UPDATED NATIONALLY DETERMINED CONTRIBUTION OF THE FEDERATED STATES OF MICRONESIA

For the period through 2030

2022

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Glossary

ADB	Asian Development Bank
AW-REP	Access to Water through Renewable Energy Project
BPC	Blue Prosperity Coalition
BPM	Blue Prosperity Micronesia
C4L	Coconuts for Life Initiative
CFA	Compact of Free Association
CocoNES	Coconut National Export Strategy
CP	Green Climate Fund Country Program
EEZ	Exclusive Economic Zone
EU	European Union
FAD	Fish Aggregating Device
FBUR	First Biennial Update Report
FBD	Food borne disease
FSM	Federated States of Micronesia
FSM PAN	FSM Protected Areas Network National Guiding Policy Framework
GAP	Gender Action Plan
GCF	Green Climate Fund
GEF	Global Environment Facility
IDP	FSM Infrastructure Development Plan
ILMP	Integrated Land Management Plans
JSAP	Joint State Action Plan on Disaster Risk Management and Climate Change
MC	Micronesia Challenge
MCT	Micronesia Conservation Trust
MPSBEE	Micronesia Public Sector Buildings Energy Efficiency
NDC	Nationally Determined Contribution
NGP	National Gender Policy
PA	Protected Area
PAN	Protected Area Network
SEA	Strategic Environmental Assessment
SDGs	Sustainable Development Goals
SFP	Sustainable Finance Plan
SIDS	Small Island Developing States
TNC	Third National Communication
UN	United Nations

UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VBD	Vector borne disease
WBD	Water borne disease

1. INTRODUCTION

The Federated States of Micronesia (FSM) has the honor to submit this updated Nationally Determined Contribution (NDC) pursuant to Article 4.2 of the Paris Agreement on Climate Change.[1] This updated NDC covers the time period through 2030 and builds upon our initial NDC, which was submitted on 15 September 2016.[2]

The FSM's climate actions are aligned with national efforts to achieve the Sustainable Development Goals (SDGs), with a view to improving the safety, security, resilience, and quality of life of our people. As a Small Island Developing State (SIDS), the FSM is extremely vulnerable to the negative impacts of climate change, and therefore adaptation is an urgent priority.

The FSM also recognizes the importance of all countries taking action to reduce their greenhouse gas emissions as part of the shared effort to limit global average temperature rise to below 1.5°C. With a population of approximately 105,000 people and a developing economy, the FSM emits a negligible quantity of greenhouse gas emissions. However, we are taking ambitious action to rapidly reduce our emissions over the next decade, and we strongly urge other nations to do the same.

This updated NDC describes the contributions of the FSM, including the adaptation and mitigation co-benefits, across eight core economic and policy areas: (i) energy security, (ii) short-lived climate pollutants, (iii) food security, (iv) water security, (v) ecosystems management, (vi) resilient transport systems, (vii) public health, and (viii) emergency management and response. The contributions of the FSM in each of these eight policy areas are summarized in ***Section 2*** below.

Section 3 of this updated NDC describes the national context within which the FSM is building a more resilient and low-emission society. ***Section 4*** explains how the contributions listed in this updated NDC are fair and ambitious, particularly in light of the FSM's significant sustainable development challenges and urgent climate change adaptation needs. ***Section 5*** highlights several efforts the FSM is making to integrate a more gender-responsive approach in its climate action planning and implementation. ***Section 6*** addresses national planning for net-zero emissions. Finally, ***Section 7*** provides a detailed description of the FSM's national contributions, including the means of implementation required when applicable.

[1] Financial support for the development of this updated NDC was generously provided by the Government of Italy. Project coordination and technical support was provided by the Institute for Energy and Climate Strategies.

[2] First NDC available at: https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx

2. SUMMARY OF NATIONALLY DETERMINED CONTRIBUTIONS

Contributions for 2030	Conditions	Climate Change Co-Benefits	SDGs
Energy Security			
By 2030, increase access to electricity to 100% nationwide	Conditional on access to means of implementation	**Adaptation Co-benefits** • Distributed renewable energy increases the resilience of the energy system to sea-level rise and extreme weather events • Domestically produced renewable energy is less vulnerable than imported fossil fuels to climate change-induced disruption of global supply chains **Mitigation Co-benefits** • Reduced emissions of carbon dioxide • Reduced demand for, and use and transport of, diesel fuel • Reductions of non-CO_2 diesel emissions, e.g., black carbon, methane (see below)	5 7 8 9 13 17
By 2030, increase electricity generation from renewable energy to more than 70% of total generation	Conditional on access to means of implementation		
By 2030, reduce carbon dioxide emissions from electricity generation by more than 65% below 2000 levels	Conditional on access to means of implementation		
Short-Lived Climate Pollutants			
Meet Kigali Amendment HFC phase down commitments (in advance of schedule if possible)	Conditional on access to means of implementation	**Mitigation Co-benefits** • Reduced emissions of black carbon • Reduced emissions of HFCs • Reduced emissions of methane	3 7 9 12 13 17
By 2030, reduce black carbon and methane emissions related to diesel electric generation by more than 65% below 2000 levels	Conditional on access to means of implementation		
Undertake a national methane inventory and assessment of methane abatement opportunities	Conditional on access to means of implementation		
Food Security			
By 2030, establish and/or strengthen farmer cooperatives across all four FSM States	Unconditional	**Adaptation Co-benefits** • Increased resilience to climate change impacts on local food production, including sea-level rise, saltwater intrusion into freshwater lens, and changes in precipitation patterns • Increased resilience to price spikes and shortages of key food imports caused by climate change impacts on the global food system **Mitigation Co-benefits** • Reduced shipping emissions due to a decreased reliance on food imports • Potential for increased production of coconut-derived biofuels to replace certain uses of fossil fuels	2 3 8 13 17
By 2030, establish and support state-level farmer associations to provide training in climate-smart agriculture practices, and establish local seed banks	Unconditional		
By 2030, improve market access for farmers by facilitating development of commercial agreements with local purchasers	Unconditional		
By 2030, increase annual production of coconuts and coconut-based products to improve resilience of the food system to climate change impacts	Conditional on access to means of implementation		

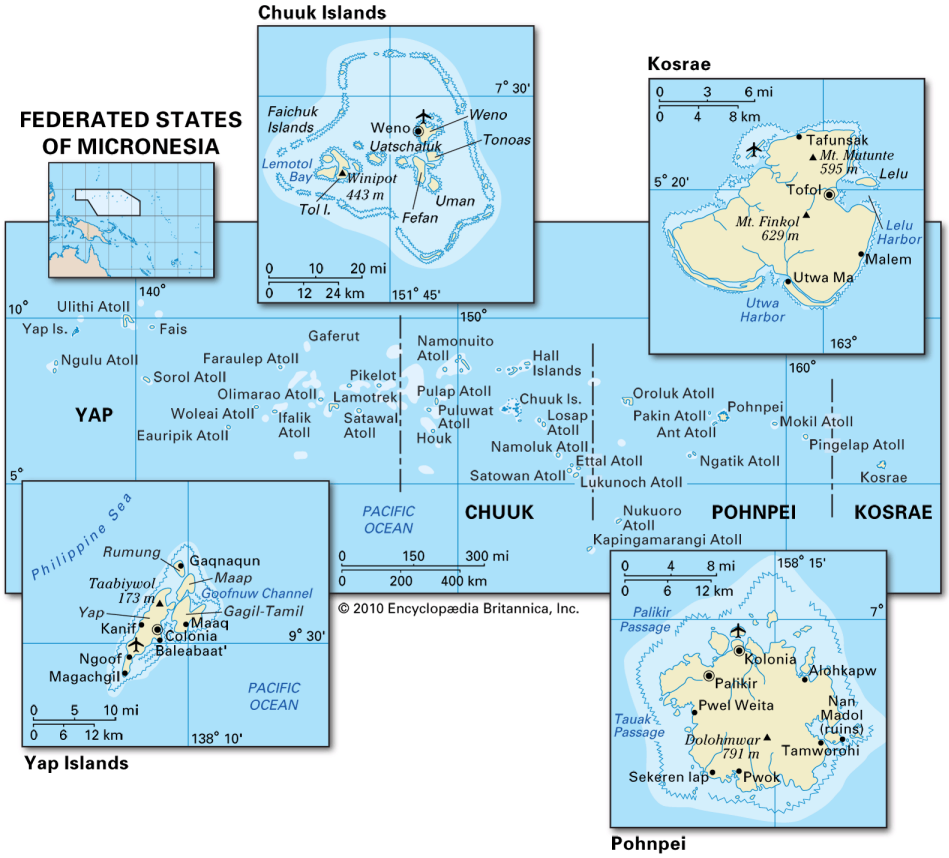
Water Security			
By 2030, provide universal access to clean drinking water through refurbishment of existing water infrastructure and extension of network to unserved and underserved areas	Conditional on access to means of implementation	**Adaptation Co-benefits** • Increased resilience of the local water supply to climate change impacts, including sea-level rise, storm surge, saltwater intrusion into freshwater lens, and more severe drought	
Ecosystems Management: Marine, Terrestrial and Coastal			
By 2030, effectively manage 50% of marine resources and 30% of terrestrial resources, including restricting commercial fishing in up to 30% of the FSM marine environment	Unconditional	**Adaptation Co-benefits** • Increased resilience of fisheries to climate change impacts by improving sustainability, reducing by-catch, reducing IUU fishing, and providing protected areas for stocks to recover • Preservation of ecosystems services and livelihoods • Preservation of food supply/security • Improved capacity of governments and communities to respond to climate change impacts on coastal and marine ecosystems • Improved climate-resilience of livelihoods and businesses reliant on coastal and marine ecosystems • Improved flood resilience through protection of mangroves and implementation of other nature-based solutions • Reduction of coastal erosion • Improved resilience to more extreme droughts through water conservation / groundwater protection • Increased resilience of coral reefs, mangrove forests, and wetlands to climate change impacts **Mitigation Co-benefits** • Reduced emissions from fishing fuel • Less disturbance of land and ocean-based carbon sinks	
By 2030, develop non-entangling and biodegradable Fish Aggregating Devices (FAD) to be used by all purse seine flag vessels in the FSM EEZ	Unconditional		
By 2023, achieve full tuna fishery transparency, through electronic monitoring of all FSM-flagged longline fishing vessels	Unconditional		
By 2030, develop Integrated Land Management Plans and Shoreline Development Plans to effectively protect and sustain terrestrial and coastal ecosystems	Conditional on access to means of implementation		
By 2030, expand the number of Protected Areas and their coordination through Protected Area Networks	Conditional on access to means of implementation		
Resilient Transport Systems			
By 2030, climate-proof all major island ring roads, airport access roads, and arterial roads	Conditional on access to means of implementation	**Adaptation Co-benefits** • Resilience to flooding from sea-level rise and king tides • Maintenance of public and commercial services during weather-related emergencies **Mitigation Co-benefits** • Reduction of emissions from idling vessels by reducing time spent waiting to dock • Reduction of emissions from large transportation idling vessels waiting to dock by incorporating renewable energy technology for powering their auxiliary equipment	
By 2030, complete climate-proofing of major ports (larger and more resilient docks meeting ISPS standards)	Conditional on access to means of implementation		

