 2090 and 6.5 ft (2 m) projected beyond 2150.

A proposed Sea Level Rise Adaptation Policy has been prepared to guide this planning. It acknowledges recent findings and includes the need to monitor actual sea level rise over time to guide planning. It also includes the need to identify a progressive pathway of practicable protection measures to a long-term end point of 6.6 ft (2 m) sea level rise, critical to determining the viability of maintaining our core nation state. It also includes a requirement that future development fit within the context of a long-term end-point plan. This will have major ramifications for future development activity.

The proposed policy also speaks to the need to address the underlying issues considered necessary to enable the implementation of the NAP. These include on-going reform of our public sector, women's representation and their voice in political and economic activity, land tenure and land use mechanisms, and the re-allocation of rights for land loss and land protection, amongst others.

Part B - The Climate Story

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Observations and Trends

Weather parameters have been recorded in the RMI, starting in 1956 in Majuro and 1960 in Kwajalein; and climate records for temperature and rainfall have been monitored since then.

The RMI has a tropical climate with average temperature remaining almost constant at 80-82°F (26.7-27.8°C) all year round. Average air temperature has increased by 0.3°C/decade in Kwajalein since 1960 and by 0.12°C/decade in Majuro since 1956 and the number of hot days and nights have increased at both locations.

In contrast to temperature, rainfall varies significantly between the dry season (December to April) and the wet season (May to November). In addition, there is a considerable difference between the northern atolls (which receive less than 50 in (125 cm) of rain each year and are very dry in the dry season) and the atolls closer to the equator which receive more than 100 in (250 cm) of rain each year. Rainfall has decreased by 30 mm/decade in Kwajalein since 1960 and by 77.4 mm/decade in Majuro since 1956. In addition to the long-term observed decrease, the main driver of rainfall in the RMI is the El-Niño Southern Oscillation (ENSO) with severe El Niño events reducing rainfall by up to 80%. Drought is becoming a more frequent feature of weather patterns, especially so for the core northern atolls.

The RMI is already exposed to flooding from different sources, primarily extreme water levels, waves, and rainfall or a combination thereof. Nuisance flooding and low-intensity events affecting small areas are generally caused by high tides inundating low-lying areas and wave overtopping of the immediate shoreline and low-lying land.

More severe and damaging floods occur during typhoons or strong storms, or are caused by occasional large swell wave conditions caused by distant storms. These higher-intensity events lead to inundation of large areas and even whole islets. The exposure to wind- and wave-generated high water level events and inundation varies in the RMI, with the atolls and islands heavily exposed to the north-eastern trade winds being more prone to coastal inundation.

The RMI is also exposed to other natural hazards. RMI is not in a seismically active area and its narrow continental shelf limits the generation of high tsunami waves, but extremely active seismic zones in the Pacific can generate earthquakes and tsunamis capable of travelling great distances. The RMI can also be affected by typhoons although

they are relatively infrequent, with an average of 22 cyclones per decade being recorded between 1977 and 2011 with just 4 of these typhoons developing into severe events (Category 3 or stronger).

Future Climate Changes

Weather and climate in the Pacific region are controlled by the location of the Inter Tropical Convergence Zone (ITCZ) and the South Pacific Convergence Zone (SPCZ) and affected by ENSO events, which are, and will continue to be, the major cause of year-to-year climate variations in the Pacific. El Niño events will be warmer in the future although projections regarding the frequency and intensity of future ENSO events are not consistent.

ENSO-driven rainfall changes are expected to intensify in the central-east equatorial Pacific and the western equatorial Pacific. Extreme El Niño events may become more common in the future and El Niño-driven rainfall variations near the equator may be enhanced under global warming. More specifically, for the RMI:

Under a very low emission scenario (RCP2.6[4]) (this scenario is still possible, but emissions are currently off track):

* Average air temperature will increase by 0.8°C by 2090;
* Annual rainfall will increase by 3% by 2090;
* Current extreme rainfall events (5% probability occurrence in any one year) will have a 12.5% probability of occurrence in any one year in Kwajalein and a 11.1% probability of occurrence in any one year in Majuro;
* Rainfall during these extreme events will increase by 6 mm in Kwajalein and 9mm in Majuro by 2090;
* Sea level will rise by 1.35 ft (41 cm) by 2090.

Under a low emission scenario (RCP4.5):

* Average air temperature will increase by 1.5°C by 2090;
* Annual rainfall will increase by 5% in Kwajalein and by 3% in Majuro by 2090;
* Sea level will rise by 1.58 ft (48 cm) by 2090.

Under a high emission scenario (RCP6.0):

* Average air temperature will increase by 1.9°C in Kwajalein and 1.8°C in Majuro by 2090;
* Annual rainfall will increase by 5% in Kwajalein and Majuro by 2090;
* Sea level will rise by 1.61 ft (49 cm) by 2090.

Under a very high emission scenario (RCP8.5):

* Average air temperature will increase by 3.1°C in Kwajalein and 3.0°C in Majuro by 2090;
* Annual rainfall will increase by 14% in Kwajalein and by 8% in Majuro by 2090;
* Current extreme rainfall events (5% probability occurrence in any one year) will have a 20% probability of occurrence in any one year in Kwajalein and a 16.7% probability of occurrence in any one year in Majuro;
* Rainfall during these extreme events will increase by 32 mm in Kwajalein and 30 mm in Majuro by 2090;
* Sea level will rise by 2.13 ft (65 cm) by 2090.

[4] RCPs are scenarios that include time series of emissions and concentrations of the full suite of GHGs and aerosols and chemically active gases, as well as land use / land cover. RCPs provide only one set of many possible scenarios that would lead to different levels of global warming. The most recent IPCC report used another set of scenarios, the Shared Socioeconomic Pathways (SSPs) derived from the RCP scenarios. Unfortunately, no downscaled SSPs exist for the RMI so RCPs are used in the RMI NAP.

Community and Societal Impacts and Vulnerability

These climatic changes based on downscaled climate projections from climate models of the 5th generation (CIMP5), will lead to different impacts on the RMI, depending on the sector affected or the type of atoll (urban, intermediate or rural). For all sectors and types of atolls, sea level rise is projected to have major impacts including coastal inundation, inundation of low-lying areas, soil and groundwater salination. The consequences of these impacts include water and food insecurity and associated health issues, damages to infrastructures and general decrease in wellbeing.

With a sea level rise of 20 in (0.5 m), which may materialize as early as 2070 though unlikely to be later than 2090, life in the major urban and intermediate centers will be difficult without significant and costly engineering focused adaptation measures (such as seawalls and revetments), as flooding extents reach 52% (Majuro - Figures B.1 & B.2) and 82% (Ebeye – Table B.1) for the 1-in-10-yr swell event.

__Table B.1__: Overview of flooded area, people affected, and EAD for Ebeye, for the 1-in-10-yr swell event.

Indicator	Sea level rise					
	0 ft (0 m)	0.85 ft (0.26 m)	1.7 ft (0.53 m)	2.5 ft (0.78 m)	3.3 ft (1 m)	6.6 ft (2 m)
Projection year estimate (median SSP1-2.6 - SSP5-8.5)	**Current**	**2050-2050**	**2070-2090**	**2090-2130**	**2110->2150**	**>2150**
Flooded Area	69%	82%	89%	92%	96%	99%
People Affected	67%	83%	94%	98%	-	-
Expected Av. annual damage (million USD/yr)	4.5	6.6	9.6	16.3	-	-

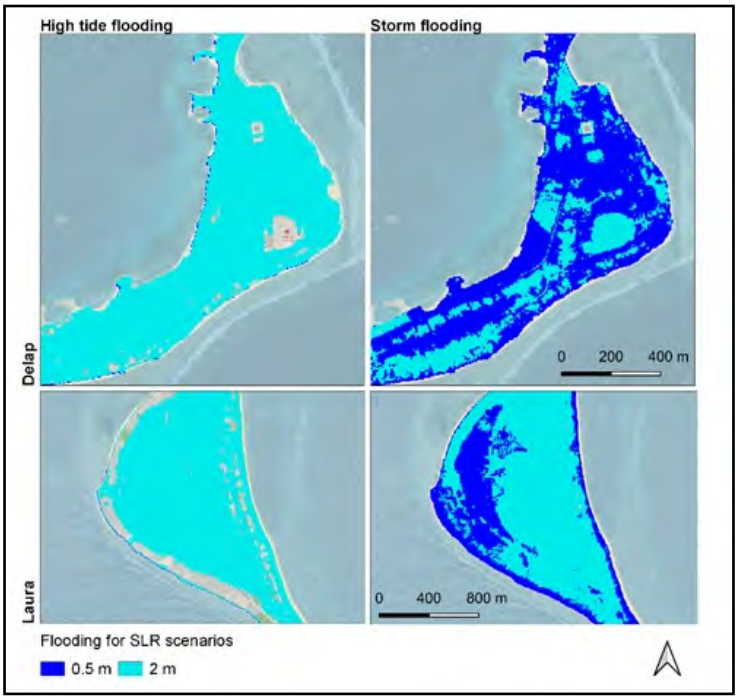

__Figure B.1__: Illustration of flooding scenarios for the Delap, Djarrit, and Laura communities in Majuro, showing regions affected by groundwater flooding, high tide flooding and flooding during a storm event for different sea level rise scenarios.

In the urban centers of Majuro atoll and Ebeye Island in Kwajalein Atoll, characterized by high population density and the presence of essential infrastructure and services, sea level rise will threaten people and infrastructure as well as economic activity through impacts on harbors and jetties. Significant parts of urban Majuro (35%) and Ebeye (69%) are prone to flooding during the 1-in-10-yr swell event. Projected flood extents are highly variable for the other atolls, with estimates ranging from 5–60%.

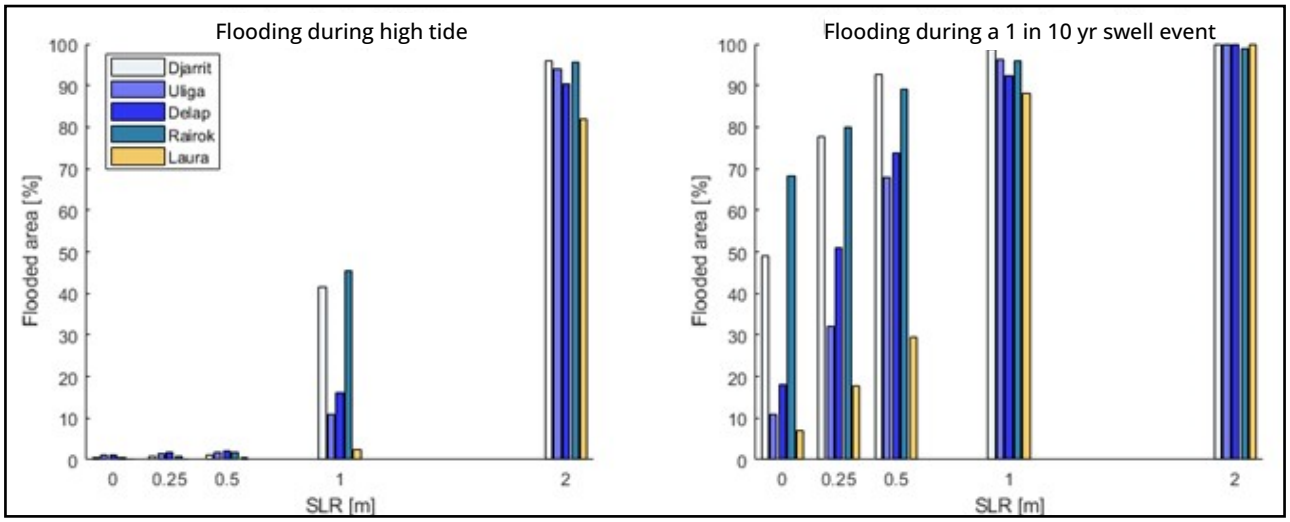

***Figure B.2**: Flooding during high tide (MHHW) (left panel) and during the 1-in-10-yr swell wave event (right panel), for the urban centers Djarrit, Uliga, Delap, and Rairok, and the intermediate center Laura on Majuro Atoll.*

The area, and the average number of people per year affected by tidal flooding, is expected to increase dramatically above 20 in (0.5 m) sea level rise. In addition, the density of population and infrastructure in the urban centers is expected to generate an 'island heat effect', increasing the air temperature in the area, with impacts on health, energy demand and water demand. Over the long-term, transformative measures such as raising or reclaiming land are required to protect up to a 2 m sea level rise, as projections estimate that almost the entire urban atolls of Majuro and Kwajalein (including the urban center of Ebeye) will be flooded. In addition, between 10 and 95 % of the area of all other atolls will be submerged, or uninhabitable (due to saline intrusion) (Figure B.3).