Public Health			
By 2030, establish a surveillance system, including a laboratory facility, to detect and monitor VBD, WBD, and FBD to enable rapid response and control of outbreaks	Conditional on access to means of implementation	**Adaptation Co-benefits** • Improved preparedness of the public health system to respond to VBD, WBD, and FBD outbreaks, which are projected to increase due to climate change	3 13 17
By 2030, provide training in the detection and treatment of VBD, WBD, and FBD to all medical personnel and public health officials	Conditional on access to means of implementation		
By 2030, equip all hospitals and other relevant medical facilities to receive and effectively treat patients suffering from VBD, WBD, and FBD	Conditional on access to means of implementation		
Emergency Management & Response			
By 2025, complete an update of the National Disaster Response Plan	Unconditional	**Adaptation Co-benefits** • Enhancement of emergency management and disaster response to extreme weather events, including improved delivery of essential supplies and services (e.g., food, water, medical, transportation) • Improved monitoring of coastal erosion, sea level-rise, groundwater supplies, and other natural resources **Mitigation Co-benefits** • Reduction of carbon dioxide emissions from emergency response vessels	3 10 13 17
By 2030, complete comprehensive nationwide GIS mapping	Conditional on access to means of implementation		
By 2030, update vessels and/or secure additional vessels for inter-state transportation and emergency response operations, incorporating renewable energy technology	Conditional on access to means of implementation		

3. NATIONAL CONTEXT

Geography, Political Organization, and Economy

The FSM is an archipelagic nation in the Western Pacific Ocean. The country's relatively small land area of just over 700 km^2 is spread over 607 islands, of which 74 are inhabited. However, at nearly 3 million km^2, the FSM has the fourteenth (14th) largest Exclusive Economic Zone (EEZ) in the world.



The Federation consists of four semi-autonomous states: Yap, Chuuk, Pohnpei and Kosrae. The population of the FSM is estimated to be approximately 105,000, with 45% living in Chuuk, 37% in Pohnpei, 11% in Yap and 7% in Kosrae. Each of the four states consists of a main island surrounded by numerous outer islands, with the exception of Kosrae, which has no outer islands. While some of the outer islands have higher elevations, the vast majority are low-lying atolls that are especially vulnerable to sea-level rise. The outer atolls also tend to be much less developed, creating challenges for building resilience, as they are not served by the nation's main water and energy systems, nor are they frequently served by national transportation systems.

The western islands of the FSM, especially in the states of Chuuk and Yap, lie at the edge of the typhoon belt and are the most often impacted by typhoons. However, the El Nino Southern Oscillation (ENSO) affects precipitation patterns nationwide by bringing the Western Pacific monsoon further east and thus delivering more rain during El Nino, and shifting the monsoon farther east, and therefore bringing less rain, during La Nina. The ENSO system can also amplify

seasonal variations in some regions, leading to more rain in the rainy season or less rain during the dry season.

Fisheries and agriculture are the mainstays of the economy, with almost half of employed persons working as subsistence fishers or farmers. Incoming tourism and trade in manufactured goods make up the remainder of the private sector economy. The public sector employs over 45% of all workers in the FSM. Most of the Government's revenue derives from fishing fees and the Compact of Free Association (CFA) with the United States, as well as other foreign aid. Agriculture, fisheries, and tourism are considered the most promising sectors for future economic growth.

Under the CFA, the FSM benefits from annual financial transfers to the Government, access to some U.S. national services, and open migration to, and employment opportunities in, the United States for FSM citizens, and vice versa. The CFA has also provides for contributions to a national trust fund intended to replace direct contributions from the United States upon the CFA's expiration. However, the CFA is set to expire in 2023 and the trust fund is not adequately funded to sustainably support the FSM's needs thereafter. Discussions are presently underway within the FSM and between the FSM and the United States about potential next steps. In any scenario, for the FSM, access to affordable finance and other means of implementation will be essential to achieve the ambitious goals elaborated in this updated NDC.

Climate Change Vulnerabilities

The FSM is particularly vulnerable to extreme weather events, such as droughts, typhoons, storm surges, flooding, and landslides, all of which are being exacerbated by climate change and sea-level rise. Sea-level rise increases coastal erosion and threatens agricultural productivity and water security due to intrusions of saltwater into croplands and freshwater reservoirs. Over the longer-term, sea-level rise may even affect the viability of some of the FSM's low-lying islands.

As most of the population lives near the coast and much of the major economic and government infrastructure is located along or near the coasts, damage from storms and flooding to critical infrastructure, such as roads, seaports, and airports, can severely impact the economy and key public services. The FSM also faces threats from worsening ocean acidification and coral bleaching, which damage the reef ecosystems that are essential to food security, livelihoods, and tourism. Ocean temperature rise may also negatively impact fisheries stocks and alter tuna migration routes. In addition, climate change is projected to increase health risks in Micronesia, including the prevalence of certain vector-borne, food-borne, and water-borne diseases.

Overall, the FSM is expected to see increases in all of the following: sea-surface and air temperatures, sea level, ocean acidification, the number of very hot days, and the number of extreme rainfall days. Changes to precipitation and typhoon patterns can also be expected, but are less certain. Some studies estimate fewer, but more severe typhoons. Given that Typhoon Maysak in 2015 wiped out up to 90% of key agricultural products in both Chuuk and Yap, such projections are of serious concern.

Impact of Covid-19 Pandemic

Like many countries, the FSM has been adversely affected by the Covid-19 pandemic. Stringent travel restrictions led to no cases reported until July of 2022, when the FSM suffered its first outbreak. As of September 2022, there had been 8,549 confirmed cases and twenty-seven deaths,

with the outbreak having largely abated since August, but with remaining concerns as the virus had yet to spread broadly in Chuuk, the most populous state.

In the first two years of the pandemic, impacts included diminished access to goods, and some depression of demand for labor, goods, and services. Some major infrastructure improvements were put on hold as needed management, engineering, and technical experts were unable to enter the country to advance these projects. Closed borders also limited repatriation for hundreds of citizens stranded abroad. Nonetheless, through use of Economic Stimulus measures, such as the nationally funded Tourism Sector Mitigation Fund, and support from the U.S.-funded pandemic unemployment programs, as well as the government of China and the ADB-funded Low-Income Household Assistance Program, the FSM has been able to respond to disruptions, and effectively minimize longer-term economic damages from the pandemic.

National Vision for Sustainable Economic Development

The FSM has a strongly positive view of its near-term sustainable economic development. Despite the challenges and threats posed by climate change, the FSM sees a promising future for large ocean states such as itself. Indeed, climate action will be a key driver of sustainable economic development in the FSM in the decades to come.

In 2017, a year-long stakeholder consultation with the Green Climate Fund (GCF) produced "The FSM-GCF CP strategic framework on a 'green growth' development pathway" (GCF-CP). It represents an increasing commitment in the FSM towards green growth and provides great potential for the country to meet the SDGs. It takes the FSM SDP's 'sustained growth' approach in the last few decades to the next step, where economic-centered growth is reconciled with social inclusivity and environmental sustainability; thus from sustained growth to 'sustainable growth.' With the GCF-CP, the FSM now has in-country processes that simplify and enhance the review and approval processes for accessing the GCF and other complementing sources of climate finance, across the National Government and the country's four State Governments. This consolidated framework aims to develop large scale, cross-sectoral priority projects and programs to transform the current fossil fuel-reliant economy into a 'green economy.'

With new practices to protect and manage its diverse ecosystems, the FSM is committed to sustaining its enormous endowment of natural resources for the benefit of current and future generations. New domestic sources of clean, affordable energy will move the country toward a more sustainable balance of trade, and will reduce economic insecurity caused by fluctuations in the price of imported fossil fuels. With access to affordable finance and durable partnerships, these and other actions described in this updated NDC can deliver a more resilient and prosperous future. The FSM looks forward to further cultivating and sharing its vast ocean of opportunities with its people and with its partners in the international community.

4. FAIRNESS & AMBITION

Article 2 paragraph 2 of the Paris Agreement states that it will be implemented "to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances." The FSM is a developing country that is extremely vulnerable to many impacts of climate change. It is also a SIDS, whose particular needs in the context of climate change are recognized in Article 9 paragraph 4. Considered in this context, the

FSM is of the view that this updated NDC is fair and ambitious. This updated NDC also represents a significant progression over previous efforts reflected in our initial NDC.