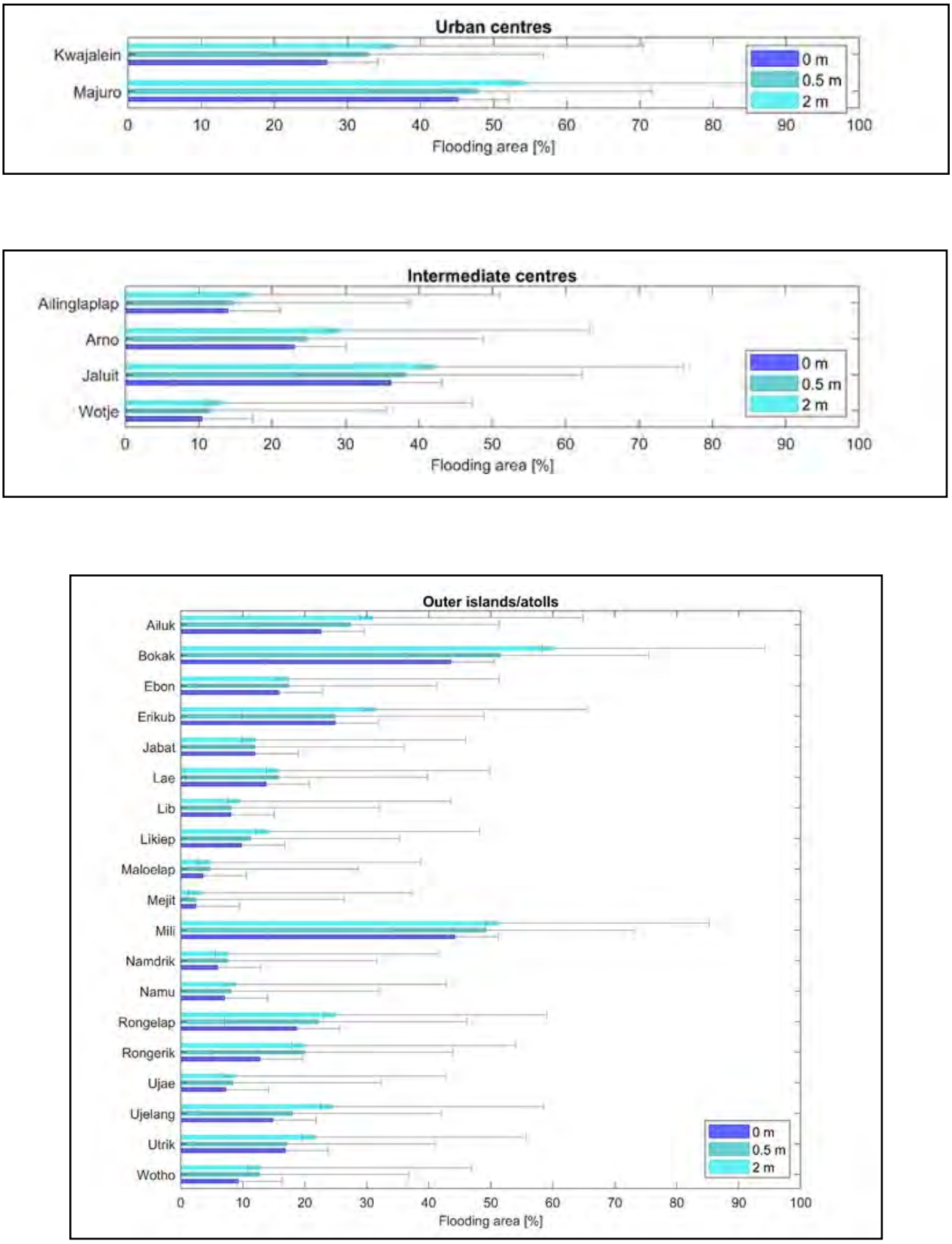

***Figure B.3**: Percentage of flooded area per atoll for the four settlements, modelled using global elevation data. Uncertainty bands were estimated based on the comparison to high resolution model results for Majuro and Ebeye.*

In the intermediate centers with lower population density and more limited infrastructure and services, climate change will affect population and infrastructure, but the island heat effect is expected to be less. However, agriculture is more developed in these atolls and will be affected by soil and water salination.

In the rural neighboring atolls, climate change impacts will affect food security from both agriculture and fisheries. Sea level rise and change in rainfall will affect agriculture while changes in ocean's conditions, such as ocean warming and acidification will affect coastal marine habitats, fish distribution and abundance. This is expected to result in food insecurity and a reduction in the quality of livelihoods and wellbeing.

general exposure of the atolls/islands and their communities. The level of vulnerability varies between the different atolls/islands and between the different communities in each atoll.

In addition, socio-economic drivers such as poverty, weak economic development, gender inequality, etc., will affect different groups and strongly influence vulnerability at local levels, for example, making certain vulnerable groups even more vulnerable.

A coastal vulnerability assessment has been completed for Majuro and Ebeye, but it focuses on exposure and not on the socio-economic drivers that will be assessed during a community consultation program in 2022-2023.

A key issue for rural atolls is the prospect of becoming uninhabitable due to sea level rise. In this case, planned relocation to more protected and elevated atolls is considered to be one possible adaptation measure available.

Another key issue for the rural neighboring atolls is the prospect of becoming uninhabitable due to sea level rise. In this case, planned relocation to other more protected and elevated atolls is considered to be one possible adaptation measure available.

The consequences of this measure in terms of loss of land, loss of livelihood and community will need to be addressed.

Precise elevation data for the different rural atolls and islands is not available. Consequently, projections of the area inundated by sea level rise varies strongly between atolls and is very uncertain.

Differences in the exposure to sea level rise is highlighted in the figures above, but other climate change impacts will affect the

Sectoral Impacts, Vulnerability, Challenges and Opportunities

The level of vulnerability and the degree of impact from climate change factors differs between sectors. The fisheries sector will suffer from changes in the ocean reducing catch, while the agriculture sector is more exposed to seal level rise, changes in rainfall and increased temperatures. Some Ministries and Agencies have identified their exposure and vulnerability in their sectoral plans, but not all.

Other parameters will also affect their vulnerability. Some are sector specific while others are more general. For example, the lack of risk informed planning and investment is a cross-cutting issue, as is limited retention

of skilled labor to support climate change adaptation and risk reduction. A more detailed study on sectoral vulnerability is in progress and will be reported in the final NAP in 2023.

Health: Climate change-induced risks include increased occurrence of skin infections; cancer and infectious diseases; water and food-borne diseases; and mosquito- and fly-transmitted infections and diseases. Warmer temperatures impact human health, in particular increasing the risk of dehydration and affecting people with respiratory illness. Decreasing air and water quality due to poor waste management and other human pressures also affect health. In addition to the above issues which can be expected to become more prevalent in our nation over time, we need to also be mindful of the mental health repercussions of climate change.

Water Resources: The warming climate is expected to increase water demand. Climate projections indicate a slight increase in rainfall, with heavy rainfall events projected to increase. Whilst heavy rainfall helps to replenish water catchment systems, it can also lead to a decrease in water quality. Households in the RMI rely on their rainwater catchment system but the efficiency of these systems is very low at around 20%.

Current projects are aiming at expanding the freshwater resource options but barriers and gaps remain, particularly, insufficient infrastructure, limited maintenance, and high risks of contamination.

Food and Nutrition: Temperature increase, change in rainfall patterns, and soil and groundwater salination will further reduce already low agricultural yields in the RMI. Farmers are encouraged to use agroforestry and salt and drought resistant varieties. The use of mesh to prepare shelter areas and other methods to reduce water consumption are also in place.

In addition, ocean warming and acidification will damage coral reefs, the main coastal marine habitat. This will reduce food security and increase an already high dependence on imported food. Changes in the ocean will also drive change in the distribution of tuna, leading to a projected reduction in catch around 30% in our extensive Exclusive Economic Zone (EEZ).

Image supplied by Scott Hafner

Education: With the continuity of education threatened by extreme weather events, it is appropriate that the school system play a major role in awareness of climate change and preparing the population for its response.

Schools already close during drought when there is no water in the facilities. Schools are also used as emergency shelters when necessary, precluding continuity of education for the duration of the emergency event. Such interruptions are expected to become more frequent with climate change.

Constraints to the education system include coastal erosion and major swells threatening school buildings.

Women: Although several of our policies addressing climate change and gender do refer to women as agents of change, women are still mostly seen as vulnerable and in need of support.

Addressing gender inequalities through climate policies and action is a positive step, but more is needed. The NAP implementation enabling environment must be reviewed to ensure that the voice and perspective of women as nurturers, landowners and peacemakers are assured of equal influence in this process.

Economic Development: Changes in the ocean's characteristics are expected to influence the distribution of tuna in the Pacific. This will lead to a decrease of tuna catch in the Marshallese waters, reducing the revenues from the selling of fishing licenses and limiting the development of tuna handling and preparation in the RMI. As the largest source of revenues for the RMI outside of foreign aid, any negative impact is expected to be profound. To limit depletion of natural resources, pollution of the land, air and water assistance must be sought to provide RMI with access to clean development mechanisms.

A bright spot within this context is our EEZ with its potential to host an emerging 'blue economy'. This indeed may become the main economic development pathway, an opportunity already gaining support from development partners.

Critical Infrastructure: Infrastructure development is limited by the availability of land and protracted legal undertakings before building can start. Climate hazards create threats to the infrastructure assets, including damage from flooding (water and silt), strong winds, and high salt levels which significantly reduces the life-expectancy of key infrastructure. All classes of infrastructure and housing are affected, including key transport infrastructure (docks and airstrips). To maintain supply of essential services and important connectivity between islands, upgrades to and protection of such infrastructure, will be necessary.

Image supplied by Scott Hafner

The RMI building codes are in the final stages of review and when ratified will establish standards for buildings to be resilient to extreme events.

Terrestrial and Marine Biodiversity: Climate change is expected to decrease the quality and quantity of biodiversity in terms of species health and their ability to reproduce. Pests, diseases (e.g., fungal diseases), and invasive species affect both the flora and fauna, in particular, the native terrestrial birds.

Coastal vegetation, essential to reinforce the berm, which act to resist coastal erosion and minimize the occurrence of overtopping, has been thinned and removed in many urban and rural areas. Restoration and maintenance of vegetation to its natural state is a "no-regrets strategy" and viewed as a first line of defense against the effects of sea level rise.

Coral reefs, recognized as one of our essential natural assets, which support marine ecosystems and coastal fisheries, are under threat from climate change, particularly from ocean warming and acidification, as well as from more intense storms. In addition, marine pollution in the urban centers is another pressing problem.

We are taking steps to preserve our ecosystems, particularly, the vulnerable coastal land and marine areas. It is accomplishing this through participation in the Micronesia Challenge and efforts to develop community-based natural resources management.

Nuclear Legacy and National Security: The RMI's nuclear legacy we continue to confront, cuts across nearly every sector of our society, public and private, as our people continue to face outstanding issues as a result of the USA nuclear weapons testing program from 1946-1958.

The nuclear legacy provides unfortunate but valuable lessons on planning and managing the relocation of population in a climate threatened future.

The intersection of nuclear justice and climate change is perhaps at its apex at the Runit Dome, a nuclear waste repository which today poses serious health risks to the people of nearby Enewetak and to the RMI as a whole. The need to better understand the impact of sea level rise on the Runit Dome must be regarded as a matter of **urgent priority**.

The nuclear legacy provides unfortunate but valuable lessons on planning and managing the relocation of population in a climate threatened future.

Part C - Adaptation Pathways

Beyond the 2050s, for all but the very lowest emission scenarios, communities in the RMI will need to adapt to coastal hazard events well beyond the current experience. Particularly in terms of adapting to the predicted increased frequency of major impact and nuisance climate hazard events.

Current projections indicate coastal hazard impacts for all atolls, are likely to result in increased inundations that will become intolerable for a substantial portion of society. Shifting from a focus on short-term protection actions to a longer-term National Adaptation Pathway for the RMI is therefore critical.

This Part C discusses a range of adaptation pathways (Table C.1) derived from the major studies over the past three years. These adaptation pathways reflect our current level of scientific knowledge and technological capacities and will be adjusted to include any significant changes in these domains in the next decades. As noted in Part A, further work is required to identify a practicable pathway with a defined end-point for combating sea level rise. The findings from recent analyses are showing that:

* at around 20 in (0.5 m) sea level rise habitability of unprotected atolls will be compromised;
* Aiming to protect **all** atolls against long-term sea level rise is fraught with technical and financial challenges currently beyond reach. Costs in the order of $4 billion for 20" (0.5 m) sea level rise to $35 billion for 6.6 ft (2 m) sea level rise[5]. Even for individual atolls, the costs are prohibitive and therefore, preserving just parts of an atoll will need to be considered in the long term;
* major difficulties are faced in protecting the urban atolls of Ebeye and Majuro beyond 20 in (0.5 m) sea level rise due to existing buildings, barriers and infrastructure as well as issues related to lagoon access;
* sometime between 20 in and 40 in (0.5 m and 1 m) sea level rise, the rising ground water between the barrier walls will inundate the existing land and require its lifting along with any buildings and infrastructure present;
* with the costs of protection already at a limit, this additional cost means that protection of the urban centres of Ebeye and Majuro beyond 20 in (0.5 m) sea level rise is going to be impractical; and
* incremental adaptation measures for the RMI will not be sufficient or effective – transformative measures within an end-point pathway will be critical;

Adaptation planning to address these findings needs to be framed to deal with increasing sea level rise in a sequential or progressive manner and within an identified end-point pathway. It is necessary that our development policies and guidelines are set down to ensure that the agreed pathway is identified and followed. Analysis of the key points outlined above brings an even stronger focus to the limitations of these pathways and the need for further work to identify practicable options. It is stressed that some form of policy addressing these issues is necessary to enable the implementation of the selected pathway.

Longer term climate projections and adaptation needs are affected by uncertainties. Various pathway options up to 6.6 ft (2 m) sea level rise have been used to incorporate these uncertainties into our long-term adaptive planning. Rather than trying to predict the future, adaptation pathways present a way

[5] Atoll Study Deltares and Tonkin and Taylor "Long term climate adaptation options, costing and financing for RMI", 2021.

of thinking about a range of possible options that could be implemented over time, as the changes occur. This retains flexibility, rather than prescribing a single solution. This means that adaptation choices are mapped out in advance and implemented as required.

Adaptive capacities will need to move from consideration of single, independent options, e.g., a focus on a hard engineered seawall only, to a consideration of a mix of "hybrid" options that work together and over time to respond

The RMI does not have a wide range of options and adaptation pathways to respond to the impacts of long-term sea-level rise. Adaptation will be a continuous journey...

As an atoll nation, we do not have a wide range of options and adaptation pathways to respond to the impacts of long-term sea-level rise. Adaptation will be a continuous journey involving a range of inter-relating activities varying from location to location. Over time, our National Adaptation Pathway may need to change to adjust to the magnitude of sea level rise.

to the longer-term sea level rise challenges. This will provide more effective or longer-term pathways. There is a need to start focusing on practicable outcomes (from a societal and economic perspective) and avoid following adaptive pathways that are unattainable.

***Table C.1**: Description of the pathway options for the different types of atolls / centers in the RMI*

Pathway Option	Type of Atoll / Center	Detailed Actions
Protect and Raise	urban & intermediate	Protect the coast with engineered defence and raise the land above 6.6. ft (2m) sea level rise.
Protect and Reclaim and Raise on the shallow lagoon shoreline	all	Reclaim land on the coast and raise it to protect against 6.6 ft (2 m) sea level rise.
Protect (engineered) and Relocate to raised land on other islands	urban & intermediate	Protect the coast with engineered defense to protect against 20 in (0.5 m) sea level rise. Beyond 20 in (0.5 m), when the protected land becomes uninhabitable, relocate the population to land raised to protect against 6.6 ft (2 m) sea level rise. Beyond that point, migration will be an option.
Protect (NbS) and Relocate to raised land on other islands	intermediate & rural	Protect the coast with nature-based solutions to protect against 20 in (0.5 m) sea level rise. Beyond 20 in (0.5 m) or when the protected land becomes uninhabitable, relocate the population to land raised to protect against 6.6 ft (2 m) sea level rise. Beyond that point, migration will be an option.
Protect (engineered) and Migrate	urban & intermediate	Protect the coast with engineered solutions to protect against 20 in (0.5 m) sea level rise. Do not raise any land. Beyond 20 in (0.5 m) or when the protected land becomes uninhabitable, migrate abroad.
Protect (NbS) and Migrate	intermediate & rural	Protect the coast with nature-based solutions to protect against 20 in (0.5 m) sea level rise. Do not raise any land. Beyond 20 in (0.5 m) or when the protected land becomes uninhabitable, migrate abroad.