Relative to the FSM's initial NDC, which was focused on emissions reductions in the energy sector, this updated NDC encompasses action across nearly all sectors of the economy. It also integrates a range of urgent climate change adaptation priorities. This updated NDC is headlined by the contribution of producing more than 70% of the FSM's electricity through renewable energy sources by 2030.

5. GENDER

The FSM is committed to supporting equal rights, equal opportunities, and access to services for all people. The Government has taken steps to meet its international commitments by ratifying the Convention on the Rights of the Child, the Convention on the Elimination of all forms of Discrimination against Women, the Pacific Leaders Gender Equality Declaration, and the Convention on the Rights of Persons with Disabilities. The National Gender Policy was adopted in 2018 to implement these commitments. The NGP has five goals:

Goal One: Better representation of women in decision-making

Goal Two: Elimination of gender-based violence

Goal Three: Equitable education outcomes

Goal Four: Address barriers facing women in the workforce

Goal Five: Women have better healthcare and choices over their fertility

This gender-responsive approach has been integrated into the FSM's climate action. The FSM has created a Gender Action Plan (GAP) to guide the collection and reporting of data under its Third National Communication (TNC) and First Biennial Update Report (FBUR). This will include gender data to ascertain where key informational gaps exist and to facilitate the development of structures that support the implementation of gender policies. This gender-responsive approach will ensure that women and men are represented in the development and implementation stages of the TNC and FBUR. Including a gender dimension to the TNC and FBUR processes will provide vital information about differential access to available resources and the influence of broader socioeconomic and cultural conditions.

A gender-responsive approach has also been adopted at the sectoral level. In the FSM, women play a very important role in the food system. The GCF-funded project, "Climate resilient food security for farming households across the Federated States of Micronesia," will identify the constraints and opportunities for women and men identified during a gender analysis, with a view to fully integrating them into the project design. With regard to the energy sector, the FSM has set a goal to increase the number of women in senior positions, and has created various capacity building programs to achieve it. Ultimately, improving gender balance in the design, planning, and implementation of climate action will promote greater community resilience.

6. ACHIEVING NET-ZERO EMISSIONS

The FSM recognizes the humanitarian imperative to achieve net zero greenhouse gas emissions at the global level by 2050 in order to preserve a reasonable chance at achieving the long-term temperature goal under Article 2 of the Paris Agreement. The FSM's ambitious contributions in the energy sector are well in line with this objective, particularly when considered in light of the country's development circumstances. With the provision of the necessary means of implementation from international sources, the FSM has the potential and the political will to take even greater action in the energy sector and other high emitting sectors with a view to achieving net zero emissions as soon as possible. The FSM also recognizes the substantial sustainable development co-benefits that would accompany such an ambitious undertaking.

7. DETAILED CONTRIBUTIONS

The following sections provide more detailed information on each of the contributions, including the sectoral context, the means of implementation required, the climate change adaptation and mitigation co-benefits, and the relevant SDGs advanced by the contributions.

ENERGY SECURITY

Sectoral Context

The FSM presently imports petroleum fuels for electricity generation and transportation, an annual expenditure of USD 30-40 million or about 10-15% of GDP. These fuels are responsible for almost 80% of the FSM's carbon dioxide emissions. However, the FSM has set strong goals for improving equitable access to energy for the population and for reducing reliance on fossil fuels for energy generation. The FSM presently envisions achieving 100% access to energy by the end of the decade and an 80% reduction of fossil fuel diesel for electricity generation use over the next two decades.

Large-scale nationwide deployment of renewable energy is the backbone of the FSM's "National Vision" for energy security: "To improve the life and livelihood of all FSM citizens with affordable, reliable and environmentally sound energy." By diversifying energy sources and reducing reliance on imported fossil fuels in favor of domestic renewable sources, the FSM will greatly reduce emissions and recurring expenses, while improving economic efficiency and productivity. By moving to more distributed energy such as solar, the FSM will also avoid longer term adaptation costs, such as moving utility infrastructure from low-lying areas more vulnerable to sea level rise and storm surge. Overall, the FSM is poised to make rapid advances on its stated national energy objective: "to promote the sustainable social and economic development of the FSM through the provision and utilization of cost-effective, safe, reliable and sustainable energy services."

National Outcomes from State-Level Energy Security Actions

The FSM's national energy goals will largely be achieved through action planned and implemented at the state level. For example, each of Micronesia's four states has an Energy Master Plan that contains very specific and ambitious actions in the energy sector. A central theme of these state plans is rapidly increasing the deployment of renewable energy and reducing the use of imported fossil fuel for electric generation. The table below summarizes the projected outcomes at the national level from full implementation of the four states' Energy Master Plans over the twenty years from 2018-2037.

	2018	2020	2027	2037
Electricity Access	67%	82%	100%	100%
Renewable Energy %	19%	44%	63%	84%

As shown, by 2037, the full implementation of these plans would increase overall electricity access from 67% to 100% and would increase renewable energy generation from 19% to 84%. As shown below, it would also reduce both diesel fuel generation and the resulting carbon dioxide emissions by almost 65%.

While these projected results are impressive, complete financing for these plans remains to be secured and institutional capacity to implement the plans needs improvement. Indeed, although some states are on track, or may even be ahead of plans, due to the Covid-19 pandemic and other challenges, at the national level the FSM is not presently on track to meet the nearer term targets and will need significant additional support to achieve the longer term goals on schedule.

One specific challenge is the state of Chuuk, where presently only two of forty municipalities across forty separate islands have access to electricity. Although the scale of the individual projects needed to provide electricity is relatively small, several dozen projects are needed across numerous outer islands. Present estimates indicate that about ten islands will gain electricity access every five years, running up to a decade or more behind the FSM's 2027 vision for 100% access to energy nationwide. However, Chuuk's timeframe for achieving full access to electricity might be significantly improved with greater support to deploy these projects in more rapid succession across the outer islands.

The tables below show the diesel fuel use, carbon dioxide emissions and capital expenditure at the state and national levels for full, timely implementation of the four states' Energy Master plans.

Declining Diesel Fuel Use for Electric Power Generation (national annual average in gallons)

	2018	2019-2023	2023-2027	2028-2033	2034-2037
Chuuk	1,249,211	805,942	525,701	418,935	346,879
Kosrae	458,107	277,498	92,406	74,971	75,251
Pohnpei	1,787,333	1,269,637	1,112,939	1,150,808	947,475
Yap	713,745	531,801	395,833	270,186	156,349
TOTAL	**4,208,397**	**2,884,877**	**2,126,880**	**1,914,900**	**1,525,954**

Declining Carbon Dioxide Emissions from Electric Generation (annual average in tonnes)

	2018	2019-2023	2023-2027	2028-2033	2034-2037
Chuuk	12,910	8,329	5,433	4,329	3,585
Kosrae	4,734	2,868	955	775	778
Pohnpei	18,471	13,121	11,501	11,893	9,791
Yap	7,376	5,496	4,091	2,792	1,616
TOTAL	**43,490**	**29,813**	**21,980**	**19,789**	**15,769**

Capital Expenditure for a Shift to 84% Renewable Energy Electric Generation by 2037 ($ US millions 2016)

	2018	2019-2023	2024-2028	2029-2033	2034-2037	Total
Chuuk	.61	38.35	16.39	16.81	13.85	**86.01**
Kosrae	2.77	12.03	8.64	6.86	6.96	**37.26**
Pohnpei	2.85	35.63	19.97	24.76	30.80	**114.02**
Yap	1.27	15.09	13.22	15.77	13.55	**58.90**
TOTAL	**7.5**	**101.10**	**58.22**	**64.20**	**65.16**	**296.18**

Energy Efficiency

The 2012 FSM National and State Energy Policy set a target of fifty percent (50%) improvement in energy efficiency by 2020. However, due to implementation resource constraints and other barriers, the FSM has not been able to achieve its energy efficiency targets to date. To address some

of these challenges, the FSM launched the Micronesia Public Sector Buildings Energy Efficiency (MPSBEE) project in 2021. The MPSBEE covers a range of issues that will strengthen the energy efficiency strategies of the FSM, including:

- formulation of recommended energy conservation and energy efficiency policies, practices, and applications in public sector buildings;
- development of a public sector Building Energy Audit System (BEAS);
- design of energy conservation and efficiency technology application demonstrations; and
- implementation of building energy conservation and energy efficiency demonstrations.

These are especially important measures since the largest use of electricity in the FSM is for air conditioning (largely in government buildings) and lighting. The goal of the project is to help the FSM achieve its energy efficiency targets within three years.

Contributions

Conditional

By 2030, increase access to electricity to 100% nationwide

Conditional

By 2030, increase electricity generation from renewable energy to more than 70% of total generation

Conditional

By 2030, reduce carbon dioxide emissions from electricity generation by more than 65% below 2000 levels

Climate Change Co-benefits

Mitigation	Adaptation
• Carbon dioxide emissions reductions • Reduced demand for and use of diesel fuel • Reductions of non-CO_2 diesel emissions, e.g., black carbon, methane (see SLCP section)	• Distributed renewable energy increases the resilience of the energy system to sea-level rise and extreme weather events • Domestically produced renewable energy is less vulnerable than imported fossil fuels to climate change-induced disruption of global supply chains

Means of Implementation Requirements

The FSM National Energy Master Plans estimate an approximate cost of USD 296 million to implement the plans over a 20-year period, plus an added cost of approximately 5% of the total budget to provide additional capacity building and technical assistance—e.g., for coordinating and monitoring implementation—over the course of the projects.

Relevant SDGs

	***Gender equality*** is advanced through a capacity building program focused on increasing the number of women working in the energy sector.
	***Affordable and clean energy*** are advanced by replacing expensive, imported diesel fuels with clean, domestic renewable energy sources.