For Urban Centers, DUD-Rairok on Majuro Atoll and Ebeye on Kwajalein Atoll, in the short term, all adaptation pathways rely on hard engineering measures to protect against sea level rise at least up to 20 in (0.5 m), expected to occur likely between 2070 and 2090. These measures include building new, and improving existing, seawalls and revetments. In the long-term, engineered measures may continue to provide partial protection from event-driven flooding, however, they will not protect from groundwater-driven flooding caused by sea level rise. Therefore, transformative measures such as land raising are required to keep our country habitable beyond 20 in (0.5 m) sea level rise.

Four options were considered for the major urban centers:

* Protect and Raise,
* Protect and Relocate to raised land on other islands,
* Protect and Reclaim and Raise on the shallow lagoon shoreline, or
* Protect and Migrate.

The costs for these pathways for protecting existing land and population up to 6.6 ft (2 m) sea level rise (but only for Majuro and Ebeye combined) range from $6.1B (protect to 20 in and migrate) to $23.4B (protect to 20 in, relocate to raised alternative land and migrate). These costs only include building of coastal protection and the raising of the land, not the social or cultural costs nor the building of houses and infrastructure. They also do not include the potential relocation/rehabilitation costs.

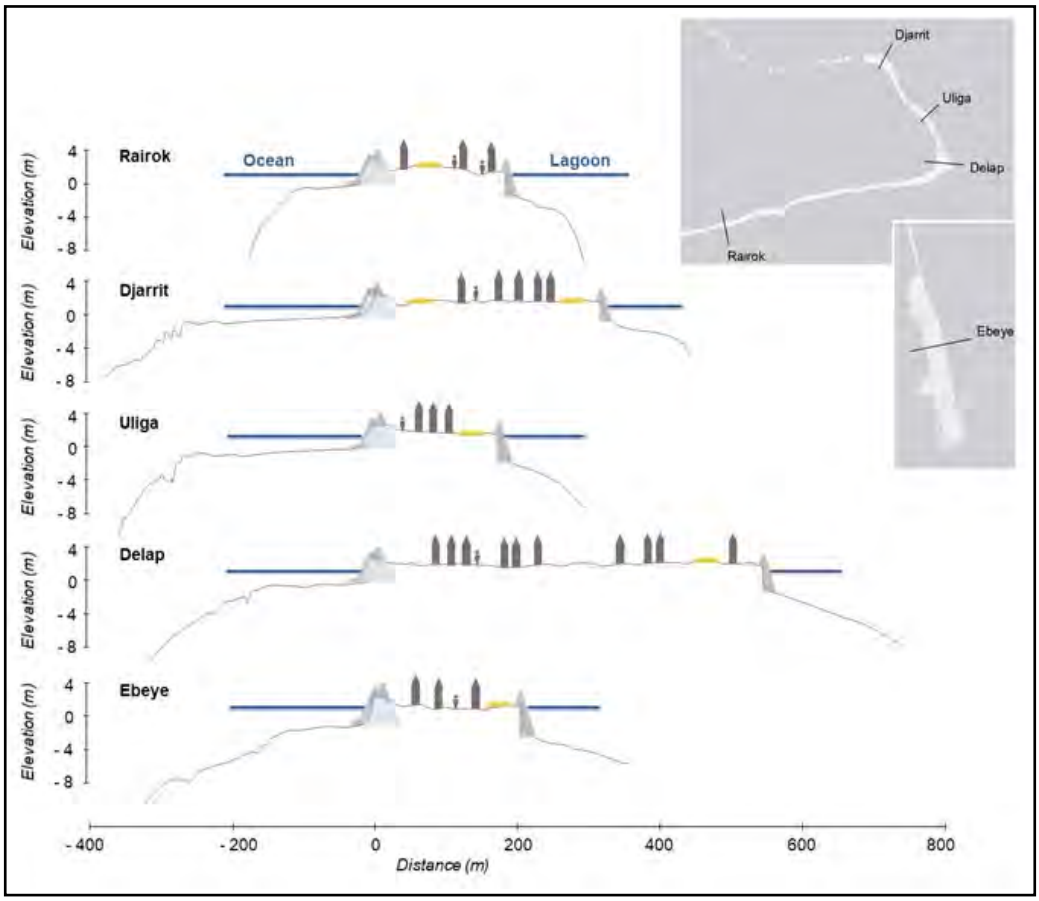

***Figure C.1**: Transects across the urban centers of Rairok, Djarrit, Uliga, Delap, and Ebeye with an indication of the scale of the coastal protection measures relative to the island elevation and island width. The depicted water levels correspond to the Mean Higher High Water (MHHW) level (=0.645 m) plus 0.5 m sea level rise. Note that the horizontal scale is distorted.*

For Intermediate Centers, the long-term Protect and Raise; Protect and Reclaim; or Protect and Migrate options described for the major urban atolls (see above) also apply to the intermediate atolls being considered for planned relocation.

These intermediate centers have fewer buildings and infrastructure which make elevating the land more achievable and they have more space to locate them further inland. However, they also have less existing protection structures. The total cost for protecting all intermediate centers to adapt to 2 m sea level rise is estimated to range from $754M for Protect and Migrate to around $5.5B for Protect and Raise or Protect and Reclaim. These costs only include building of coastal protection and the raising of the land, not the social or cultural costs, nor the building of houses and infrastructure. They also do not include the potential relocation/rehabilitation costs.

Clearly, large investment sums are required that may not be readily available. Prioritization of which atolls to consolidate can aid in the progressive planning of adaptation.

For Rural Atolls, short-term adaptation pathways place a strong focus on maintaining and restoring ecosystem-based services to extend their habitability. In particular, these may include: coastal protection, continuing traditional settlement approaches, moving from slab concrete foundation to pile foundations and building backstop protection to limit the impacts of more frequent wave overtopping.