	***Decent work*** is created in the energy sector with proper investments in capacity building, so that local workers have the skills to install, operate, and maintain a renewable energy system. ***Economic growth*** is advanced by deploying domestic sources of renewable energy, which is much less vulnerable to international price fluctuations or supply disruptions.
	***Resilient infrastructure and sustainable industrialization*** are advanced by deploying clean energy systems that are more distributed and less vulnerable to climate impacts.
	***Climate action is enhanced*** by creating an energy system that is more resilient to climate change impacts and by reducing emissions of carbon dioxide, as well as co-emitted SLCPs (black carbon and methane).
	***Durable partnerships, access to adequate means of implementation, and technology transfer*** will be required to fully achieve these goals.

SHORT-LIVED CLIMATE POLLUTANTS

Sectoral Context

For over a decade the FSM has been a global leader on Short-Lived Climate Pollutants (SLCPs), both by calling attention to the near-term climate change and air quality benefits of reducing SLCPs, and by developing and advancing policies and frameworks to reduce them. In 2009 the FSM became the first country to formally propose an international initiative to reduce Short-Lived Climate Pollutants. The same year the FSM and Mauritius became the first countries to propose an amendment to the Montreal Protocol to phase down the production and consumption of HFCs. Now, as a partner country of the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC) and a signatory to the Kigali Amendment to the Montreal Protocol, the FSM looks forward to continuing its leadership in addressing SLCPs both domestically and internationally.

The FSM's domestic energy plans to replace diesel electric power generation with renewable electric generation will greatly reduce related black carbon and methane emissions from electric generation, by up to 65%. The FSM sees the near-term climate and air quality co-benefits of SLCP reductions as strong incentives (in addition to carbon dioxide reductions) to rapidly replace fossil fuel energy sources with renewable energy sources.

The FSM also looks forward to phasing down its HFC use in accordance with its commitments under the Kigali Amendment to the Montreal Protocol. If the means of implementation were to become available, the FSM would even consider acting in advance of the schedule elaborated in the amendment. Moreover, as the FSM emphasized in the Kigali negotiations, the HFC phase down presents an important opportunity to improve the energy efficiency of the cooling appliances and other equipment that utilize refrigerants. Therefore, in implementing its HFC phase down, the FSM will look for opportunities to complement the switch to climate-friendly refrigerants by also improving the energy efficiency of the equipment that uses those refrigerants, thereby maximizing the climate benefits of its HFC phase down.

More recently, the FSM signed the Global Methane Pledge in October 2021 and now aims to undertake a national methane inventory and assessment of potential domestic methane abatement opportunities, including in its energy, agriculture and solid waste sectors.

Contributions

Conditional

Phase down HFC consumption in accordance with the commitments in the Kigali Amendment to the Montreal Protocol

Conditional

By 2030, reduce black carbon and methane emissions related to diesel electric generation more than 65% below 2000 levels

Conditional

Undertake a national methane inventory and assessment of potential methane abatement opportunities.

Climate Change Co-Benefits

Mitigation
• Reduced emissions of black carbon • Reduced emissions of HFCs • Reduced emissions of methane

Means of Implementation Requirements

Means of implementation for the HFC phase down are expected to be provided by the Multilateral Fund of the Montreal Protocol and complementary sources, such as those supporting energy efficiency improvements in the cooling sector.

The black carbon and methane emissions reductions resulting from decreasing diesel-powered electric generation are co-benefits from this switch to renewable energy. They will not require more funding than is detailed in the energy section for power generation. However, these additional emissions reductions provide concrete added returns on, and therefore additional incentives for, investment in the FSM's renewable energy projects.

Relevant SDGs

	***Good health and well-being*** are enhanced by reducing traditional air pollutants such as black carbon soot (a component of PM2.5) and methane, which contributes to the formation of tropospheric ozone pollution.
	***Affordable and clean energy*** are advanced by replacing fossil diesel with solar and clean electric generation sources.
	***Industry innovation and infrastructure*** are advanced by driving a shift at the factory level away from production of HFCs to production and use of more climate-friendly, often not-in-kind, alternatives.
	***Responsible consumption and production*** are enhanced by phasing down production and consumption of highly warming HFCs.
	***Climate action is enhanced*** by reducing emissions of potent climate-forcing agents such as black carbon, HFCs and methane
	***Durable partnerships*** are enhanced by utilizing existing governance regimes like the Montreal Protocol to guide the global HFC phase down, and by effectively cooperating in the CCAC to undertake projects and share knowledge and resources related to reducing climate and air pollutants.

FOOD SECURITY

Sectoral Context

Food security in the FSM has worsened significantly over the last few decades due to falling local production per capita, poor growth in the agriculture sector, and increased and costly dependence on food imports. The country's heavy reliance on imported foodstuff, especially fruits, vegetables, and animal products, is also economically detrimental and has contributed to the overall decline in local production.

Climate change is projected to exacerbate these negative trends and further undermine food security in the FSM through a number of channels, which include:

- Loss of arable land due to sea level rise
- Saltwater intrusion into soil and freshwater lens
- Reduced crop yields due to higher temperatures and changes in precipitation patterns, including flooding and drought
- Reduced local fish stocks due to damage to coral reef and other marine ecosystems, as well as changes in fish migration patterns, and
- Greater global price volatility in food staples due to crop failures and other shocks in major food-producing regions.

Therefore, taking action to improve food security is a critical climate change adaptation measure for the FSM. Improving traditional agricultural systems livestock production with higher yield growing and processing methods is critical to reducing poverty and meeting overall food security objectives, while also maintaining environmental integrity.

Restoring the health of coastal fisheries is also an urgent priority after years of over-harvesting, destruction of natural habitats, and growing climate change impacts. The development of hatchery-based aquaculture production is being considered as one such strategy to address these issues. However, the introduction of sustainable aquaculture has been slow due to local limitations, including lack of knowledge and skills, lack of financial support, and non-availability or reliable supply of seeds and other critical inputs.

The FSM has secured funding from the GCF for the project, "Climate resilient food security for farming households across the Federated States of Micronesia," with Micronesia Conservation Trust (MCT) serving as the accredited entity. The project includes three components: (i) establishing an enabling environment for adaptive action and investment, (ii) enhancing the food security of vulnerable households by introducing climate-smart agriculture practices, and (iii) strengthening climate-resilient value-chains and market linkages across the agriculture sector.

Food security in the FSM will be further enhanced through implementation of the measures described in the Ecosystems Management section below. For example, the effective management of commercial fishing, along with protection and restoration of coral reefs, will help to improve the health of domestic fisheries, as well as the food supply and livelihoods they support. Similarly, restoration of the upland forest and wetlands management techniques can protect groundwater used in agriculture, while improved siting and use of natural barriers can protect taro patches from floodwater intrusion.

His Excellency David W. Panuelo, President of the Federated States of Micronesia (FSM), recently launched the Coconut National Export Strategy (CocoNES) to bring the FSM's coconut products from local farmers to communities and for export to the rest of the world. CocoNES will encourage local families and farmers to grow and sell whole coconuts to Vital. These whole coconuts will then be processed by local workers into healthy value-added products that will be competitive both in the domestic and international markets.

In addition to increasing food security in the FSM, CocoNES will provide alternative income streams and good paying jobs, and enable communities to address their priority development needs. The Coconut Sector Development Coalition will create a shared understanding of key market challenges and opportunities facing the coconut industry, build consensus on the best growth path for the coconut industry, set goals and targets that will strengthen the coconut sector's competitive position, and contribute to the identification of resources for implementing priority programs and projects, among other duties. Coconut oil and agricultural waste by-products also have the potential to become potential feed stocks for biofuels in the future, which could advance emissions reduction efforts in some local sectors.

Food security efforts in the FSM are also supported through targeted capacity-building programs. The College of Micronesia, for example, offers programs in key areas such as increasing food production in agriculture and livestock systems, climate-smart agriculture (e.g., crop diversification soil protection, water conservation and agroforestry), and the development and maintenance of aquaculture systems.

Contributions

Unconditional

By 2030, establish and/or strengthen farmer cooperatives across all high island chains in the four FSM States.

Unconditional

By 2030, establish and support State-level farmer associations to provide training for local farmers in climate-smart agriculture practices and establish local seed banks.

Unconditional

By 2030, improve market access for local farmers by facilitating durable relationships and the development commercial agreements between local producers and purchasers.

Conditional

By 2030, increase annual production of coconuts and coconut-based products to improve resilience of the food system to climate change impacts.

Climate Change Co-Benefits

Mitigation	Adaptation
• Reduced shipping emissions due to a decreased reliance on food imports • Potential for increased production of coconut-derived biofuels to replace certain uses of fossil fuels	• Increased resilience to climate change impacts on local food production, including sea-level rise, saltwater intrusion into freshwater lens, and changes in precipitation patterns • Increased resilience to price spikes and shortages of key food imports caused by climate change impacts on the global food system • Reduced fish waste

Means of Implementation Requirements

GCF funding in the amount of USD 9,393,350 will enable the implementation of the first three contributions on food security. Increasing production under CocoNES will require new capital investment.

Relevant SDGs

	***Food security is enhanced*** by increasing local food production and improving food distribution.
	***Good health and well-being are enhanced*** by increasing the availability of locally produced, fresh fruits and vegetables.
	***Decent work and economic growth are enhanced*** by improving market opportunities for small farmers.
	***Climate action is enhanced*** by improving the resilience to disruptions of food imports due to climate change impacts by increasing domestic food production.
	These contributions to enhance food security will be funded in part by a grant from the GCF.

WATER SECURITY

Sectoral Context

Water security in the FSM is likely to become an increasingly difficult challenge in the context of climate change, which will negatively impact the quality and quantity of both surface freshwater and groundwater. Sea-level rise and more severe storm surge can lead to saltwater intrusion into the freshwater lens. Increased variability in precipitation patterns, including more prolonged droughts, can also decrease recharge of both natural and artificial reservoirs. Protracted La Niña-like conditions in recent years have already caused episodes of marine inundation, which required the provision of emergency water supplies.