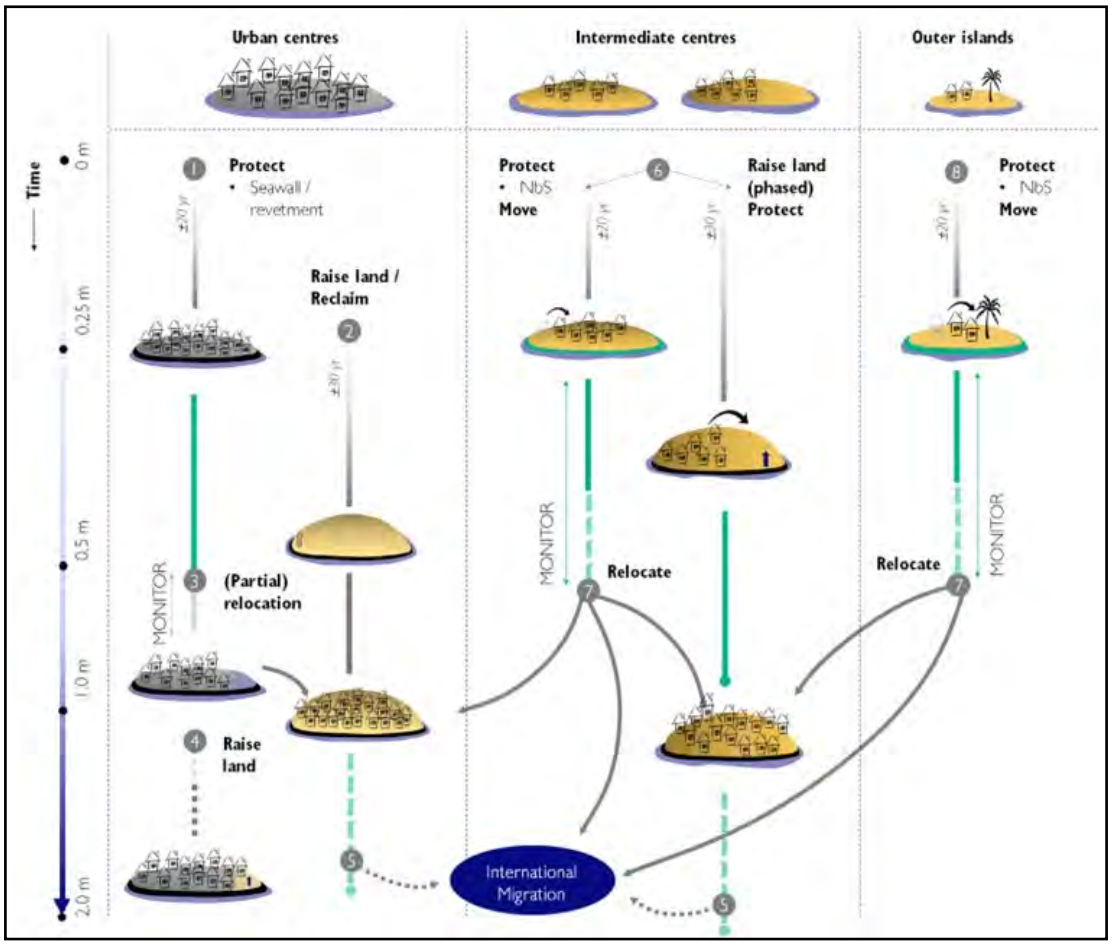

***Figure C.2**: A Survival Route for the RMI. Numbers indicate key decision points. Vertical grey lines refer to time required for planning and construction, while green lines refer to the lifetime and monitoring phase of the measures. Monitoring includes both the monitoring of SLR, island change and resulting flooding impacts, as well as demographic development. Grey arrows indicate migration options, with potential international migration for SLR beyond 6.6.ft (2 m) marked by dashed arrows.*

It is apparent these adaptation pathways have not yet produced a practicable National Adaptation Pathway for the RMI. Further work is required to refine them for the different types of atolls in order to generate a National Adaptation Pathway that both guides and ensures the survival of the RMI as a nation-state (Figure C.2). This National Adaptation Pathway focuses on adaptation measures against sea level rise, although it is recognized that other issues, such as water supply and health issues due to climate change, will also need to be addressed.

Our National Adaptation Pathway is an illustrative pathway for adaptation in the RMI intended to guide decision-making in the near future. The decisions to be made will need to be cognizant of the possibility that available funding will likely be insufficient to allow for all our atolls and islands to be fully protected and elevated, and therefore must focus on outcomes that are achievable.

Short-term interim measures alone will not be sufficient to provide the long-term protection. However, they need to be implemented to gain time to implement the long-term measures. Consequently, we must work to identify and prepare to implement transformative measures, such as elevating a selected land area. The details of these transformative measures will need to be addressed as part of an end-point plan to ensure short-term measures contribute to a long-term solution.

Our objective is to protect its 24 inhabited atolls and islands for as long as possible. However, we recognize the constraints to do so. Our National Adaptation Pathway presented here is the minimum requirement for the survival of the RMI as a nation-state up to 6.6 ft (2 m) sea level rise, not our preferred future. Any atoll or island lost due to sea level rise and other climate change impacts will be included in a request for compensation under Loss and Damages mechanisms.

There is a unique link between adaptation and loss and damage for the RMI. Loss and damage will be a direct result of our National Adaptation Pathway and requires further research and documentation. A link between the two issues is especially present with the required migration and relocation of communities. For example, once communities are relocated to protected and raised land, the loss of livelihoods associated to the land the community originally lived in, as well as the cultural knowledge associated with that specific parcel of land, makes a strong case for loss and damage.

The volume and value of cultural knowledge that will be lost in these adaptation pathways cannot be overstated – the subsequent mental health impacts from this loss on community members, which has been documented through the nuclear legacy, will have far reaching consequences on the well-being of the nation.

Clearly, large investment sums are required that may not be readily available. Prioritization of which atolls to consolidate can aid in the progressive planning of adaptation.

Part D - Implementation Plan

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Action Plan and Timeframe

Major decisions need to be made now. First, to identify our National Adaptation Pathway, aggregating the different sectoral and atoll adaptation pathways, which can be implemented, despite the parameters and constraints we are facing. Second, to initiate our short-term and long-term adaptation options. Both are critical and extremely urgent.

It is noted the options within the different pathways may change with additional information and will depend on the form of policies adopted. To this end, we need to provide resolute answers to the following key questions before 2025:

* What form or forms of tiered protection models are appropriate for the RMI to maintain a viable living habitat and lagoon access as sea level rises?
* Which urban centers, or sections of urban centers, need to be protected with hard protection structures up to 20 in (0.5 m) sea level rise and whether this is practicable?
* Which intermediate centers can be raised and protected for planned relocation intermediate centers?
* What areas to raise or reclaim to form new urban centers that will remain habitable up to 6.6 ft (2 m) sea level rise?
* How to reduce the impact of flooding at intermediate and outer atolls using relatively low-cost nature-based solutions, to preserve livelihoods and culture for as long as possible?
* What are the priority underlying issues for the development of an adaptation policy, and how will they be addressed?
* How to restructure the land tenure system for the newly protected and elevated land as well as reallocation of right for lost land?

The implementation of the NAP will be articulated around several decision points visible in Figure C.2 that can be organized in the timeline below:

Within the next 5-10 years:

* Policies and guidelines for planned internal relocation and migration of our population and communities must be prepared as soon as possible. This is to allow time for a meaningful engagement with the affected communities in planning and decision-making. Relocation must be

planned properly due to the political, psychological, cultural, and financial sensitivities involved for both the relocated and the host communities.

* The selection of the urban areas to be protected must be completed and short-term measures must be implemented to protect against more frequent flooding from sea level rise up to 20 in (0.5m) and to buy time for long-term transformative measures. However, to protect all areas to this level will likely cost over $1000 million and consideration should be given as to whether to commence transformative measures sooner and avoid measures not contributing to the long-term solution. **Decision Point 1**.

* Coastal protections for intermediate atolls should be implemented, either through Nature-based Solutions (NbS) or protection and raising of the land, depending on the decision on which intermediate centers will be raised for planned relocation. **Decision Point 2**.

* Our National Adaptation Pathway must be finalized and its implementation started for sparsely populated neighboring atolls via measures that extend the time until sea level rise and other climate change impacts will render the islands uninhabitable. **Decision Point 3**.

Within the next 50 years

* For the long-term, new raised centers must be created to provide space for habitation, government buildings, infrastructure, and economic activity in the RMI. It is neither economically nor practically feasible to raise land in the densely populated urban centers. Therefore, new space will need to be created in anticipation of increased flooding beyond 20 in (0.5 m) sea level rise.

* Raising land to 6.6 ft (2 m) sea level rise allows for the long-term habitability of islands, but is also expensive and requires significant investments in a short timeframe. The area to reclaim or raise depends strongly on the suitability of the land to be raised and on the availability of funds for adaptation. Any land that cannot be protected should

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be included in a loss and damage case. A phased approach, first raising land to be protected against 40 in (1 m) sea level rise, with the possibility to continue to raise it for up to 6.6 ft (2 m) sea level rise could be used. **Decision Point 4**.