These impacts of climate change will compound existing drivers of water insecurity. The high islands of the FSM have significant surface and groundwater supplies, however, many important watersheds have been degraded due to human development. Storms, droughts, wildfires, and invasive species have also taken their toll.[3] The smaller, outlying islands and atolls typically have no surface water and very shallow freshwater lens, and so are extremely vulnerable to droughts. In addition, population growth and increased demand from households, the agriculture sector, and businesses can lead to over-pumping of groundwater and exacerbate salination. Limited waste and sanitation infrastructure in some of the more rural areas can pollute freshwater sources and render them unfit for certain uses. Water insecurity and poor water quality can also increase the incidence of water borne illness.

FSM WATER INFRASTRUCTURE PROJECTS (*amounts in USD*)	
Pohnpei	
Extend Water Distribution System - COM to Diadi	6,380,000
Extend Water Distribution System - Diadi to NMS	2,200,000
Extend Water Distribution System - KinaKapw to Lehn Diadi	8,000,000
Develop New Surface Water Supply Sources	1,500,000
Develop New Sub-Surface Water Supply Sources	2,000,000
Improve Water Supply Distribution - Phase 1	8,643,000
Connect Sokehs Island to Kolonia Wastewater Plant	3,000,000
Improve Existing Wastewater System	2,000,000
Improve Water Supply in Outer Islands	2,000,000
Kosrae	
Malem Water System Improvements	3,000,000
Muntunte/Yata Water System Improvements	3,500,000
Walung Water System Storage Tank & Treatment	1,000,000
Lelu Water System Improvements	3,148,000
Lelu/Tofol Wastewater System Improvements	4,000,000
Yap	
Central Water - Refurbish Water Storage Tanks	1,500,000
Central Water - Replace Water Treatment System	1,800,000
Central Water - Water Main Rehabilitation Phase 1	500,000
Central Water - Water Main Rehabilitation Phase 2	500,000
Central Water - Water Well Renewal & Replacement	200,000
Southern Water – Treatment Plant/Distribution Improvements	450,000
Southern Water - Well Rehabilitation	870,000
Southern Water – Water Storage	300,000
Southern Water - Office and Storage Improvements	250,000
Central Wastewater - Sewer Main Rehabilitation Phase 1	450,000
Central Wastewater - Sewer Main Rehabilitation Phase 2	450,000
Central Wastewater - Renew Treatment Plant Outfall	3,000,000
Yap Septic Tank Program	6,500,000
Chuuk	
Weno Water Supply Improvements	7,000,000

3 FSM State of the Environment Report 2018, available at: https://fsm-data.sprep.org/dataset/fsm-state-environment-report-2018

The WHO found that the FSM is one of only four countries in the world that saw basic water coverage decrease from 2000-2015.[4] Improving the country's water security will require significant new investments in the repair and extension of the current system. A number of projects to improve the water system were identified in the FSM Infrastructure Development Plans (see table above), which will require additional financial support to complete. However, without the benefit of a master plan, water system improvements are currently being addressed on an ad-hoc, non-coordinated basis, across different national and state agencies and jurisdictions.

With the support of a USD $3 million grant from the European Union, the FSM Department of Resources & Development is developing new master plans for water, sanitation, and transport under the Access to Water through Renewable Energy Project (AW-REP), which includes the objective to make all water solutions carbon neutral/negative and powered by 100% renewable energy. The AW-REP will consist of the following components:

Component 1:	Strengthening of Project Management Capacity at the National level
Component 2:	Support Measures to the Association of Micronesian Utilities Secretariat
Component 3:	Pohnpei Utilities Corporation Improved Access to Potable Water and Sanitation
Component 4:	Kosrae Utilities Authority Improved Access to Potable Water and Sanitation
Component 5:	Chuuk Public Utilities Corporation Improved Access to Potable Water
Component 6:	Yap State Public Service Corporation Improved Access to Potable Water

Progress in Chuuk will be aided by a US$12.8 million grant from the ADB for a water supply and sanitation project scheduled to run through 2027. The project will benefit the residents of Weno, the second-largest urban center of the FSM, the administration center of Chuuk State, and home to some 14,000 people.

The FSM is also taking steps to improve the management and protection of its watersheds through a combination of increased monitoring, strengthened regulations, and improved education and public awareness. Expanding protected areas, such as the Yela Easement and Mahkontowe Conservation Area in Kosrae, and the Weloy Forest Stewardship Conservation Area and Tamil Watershed Managed Area in Yap will contribute to local water security.

Contribution

Conditional

By 2030, provide universal access to clean drinking water for people through refurbishment of existing water infrastructure and extension of network to unserved and underserved areas.

4 A Snapshot of Water and Sanitation in the Pacific, 2017 Regional Analysis of UNICEF Programme Countries.

Climate Change Co-Benefits

Adaptation
• Increased resilience of the local water supply to climate change impacts, including sea-level rise, storm surge, saltwater intrusion into freshwater lens, and more severe drought

Means of Implementation Requirements

The implementation costs of all water infrastructure improvements in the FSM Infrastructure Development Plan totals USD 74,141,000, which is only partially funded at the time of submission. Additional financial support will be required to achieve FSM's contribution of 100% access to clean water.

Relevant SDGs

	***Good health and well-being are enhanced*** by providing a more reliable source of clean water to communities, which will improve general health and reduce the incidence of water borne disease.
	***Water security*** *will be increased* by providing reliable water delivery to presently unserved and underserved communities.
	***Climate action will be enhanced by*** strengthening resilience and adaptive capacity to climate related changes to rain patterns and saltwater intrusion into groundwater supplies.
	***Durable partnerships and access to adequate means of implementation*** will be required to implement these contributions.

ECOSYSTEMS MANAGEMENT: MARINE, COASTAL & TERRESTRIAL

Sectoral Context

A core element of the FSM's vision for climate change adaptation and sustainable development is the integrated management of its marine, coastal and terrestrial ecosystems. Protecting the health of these systems by understanding the links between them, and managing the stresses upon them, helps communities conserve natural resources, protect critical biodiversity, and enhance ecosystems services that sustain local livelihoods.

With increasing climate change impacts such as severe typhoons, sea level rise, ocean acidification, saltwater intrusion, coastal flooding, and marine species geographical shifts, climate change adaptation is now a fundamental component of the FSM's integrated ecosystems management strategy. As described below, this strategy has multiple, cross-cutting benefits, including sustaining healthy ecosystems and building climate change resilience, while also improving economic opportunity, food and water security, and overall social well-being.

Two signature projects that exemplify this integrated vision of marine, terrestrial and coastal ecosystems management are the Micronesia Challenge and the Ridge to Reef Project. Together these and other ecosystems management and ecosystems-based adaptation projects demonstrate the FSM's comprehensive vision for preparing for and responding to climate change, while also cultivating sustainable economic opportunities.

The Micronesia Challenge

The ocean constitutes more than 99.9 percent of the FSM's territory and is by far the country's most valuable economic resource. For centuries Micronesians have understood the importance of protecting and sustainably cultivating marine ecosystems.

In 2006, the FSM joined with the Marshall Islands, Palau, Guam, and the Northern Mariana Islands to launch the Micronesia Challenge (MC), a commitment to effectively conserve at least 30% of near-shore marine resources and 20% of terrestrial resources by 2020. This regional inter-governmental conservation initiative demonstrates the commitment by these Micronesian leaders and governments to balance the use of their natural resources today with the need to sustain those resources for future generations.

In 2019, at the 24th Micronesian Islands Forum leaders expanded the commitment—now referred to as the Micronesia Challenge 2030 or MC2030—to effectively manage 50% of marine resources and 30% of terrestrial resources by 2030 across the region. MC2030 also expands the partnership to include goals focused on increasing livelihoods from sustainable resources, integrating fisheries management with Protected Area Networks, increasing capacity for effective management, reducing invasive species and restoring habitats, and reducing risks from climate change impacts. To guide fundraising efforts, a Sustainable Finance Plan (SFP) was developed, which has currently helped the FSM secure over USD $7 million in an endowment fund to support ongoing implementation of Protected Area Networks (PANs) at the local level. An updated SFP is being developed based on new MC2030 targets.

Related to these efforts is the Bill Raynor Micronesia Challenge Scholarship. This capacity building effort enables Micronesian individuals to pursue Masters or Doctorate degrees in conservation-related fields in order to foster responsible and environmentally friendly development,

biodiversity conservation, research and knowledge management, and sustainable livelihoods across the region. The scholarship was first awarded in 2017 and has supported over a dozen scholars so far across Micronesia.

One specific achievement under the MC that the FSM continues to enhance is the Protected Areas Network National Guiding Policy Framework (FSM PAN). The overarching goal of the FSM PAN is to support effective management of sites through marine protected area design, capacity building, setting up state and national level PAN implementing mechanisms, and providing sustainable funding to enable communities to lead on conservation and management, as well as developing sustainable livelihoods toward food security and building community resilience. The Ridge to Reef Project has been key in supporting the institutionalization of the FSM PAN and protected area management in the FSM.

Also related to the marine conservation work of the Micronesia Challenge are the efforts of the Blue Prosperity Coalition (BPC), a network of global partners committed to the long-term goal of protecting 30% of the ocean and assisting committed governments in developing and implementing comprehensive Marine Spatial Plans to protect the environment and improve the economy at the same time. Their approach provides expertise, funding, and tools, to promote growth and prosperity through empowering sustainable management of marine resources and ecosystems.

In 2019, President Panuelo signed a MOU with the BPC on behalf of the FSM to protect 30% of its ocean by 2030. Through this MOU a 5-year program known as Blue Prosperity Micronesia (BPM) was launched to support the sustainable growth of marine resources in the Federated States of Micronesia. This program is government-led, through a Task Force, with the goal to optimize ocean uses, protect 30% of the FSM's waters, strengthen fisheries management, and support the development of marine industries. The Task Force and its working groups collaborate closely with the Micronesia Conservation Trust, as the in-country member of the BPC.

With these new partnerships, approaches and monitoring tools, the FSM's ability to effectively manage and sustainably benefit from our tremendous, maritime resources is only expected to increase in the decades ahead.

Ridge to Reef Project

The Ridge to Reef program focuses on the main, or High Islands, of the four states of the FSM. Its objective is to strengthen local, State and National actions and capacities to implement integrated ecosystems management across the islands, from the terrestrial high points, the ridges, to the coastal ecosystems, the reefs. Working with institutions and individuals in state and national government, environmental NGOs and local communities, Reef to Ridge focuses on two principal areas: Sustainable Land Management (SLM) and Protected Areas (PAs).

The focus of the SLM work is on developing Integrated Land Management Plans (ILMPs) based upon data-driven Strategic Environmental Assessments (SEAs) to promote allocation of land resources in a manner that balances development and environmental interests. These tools and guidelines are based on key data including information about biodiversity as well as the physical environment. The SLM work also includes efforts to coordinate management and access to information among state, national, local, private, civil society and other key stakeholders, and to develop means of securing finance for further implementation of these practices. Finally, it involves

specific initial demonstrations, including projects to reduce water pollution from pig farming and to restore sections of upland forest. Together, these efforts will protect biodiversity, reduce erosion, increase water quality and quantity, and reduce coastal flooding.

The focus of the Protected Areas work is on enhancing the capacity for management of both existing and new Protected Areas and Protected Area Networks (PANs). This involves developing institutional frameworks at the State and National levels for managing protected areas, including planning, financing, monitoring and reporting. It also involves ensuring that the PAs have adequate legal status and that the various managing bodies, especially for newly established PAs and PANs, are coordinated and have the capacity to undertake their responsibilities. The program helps by providing a broad range of resources including guidelines and tools related to zoning and boundaries, biological and ecological monitoring and enforcement, as well as by improving stakeholder engagement, community awareness and management capacity.

Additional Ecosystems Management and Ecosystems-based Adaptation Projects

The National and State governments have numerous other ongoing partnerships with NGOs and communities to help effectively manage the coastal zone in a sustainable manner while building resilience to climate change impacts. Like the Ridge to Reef project, these projects take an integrated approach towards shoreline and marine management and ecosystem-based adaptation, seeking to balance environmental and development needs. Most often, these involve one or more of three components: soft engineering interventions or technology demonstrations; capacity-building and training for government officials and stakeholders; and development of guidance on policies, regulations, and implementation of these management approaches.

Typical soft engineering techniques include using natural defense systems such as outer reefs, mangroves, beaches and coastal vegetation to improve flood resilience and to climate-proof livelihoods and businesses. Tree planting, reef rehabilitation, and beach ridge enhancement can also be used for coastal and watershed drainage management. Capacity-building programs in coastal and watershed management for communities and stakeholders include helping fisheries-dependent communities restore and sustain coral reefs and training farmers in resilient agricultural planting and groundwater protection techniques. In the FSM, widespread private ownership of land and aquatic areas makes the active involvement and ongoing capacity building of local communities and stakeholders absolutely essential to building climate change resilience through ecosystems management. Another important component of many of these adaptation and ecosystems management projects is the development of guidance for policies and legislation at the local, state and/or national levels. This guidance can be used to promulgate land and shoreline management plans and legal regimes for protected areas and networks, as well as to help communities and other stakeholders in their monitoring and enforcement efforts.

Contributions

Unconditional

By 2030, effectively manage 50% of marine resources and 30% of terrestrial resources, including restricting commercial fishing in up to 30% of the marine environment.

Unconditional

By 2023, achieve full tuna fishery transparency through electronic monitoring of all FSM-flagged longline fishing vessels.

Unconditional

By 2030, develop non-entangling and biodegradable Fish Aggregating Devices (FAD) to be used by all purse seine flag vessels in the FSM EEZ

Unconditional

By 2030, develop Integrated Land Management Plans and Shoreline Development Plans to effectively sustain and protect terrestrial and coastal ecosystems

Unconditional

By 2030, expand the number of Protected Areas and their coordination through Protected Area Networks

Climate Change Co-benefits

Mitigation	Adaptation
• Reduced emissions from fishing fuel • Less disturbance of land and ocean-based carbon sinks	• Increased resilience of fisheries to climate change impacts by improving sustainability, reducing by-catch, reducing IUU fishing, and providing protected areas for stocks to recover • Preservation of ecosystems services and livelihoods • Preservation of food supply/security • Improved capacity of governments and communities to respond to climate change impacts on coastal and marine ecosystems • Improved climate-resilience of livelihoods and businesses reliant on coastal and marine ecosystems • Improved flood resilience through protection of mangroves and implementation of other nature-based solutions • Reduction of coastal erosion • Improved resilience to more extreme droughts through water conservation / groundwater protection • Increased resilience of coral reefs, mangrove forests, and wetlands to climate change impacts

Means of Implementation Requirements

Support has been obtained from the Adaptation Fund and Green Climate Fund to undertake food and water security measures that complement the integrated ecosystems management approach described above. Full implementation of these and other ecosystems management and ecosystems-based adaptation measures will require additional funding.

Relevant SDGs

	***Ending poverty*** is advanced by protecting ecosystems and ecosystems services that sustain livelihoods.
	***Food security*** is advanced by protecting ecosystems such as reefs and fisheries that provide food and through adaptation measures to protect groundwater supplies for drinking and agriculture.
	***Good health and well-being*** are advanced through the reduction of pollution from development and economic activity in protected and effectively managed ecosystems.
	***Good Jobs and Economic Growth*** are enhanced by protecting the ecosystems upon which fishers and farmers rely.
	***Climate action will be enhanced*** by reducing emissions from commercial fishing due to marine conservation measures and by protecting and strengthening marine, coastal and terrestrial ecosystems through management approaches that involve ecosystems-based climate change adaptation measures
	***The conservation and sustainable use of the Ocean*** are among the primary objectives of the Contributions in this Ecosystems Management policy area.
	***The protection and sustainable use of terrestrial ecosystems and halting biodiversity loss*** are among the primary objectives of the Contributions in this Ecosystems Management policy area.
	***Durable partnerships and access to adequate means of implementation*** will be required to implement these contributions.

RESILIENT TRANSPORT SYSTEMS

Sectoral Context

A resilient transport network to ensure reliable transport of goods and people by air, sea, and roads is crucial to the FSM's economy, public health and safety. The FSM is extremely dependent on the importation of most goods, including a significant portion of its food, and nearly all of its medicine and fuel, both for transportation and electric power generation.

Many of the outer islands have very limited infrastructure, including roads and health care. Residents of outer islands rely on maritime transport to main and other outlying islands, and for access to education, markets and health services. Only seven of the around seventy total inhabited outer islands have airstrips. These airstrips are presently serviced by only two aircraft, including one with a seven-person capacity and one with a fifteen-person capacity

The impacts of climate change, such as sea level rise and more severe weather events are already posing challenges to the transportation system and will require significant investment to increase its resilience. In many instances, the existing capacity of infrastructure, particularly at port facilities, is already inadequate and requires expansion just to meet current needs. This imposes additional costs on the country by slowing the transfer of goods to and from shipping vessels.

Improving the capacity and resilience of the transport network and ports of entry is essential for building the country's broader economic resilience to climate change and its impacts on global supply chains. The FSM is considering the use of battery powered land, sea, and air transportation powered by renewable energy. The FSM recognizes that all private sector operations and government functions, including education, health, social and emergency services, depend on an effectively functioning and climate-resilient transportation infrastructure system. All four states therefore include climate-proofing and possible relocation of critical infrastructure as priorities in their *Joint State Action Plans on Disaster Risk Management and Climate Change.*

Seaports

The importance of seaports to a small island state such as the FSM cannot be overstated, as they are the principal hubs of commercial goods for the economy, as well as for tourists and for emergency transportation purposes.

Improving the four states' main seaports is presently a top priority for the FSM. Key improvements needed and planned include bringing the ports up to International Ship and Port Facility Security (ISPS) Standards, improving the resilience of piers and docks to worsening currents and higher waves, and making berths larger to accommodate more traffic and larger ships. Accommodating more ships will also reduce fuel use and the associated emissions from vessels idling at sea while waiting to dock. In addition to benefiting commerce, food security, fuel conservation and emergency services, these improvements will decrease damage to ships and improve safety and security in the dock area.

More recent considerations include planning potential quarantine facilities located at or near seaports and airports. As a country with limited healthcare infrastructure, the FSM has effectively maintained a zero-COVID strategy that has resulted in no cases to date. Minimizing incoming travel and requiring that incoming persons quarantine before joining the general population has been a critical part of that successful strategy. Therefore, developing appropriate accommodations near

ports for persons needing to quarantine upon arrival may become a necessary component of port security and public health in the FSM. In addition, FSM is looking into developing a master plan to coordinate data on incoming flights and vessels across airports and seaports, especially those within close vicinity of each other.

Roads and Runways

The FSM has just over 200 kilometers of roads, ranging from very poor to good condition. Each of the four states' main islands has one primary circumferential road along the coast, as well as some secondary and other access roads. All roads are adversely affected by natural conditions such as high rainfall and undulating terrain. They are further affected by worsening climate-related impacts such as sea level rise, storm surges, flooding and increasing precipitation. In addition, roads suffer from inadequate drainage and limited capacity for maintenance, often due to the high costs of getting heavy equipment and operators to remote locations.