* Planned internal relocation of our communities must start, using the policies and guidelines developed well in advance. **Decision Point 5**.

* As rising sea levels lead to more frequent and severe flooding events in the second half of this century, inhabitants of our unconsolidated intermediate atolls will have to consider planned relocation to the newly-raised centers, or international migration. **Decision Point 6**.

* Following relocation from our urban centers, parts of the abandoned land could be further protected and raised. This could potentially be a cost-effective measure for the private sector as the urban centers would be equipped with relatively advanced coastal protection structures. This option depends on economic opportunity and private sector interests as well as demographic trends. **Decision Point 7**.

Next Century

* When sea level rises beyond 6.6 ft (2 m), more transformative measures will need to be considered. These will likely, include the potential for international migration as a part of a long-term adaptation strategy. The nature of these measures will depend on the rate of sea level rise, and also on future demographic and socio-economic developments in the RMI. **Decision Point 8**.

The Action Plan summarized in this section also reflects the three types of actions to be implemented during the lifetime of our NAP:

* **Actions needed to finalize a practicable National Adaptation Pathway**: These actions aim at collecting and analyzing additional

information to guide decision making for climate change adaptation, and to finalize the chosen adaptation pathways for the different sectors and types of atolls and the actions required under them. It is noted that our National Adaptation Pathway and the pathways and actions it contains will need to be regularly reviewed and adjusted based on observed climate parameters and trends.

* **Short term, 'no-regret' adaptation options to support our population's livelihood and wellbeing**: The actions, to be implemented in the short term (within the next 10 years), have two objectives: the protection of our population, infrastructure and assets up to 20 in sea level rise, and preparing the long-term adaptation actions presented on the next section. Short-term actions can include policy development, capacity building and ongoing community awareness. Low cost NbS options in the rural atolls provide no-regret solutions and support mitigation efforts from the RMI.

* **Preparation/planning for the long-term adaptation options**: These actions correspond to the long-term section of our National Adaptation Pathway which needs to be identified in the short term. However, because they are transformative, complex, and large-scaled, these actions will require careful consideration of the end-point and the progressive steps needed to reach it. The time necessary for their implementation also needs to be considered.

Such consideration includes attention to the underlying issues and the critical need for adequate funding and technical support. Such issues will take significant time to resolve and will require policies and planning frameworks to manage them. These adaptation options will need to be completed and in place before both the sea level reaches the tipping point for unprotected atolls and when the upgraded coastal protections will be overwhelmed. **Thus, it is essential that a whole-of-society dialogue commence without delay**.

Resource Mobilization and Funding Strategy

We have established strong internal political support for our climate plans but we face two highly significant resource-related challenges. First, the demands of these new tasks which lay ahead requires a significant increase of our human resource capacity, in addition to ongoing efforts in this area. The country will therefore require support to procure suitable technical expertise and supplementary capacity, while adopting a long-term approach to capacity building within ministries, agencies and partners that are responsible for leading implementation.

Second, financial resources needed to fund our National Adaptation Pathway will be colossal and then we will need to develop, implement and monitor a detailed long-term funding strategy to identify sources of funding, access them, manage them, and monitor disbursement. In addition, harmonization of donor processes would contribute significantly to a reduction in the time and cost we spend in access and compliance activities.

We already have experience in implementing climate change adaptation actions at different levels of government and in different sectors of activity. Our capacity for policy-oriented measures, including drafting climate change strategies and plans, designing national early warning systems, or building awareness of climate risks and solutions within different levels of government also exists, but needs to be strengthened.

Image supplied by Scott Hafner

Different skills are necessary at different levels for us to design, plan, implement and monitor adaptation actions within our National Adaptation Pathway. They include **policy level skills** to conceptualize and draft adaptation policies to reflect our national ideals and priorities; **organizational level skills** to translate our vision and intent in policy, strategy, and legislation into effect; **operational level skills** to plan and deploy resources needed to deliver agreed NAP outputs; **management skills** to organize and maintain complex social organizations; **technical skills** to understand the science of climate change, issues of vulnerability and risk, and the prioritization of adaptation options; and **participatory skills** to promote and sustain cooperation, ownership and action.

National skills assessments for adaptation planning are required to help navigate this complexity. This will clarify the types of skills that the country may need to achieve its goals, identify where those skills should be located and highlight gaps where additional skill development is necessary. Mounting scientific evidence of the impacts of climate change and increased public awareness of climate change, together prescribe a more sophisticated approach to capacity assessment and development. One such skills assessment is currently in progress.

An earlier study[6] on the protection of all atolls stated that the **estimated cost of adaptation could reach between $4 and $10 billion in present value term**, depending on the nature of the National Adaptation Pathway selected. On an annualized basis, and assuming an intermediate sea level rise scenario, this represents a cost in the range of US$400 million per year, for 116 years. In our context

[6] Atoll Study Deltares and Tonkin and Taylor "Long term climate adaptation options, costing and financing for RMI", 2021.

(and more generally of Pacific SIDS), the estimated adaptation costs vastly outweigh what has historically been made available to fund adaptation.

We will require international support for further technical inputs and to implement the NAP. **However, there is no one donor agency (or instrument) alone that would be able to fund all estimated adaptation costs**. This therefore indicates the need for the development of a very strategic approach to secure the necessary funding from multiple partners in a coordinated manner.

This is a complex issue which will depend on the identified practicable National Adaptation Pathway. Further work and discussions with our global and bi-lateral partners will be required. These will be reported on in the NAP. What is clear is that the scale of funding support needed is beyond the capacity of the current global support mechanisms which are not geared for the transformational measures required. There is a need for global dialogue to acknowledge and respond to this. At the same time our capacities and systems in-country will need to be dramatically upgraded.

This approach is expected to combine different mechanisms and instruments from different sources. Each will require detailed documentation accompanied by protracted decision-making timeframes. Each source of funding will have its own bespoke access, management and reporting processes. This will all add a further layer of complexity and burden to resources that are already under pressure. The funding strategy for the NAP (see below) is expected to take these challenges into account to ensure a continuous funding of the actions under the RMI Survival Route.

At this stage, a detailed funding strategy cannot be developed since it will depend on the final adaptation pathway selected. This strategy will play a critical role in coordinating and prioritizing potential financing sources. A number of assumptions and principles can already be established:

* Adaptation options, including long seawalls to protect the atolls and elevation of land, are extremely expensive and far beyond the current level of "traditional" climate change finance.
* We will need to look beyond simply continuing our current climate financing approach to implement the NAP.

The demands of the new tasks which lay ahead requires a significant increase of our human resource capacity. The country will therefore require support to procure suitable technical expertise and supplementary capacity, while adopting a long-term approach to capacity building.

* Identified current sources of financing for the RMI NAP are likely to include domestic government revenues (various fiscal instruments to raise additional revenue (e.g., through taxes, bond issuance) bilateral providers (targeted climate funds and government-to-government negotiations that determine agreed-upon bilateral commitments); multilateral providers (e.g.: GCF); and private sector actors, both domestic and international.

Our funding strategy for the implementation of the NAP should include discussion with donors, both multilateral and bilateral, on the need to revise the current mechanisms. Whilst suited

to small- or middle-scale adaptation options and incremental adaptation pathways, this is not the case for large-scale, transformative adaptation options which are extremely expensive and need to be implemented over a timeframe longer than the 'usual' 3-5 years adaptation projects.