Since most of the FSM population lives near the coast, and since most of the country's core infrastructure—including businesses, schools, health facilities, seaports and airports and tourist accommodations—are also located in coastal zones, disruptions to the road system can severely affect the FSM economy, as well as the flow of critical supplies and social services. Immediate improvements are therefore needed to the road system nationwide.

Overview of estimated FSM primary road network length and condition (from World Bank)

State	Unsealed	Sealed	Condition	Climate Hazard
Pohnpei	0 km	100 km asphalt	Roads are generally in good and fair condition, with a cautious estimate of approx. 15% of the road network poor and very poor. The road cross-section is very flat and side drainage is regularly missing or inadequate, leading to standing or running water on the road surface. One bridge is in unsafe condition and weight limit / closure is being considered by the government.	Road surface and pavement damage from a lack of drainage
Kosrae	0 km	35 km asphalt	Roads are generally in fair to good condition. There is no evidence of side drainage, but roads tend to have cross-fall such that run-off drains acceptably on both sides. The Lelu causeway was constructed 50 years ago, is very narrow, is low level, has insufficient drainage, and is suffering from erosion and scouring from tidal action. Bridges are generally in good condition. The road between Malem and Utwe is subject to coastal erosion, which is getting worse under the effects of sea-level rise.	The network is mostly very close to the shore and is low lying

Chuuk (Weno Island)	5 km	10 km asphalt 5 km concrete	Concrete roads are recently built (between 2015 and 2017) and in very good condition, whilst asphalt roads are relatively old and in generally very poor condition. Bridges are generally in good condition. However, the paved road network is of very limited extent and covers only the north-western part of the island in the area of the airport, the seaport and the main government institutions. The extension of the road network is a priority.	Coastal and rainfall related, depending on location.
Yap	10 km	40 km asphalt 10 km double seal	Roads are generally in good condition in large part due to good drainage. Three bridges are in unsafe condition and weight limit/closure is being considered by the government.	Coastal and rainfall related, depending on location.

To address the deteriorated state of the FSM's road network and make it more climate-resilient, President Panuelo launched the Pave the Nation Program as a national priority. This large-scale program includes a USD $75 million project funded by the World Bank to support primary and secondary road improvements nationwide. It also includes USD $ 37 million from the Asian Development Bank and USD $14 million from the government of China to support additional road improvements that have been identified as priorities by the government. The four states are presently examining further plans to elevate to strengthen, widen, and even relocate their roads to ensure sustainable functioning of principle economic activities and social and emergency services. The Pave the Nation Program will continue to implement such improvement projects as additional funds become available.

Officials are also examining opportunities to improve airport infrastructure nationwide, including expanding and restoring runways to make them more resilient to flooding and related climate impacts. In 2021, the US Federal Aviation Authority approved a $37 million grant to rehabilitate the airport in Yap. Similar funding will also be sought for such improvements at the other FSM airports.

This effort will be bolstered by the EU-funded AW-REP described above, under which the FSM Department of Resources & Development will coordinate the development of a comprehensive national Transport Master Plan and State Action Plans. The AW-REP is also intended to kickstart the transition to electric-powered transport across the Federation in the next 5-10 years.

Contributions

Conditional

By 2030, climate-proof (e.g., by widening, elevating, repairing and/or relocating) all major island ring roads, airport access roads and arterial roads

Conditional

By 2030, complete climate-proofing of major ports (including larger and more resilient docks meeting ISPS standards)

Climate Change Co-Benefits

Mitigation	Adaptation
• Reduction of emissions from idling vessels waiting to dock • Reduction of emissions from large transportation idling vessels waiting to dock by incorporating renewable energy technology for powering their auxiliary equipment	• Resilience to flooding from sea-level rise and king tides • Maintenance of public and commercial services during weather related emergencies

Means of Implementation Requirements

The FSM's Infrastructure Development Plan FY 2016 – FY2025 identifies needs totaling USD 209 million and USD 79 million for road and pedestrian and maritime infrastructure projects, respectively. Including air transportation and broader climate change adaptation projects would add another USD 103 million to total requirements for transportation infrastructure over the period. Some of the finances for roads have been secured with support from the World Bank, the Asian Development Bank and the governments of the United States and China. However, the majority of the resources needed for transportation projects over the next decade, including maintenance and repairs, have yet to be secured.

Relevant SDGs

	***Good jobs and economic growth*** are enhanced through improved access to markets and fewer disruptions to commercial activity due to severe climatic events.
	***Inequalities are reduced*** by providing poorer and underserved communities better access to transportation and public services, including health, education and emergency response.
	***Sustainable cities and communities*** are enhanced by reliable access to transportation, public services and fewer disruptions due to severe climatic events.
	***Climate action*** is enhanced by climate proofing and relocating roads and ports for adaptation purposes.
	***Durable partnerships and access to adequate means of implementation*** will be required to implement these contributions.

PUBLIC HEALTH

Sectoral Context

Climate change is projected to have many negative impacts on public health in the Pacific region, including increased vector-borne disease (VBD), such as dengue fever, malaria, Zika, and Chikungunya virus, food borne disease (FBD), such as *Salmonella*, *E. coli*, and *Staphylococcus arueus*, and water borne disease (WBD), such as diarrheal pathogens, gastroenteritis and leptospirosis.[5] Communities in tropical climates are generally considered at higher risk. Strengthening public health systems will be an important adaptation response to climate change, particularly in those countries with underdeveloped health care systems.

Diarrheal and gastroenteritis infections are already the highest causes of morbidity in the FSM, according to local hospital records. The FSM has also experienced recent outbreaks of dengue fever (2013-14 and 2019) and Chikungunya virus (2013-14).[6]

In addition, there are many risk factors present in the FSM that have the potential to exacerbate the negative health implications of climate change. Poorer parts of the country are often not well served with regard to access to clean water and sanitation. Water treatment is not available in all public and community systems on the main islands, and the physical infrastructure is not always well maintained.[7] Over-consumption of imported packaged food, lack of physical activity, and use of tobacco and local plant products also contribute to the high incidence of non-communicable diseases, such as diabetes, cardiovascular diseases, and various cancers.[8]

Improving the public health system in the FSM, including with regard to climate-related risks, is already a priority identified in the JSAPs of all four States. The GCF approved on 16 July 2021 the FSM's application to access the Project Preparation Facility to develop a proposal for increasing resilience to health risks of climate change.[9] The following barriers were identified and would need to be addressed in order to cope with VBD, WBD and FBD:

- Insufficient current policies, programs and regulations, both within the Department of Health and other Departments, to manage those climate change-related health risks,
- Inefficient process of health data recording, collection and analysis, in particular with respect to harmonizing health and climate information systems,
- Lack of financial and human resources dedicated to health and climate information systems, biostatistics, epidemiology and public health related to climate change,
- Lack of high-level buy-in, cross-sectoral cooperation and inter-agency support for effective project management and implementation of climate change and health projects,

5 McIver et al., Health impacts of climate change in Pacific island countries: a regional assessment of vulnerabilities and adaptation priorities. Environ Health Perspective, 2016.

6 EpiNet Surveillance data provided by FSM Department of Health and Social Affairs, 2020.

7 Millennium Development Goals and Status Report 2010 of FSM, pg. 80, available at: https://www.pacific.undp.org/content/pacific/en/home/library/mdg/FSM_MDGs2010.html

8 FSM-WHO Country Cooperation Strategy 2018-2022, available at: https://iris.wpro.who.int/handle/10665.1/13947

9 Application available at: https://www.greenclimate.fund/document/project-preparation-increasing-resilience-health-risks-climate-change-federated-states

- Low technical/organizational/financial capacities to operate and maintain resilient and safe water supply systems,
- Lack of knowledge and capacities in the management of mosquitoes breeding zones, and
- Lack of public understanding on VBD, WBD and FBD (risks of transmissions, prevention measures).[10]

The FSM is also implementing a significant project funded by the Adaptation Fund aimed at enhancing water security in the communities of Woleai, Eauripik, Satawan, Lukunor, Kapingamarangi, Nukuoro, Utwe, and Malem.[11] The overall goal of the project is to build social, ecological and economic resilience of the target communities and reduce their vulnerabilities to extreme drought, sea level rise, and other climate risks through water resource management, coastal resource and development planning, and by promoting gender perspectives and ecologically sound climate resilient livelihoods.

The College of Micronesia (CoM) can play an important role in the response of the public health system to climate change, particularly in the area of training. The CoM currently offers a 3rd year certificate in Public Health and operates an Area Health Education Center in each states to provide trainings for State public health workers. These operations can be readily expanded to include preparation for climate change impacts like VBD, WBD, and FBD.

With international assistance and access to the required financial support, the FSM is committed to strengthening its public health system, so that it is able to respond to the growing health risks associated with climate change and improve the health and well-being of the population.

Contributions

Conditional

By 2030, establish a surveillance system to detect and monitor VBD, WBD, and FBD, including a laboratory, to enable rapid response and control of outbreaks.

Conditional

By 2030, provide all medical personnel and public health officials with training in the detection and treatment of VBD, WBD, and FBD.

Conditional

By 2030, equip all hospitals and other relevant medical facilities to receive and effectively treat patients suffering from VBD, WBD, and FBD.

10 GCF Project Preparation Service Application, Increasing resilience to the health risks of climate change in the Federated States of Micronesia, Concept Note pg.10, approved 16 July 2021, available at: https://www.greenclimate.fund/document/project-preparation-increasing-resilience-health-risks-climate-change-federated-states

11 More information available at:https://www.adaptation-fund.org/project/enhancing-climate-change-resilience-vulnerable-island-communities-federated-states-micronesia/

Climate Change Co-Benefits

Adaptation
• Increased preparedness for the negative impacts of climate change on public health, including increased risk of VBD, WBD, and FBD

Means of Implementation Requirements

Full implementation of the project for increasing the resilience to the health risks of climate change will require additional funding of USD 9,475,000. The Government of the FSM has committed co-financing of USD 500,000. This project will be submitted to the GCF.