Systematic Priorities for Adaptation

Climate and ocean observation and projections are available in the RMI from the National Weather Service Office and various regional organizations that provide daily and seasonal forecasts, as well as other specific services for both the atmosphere and the ocean. However, they focus mostly on Majuro and Ebeye, with limited, specific information for the other atolls. Similarly, there are limited RMI-specific projections on climate change impacts, and the uncertainty associated with future projections make them difficult to understand and to use for planning.

Several awareness campaigns are conducted in both our urban and rural communities, with a focus on increasing awareness in our children and youth. It is very important to extend these activities to increase awareness of our whole population. The messages must be consistent and based on place-based material.

It is appreciated that effective climate governance structures require clear institutional arrangements, strengthened coordination mechanisms, and increased institutional capacities, especially where gender and social equality needs to be addressed. Importantly, we have already undertaken gender responsive capacity development actions. Our Gender in Development office continues to seek and address ways that climate change and disasters impact genders differently and the ways that gender equality/equity and social justice can be addressed. Similarly, the Disability Coordination Office, is included in such discussions and tries to motivate persons with disability to discuss and think about the impacts climate change might have on their lives and how they might be able to contribute to the efforts for adapting, to climate impacts.

The estimated costs of adaptation vastly outweigh what has historically been made available. What is clear is that the scale of funding support needed is beyond the capacity of the current global support mechanisms which are not geared for the transformational measures required.

Our adaptation barriers include, but are not limited to, human, technical, financial and cultural barriers. Human barriers, such as the limited number of local experts to design, plan and implement adaptation activities, as well as a litany of financial (see above), technical and cultural barriers may affect the design and implementation of adaptation options. The support of our local population is a necessary pillar for the implementation of any adaptation strategy. In addition, the design and implementation of adaptation strategies in the different atolls and islands within the RMI, would greatly benefit from the local knowledge of their inhabitants. Policies should include the requirement to provide for local awareness and input as well as addressing gender and inclusiveness.

Part E - Monitoring, Evaluation and Reporting

As the 'RMI Survival Plan', the NAP is essential to ensure the future of the RMI.

It is therefore critically important to implement our National Adaptation Pathway and options presented in the NAP. In addition, the scale, and time available for the implementation, of some of the proposed actions depends on the rate of change in climate change impacts, in particular sea level rise.

As a result, the NAP should be regularly reviewed and updated and its implementation closely monitored to ensure the objectives are reached.

This section summarizes the characteristics of a successful monitoring process: the roles and responsibilities of the different stakeholders, the indicators to report against and the reporting process and timeline. The proposed monitoring and reporting process is presented in Figure E1.

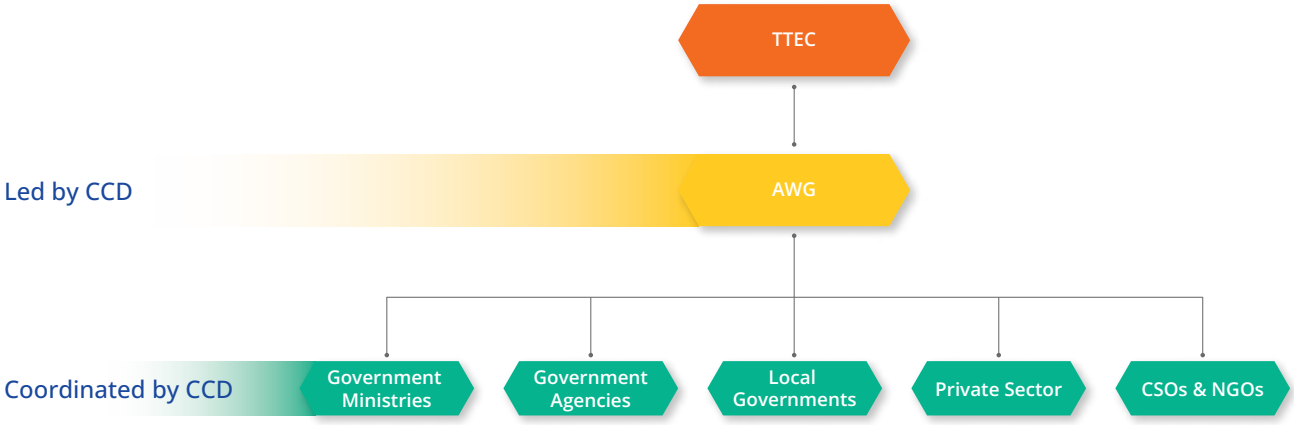

Figure E.1: Monitoring process for the implementation of the NAP

As much as possible the NAP monitoring and reporting should be integrated with the monitoring and reporting of our other national plans and strategies, as well as international frameworks and plans (e.g., SDGs, Paris Agreement, and Sendai Framework for DRR), using already existing indicators whenever relevant. It should be based on and supported by a robust, user-friendly Information Management System (IMS).

The timeframe of the monitoring of, and reporting against, progress of the implementation of the NAP is also important to ensure the NAP objectives are reached. Our Ministry of Environment Act 2018 calls for an annual state of the environment report to the Nitijela (the parliament). The reporting on the progress of the implementation of the NAP shall be timed to be aligned with the preparation of this annual report.

Conclusion – Key Messages

There are a number of key messages to focus the way forward in our planning and discussion with our communities and in our dialogue with the global community. These are:

* Climate change is the single greatest threat to the RMI, to our existence, our lands, ocean, culture, national identity, and our future. It must be addressed with urgent and ambitious global attention, resourcing, and action
* There are underlying issues within our institutional and cultural framework which will need to be addressed both at the traditional and contemporary governance levels. These include on-going government and public sector reforms, issues of land tenure and land use mechanisms, the mechanism for the re-allocation of rights arising from the various loss and protection of lands and the relocation of populations brought about by climate change impacts
* The upscaling of capacity building to strengthen an all-inclusive decision-making mechanism is needed now more than ever. This applies to our women, youth and vulnerable people
* There is a tipping point at around 20 in (0.5 m) sea level rise beyond which the habitability of unprotected atolls (without hard edge/seawalls or revetments) will be compromised. This is expected to be reached between 2070 and 2090 on current climate projections
* Aiming to protect all atolls against long-term sea level rise is fraught with technical and financial challenges currently beyond reach. The focus needs to turn to identifying which atolls or parts of atolls can be protected and at what cost
* Protecting the urban centers of Majuro and Ebeye beyond 20 in (0.5 m) sea level rise is not practicable due to the presence of existing buildings, barriers and infrastructure. Beyond this level, land will need to be elevated to overcome rising ground water levels
* Long-term protection will need to address 6.6 ft (2 m) sea level rise in a progressive tiered solution over time, matching the actual rise in sea level. Many atolls will not be suitable for such treatment because of the lack of width to accommodate the tiered solution. The cost of such a solution means that parts of an atoll or island will need to be considered rather than the whole
* The pathway to such a solution is not yet apparent and investigation is needed to identify options and how sufficient land can be protected to maintain a core nation state. This will include the requirements for a center of government and associated residential and commercial areas.
* The loss of our other unprotected atolls, associated livelihood, culture and human rights will need to be addressed under the loss and damage mechanism.
* It is clear that current adaptation efforts and incremental approaches to protection will not be adequate to deal with these issues. Progressive transformative measures over time will be needed within an identified end point pathway. The identification of this pathway needs to be a priority in the short term
* It is clear the current global support mechanisms geared for the incremental approach is not and will not be adequate and creates additional burden for the country.
* The developed countries will need to acknowledge and respond to this by fully meeting and significantly enhancing their financial commitments

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