Relevant SDGs

	***Good health and well-being is enhanced*** by directly addressing the serious and growing health risks posed by VBD, FBD, and WBD to the people of the FSM, all of which are exacerbated by climate change.
	***Climate action is enhanced*** by improving the responsiveness of the FSM's public health system to the projected negative impacts of climate change.
	The FSM will be seeking financial support from the GCF to fully fund the actions associated with these contributions.

EMERGENCY MANAGEMENT & RESPONSE

Sectoral Context

Disaster Risk Management is both critical and difficult in a geographically dispersed SIDS such as the FSM. As listed below, there are numerous possible threats to and impacts on the safety and security of communities in the FSM, most of which are exacerbated by climate change. Damage to economic assets and infrastructure, as well as adverse impacts on livelihoods can be expected. The territorial integrity of some areas and islands is also threatened by sea-level rise, storm surges and other climate-related impacts.

Near-Term Threats to the FSM	Disaster Impacts on the FSM and its People
• Tropical storms and typhoons • Pandemics • Tidal and wave surges • Agriculture pests and diseases • Floods • Aviation and maritime disasters • Earthquakes • Fires • Landslides • Industrial accidents • Tsunamis • Marine pollution • Droughts	• Loss of life • Disruption of lifestyle • Injury • Disruption of services • Damage to and destruction of property • Damage to infrastructure and disruption of government systems • Damage to subsistence and cash crops • National economic loss • Loss of livelihoods • Sociological and psychological after-effects

Just as climate change can exacerbate the threats and impacts of disasters suffered in the FSM, so too can overlapping threats compound the impacts and difficulties in responding effectively. For example, the Covid-19 pandemic has strained emergency preparedness and food security efforts, since shipments of key supplies found to be contaminated have had to be turned away. In the future, climate change impacts could cause similar disruptions to supply chains.

Institutions and Governance

Cognizant of the challenges ahead, the FSM has taken significant steps towards developing an integrated state and national governance regime. The FSM's overarching approach to these issues is laid out in the Integrated Disaster Risk Management and Climate Change Policy, adopted in 2013. This was followed in 2014 by passage of the Climate Change Act, which specifies obligation of the various government departments. The National Disaster Response Plan, adopted in 2017, establishes the FSM's institutional arrangements for preparedness, monitoring and responses to disasters, as well as for state and national coordination and for accessing international support.

Also at the national level, the increased focus on climate change and emergency management has led to the elevating of what was formerly the Office of Environment and Emergency Management (OEEM) to become the Department of Environment, Climate Change and Emergency Management (DECEM). This national office consists of separate divisions of Environment, Climate Change and Emergency Management. These divisions work closely with each other, with other branches of the national government, with government offices at the state level, and even with schools and communities within the four states. Two of DECEM's near-term priorities include finalizing the

country's National Adaptation Plan (NAP) and updating the National Disaster Response Plan mentioned above. A third key near-term priority is the completion of nationwide GIS mapping to help prepare for climate change impacts and responses.

At the state level emergency management plans and programs differ somewhat depending on what each state identifies as its specific priorities, but each state undertakes the following key actions, among others:

- Developing materials and resources relevant to the disaster and climate change context of the specific state
- Implementing Climate Change and Disaster Risk Management education and awareness programs appropriate for communities and schools in the main and outer islands
- Establishing and strengthening early warning systems
- Creating disaster response plans for all communities
- Developing maps of, and plans for, vulnerable communities
- Mapping and communicating information about safe shelters
- Equipping communities with disaster proof communications systems
- Equipping emergency operations offices with the necessary resources
- Providing disaster supplies and aid kits to outer islands
- Providing first aid and capacity training for potential responders
- Improving evacuation routes (e.g., for floods and tsunamis) and community awareness of them
- Conducting capacity building, training and drills regarding evacuation processes and priorities
- Building capacity for response operations, including training for Search and Rescue operations

Transportation Infrastructure and Emergency Management Synergies

At both the national and state levels, investment in intra- and inter-state cargo and transportation vessels not only greatly facilitates and improves economic activity, but it also enhances emergency response capacity, since in times of emergency these vessels serve to deliver vital supplies and to evacuate persons from disaster areas or persons in need of medical help. Therefore, the FSM aims to carefully maintain and update its primary cargo and transportation vessels, and may look to secure additional vessels. Indeed, in some circumstances, running smaller vessels more frequently can decrease fuel usage, thereby lowering both costs and emissions, while improving the economy and emergency response capacity.

Contributions

Unconditional

By 2025, complete an update of the National Disaster Response Plan.

Conditional

By 2030, complete comprehensive nationwide GIS mapping.

Conditional

By 2030, update vessels and/or secure additional vessels for inter-state transportation and emergency response operations.

Climate Change Co-Benefits

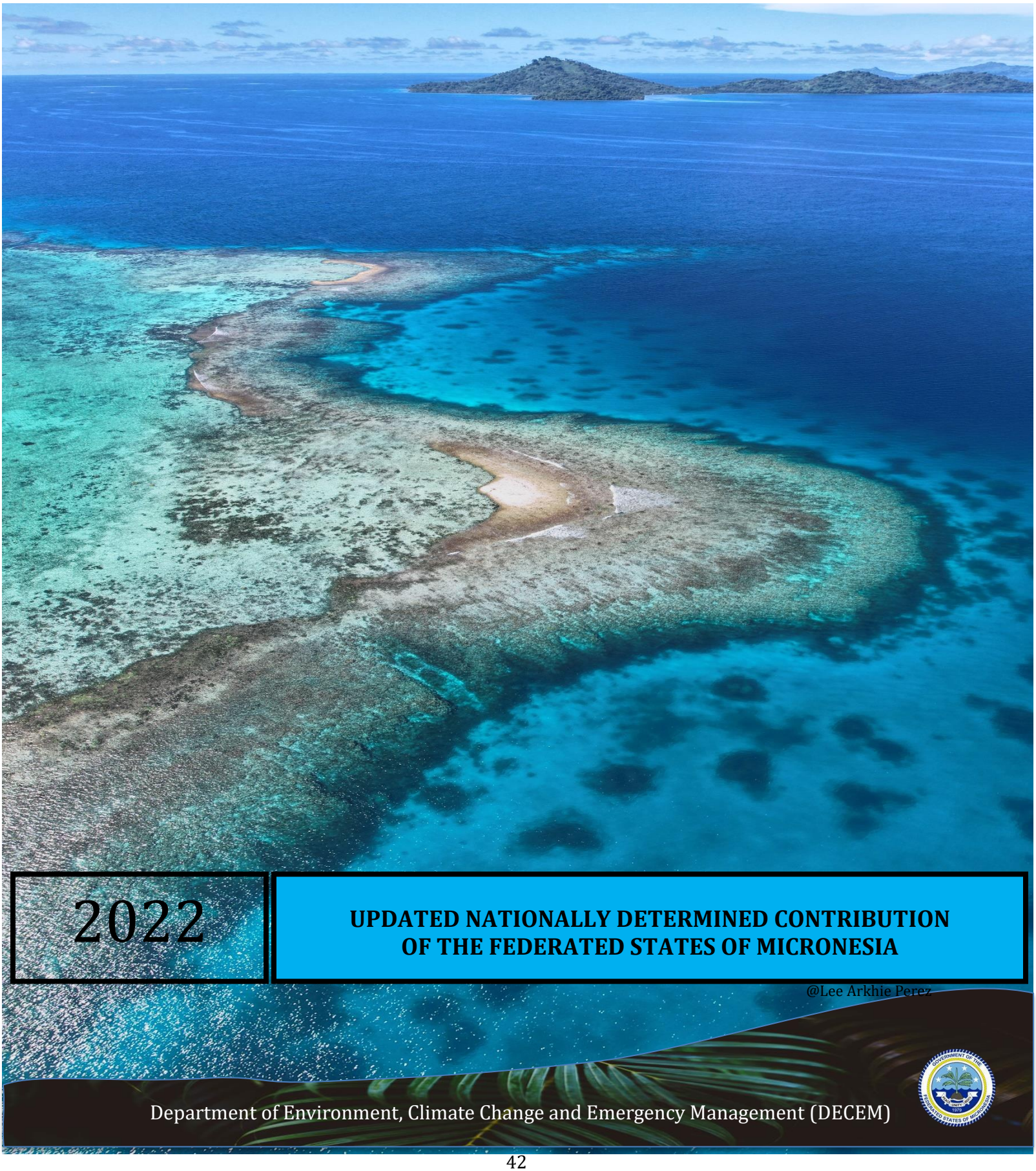
Mitigation	Adaptation
• Reduction of carbon dioxide emissions from emergency response vessels	• Enhancement of emergency management and disaster response to extreme weather events, including improved delivery of essential supplies and services (e.g., food, water, medical, transportation) • Improved monitoring of coastal erosion, sea level-rise, groundwater supplies and other natural resources

Means of Implementation Requirements

Completion of GIS mapping is expected to require additional financial resources to pay for technical assistance. Acquiring one to two additional transport and emergency response vessels will either require significant financial support or an in-kind contribution.

Relevant SDGs

	***Good health*** is advanced by preparing communities for severe climatic events and responding to such events in a timely manner.
	***Inequalities are reduced*** when remote outer island communities receive resources to prepare for severe climatic events and gain access to supplies and emergency response services that were previously unavailable.
	***Climate Action*** is enhanced by GIS mapping that facilitates climate adaptation measures, geophysical monitoring and emergency response.
	***Durable partnerships and access to adequate means of implementation*** will be required to implement these contributions.



2022

UPDATED NATIONALLY DETERMINED CONTRIBUTION OF THE FEDERATED STATES OF MICRONESIA

@Lee Arkhie Perez

Department of Environment, Climate Change and Emergency Management (DECEM)