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FEDERATED STATES OF MICRONESIA

CLIMATE CHANGE POLICY ASSESSMENT

September 2019

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CLIMATE CHANGE POLICY ASSESSMENT

August 1, 2019

Approved By
Asia Pacific and Fiscal Affairs Departments

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GLOSSARY

AEA	Army Engineer Association
BAU	Business As Usual
Cat-DDO	Catastrophe Deferred Drawdown Option
CCPA	Climate Change Policy Assessment
CRI	Global Climate Risk Index
DAEF	Disaster Assistance Emergency Fund
DECEM	Department of Environment, Climate Change and Emergency Management
DoFA	Department of Finance and Administration
DRF	Disaster Relief Fund
DRM	Disaster Risk Management
DRS	Disaster Resilience Strategy
DTCI	Department of Transportation, Communication and Infrastructure
FEMA	Federal Emergency Management Agency
FMR	Financial Management Regulation
FSM	Federated States of Micronesia
FSMTF	FSM Trust Fund
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
IDA	International Development Association
IPP	Independent Power Producer
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NOAA	National Oceanic and Atmospheric Administration
PCRAFI	Pacific Catastrophe and Risk Financing Initiative
PCRIC	Pacific Catastrophe Risk Insurance Company
PCs	Public Corporations
PEFA	Public Expenditure and Financial Accountability (Assessment)
PFM	Public Financial Management
PICs	Pacific Island Countries
PIMA	Public Investment Management Assessment
PPP	Public-Private Partnership
RMI	Marshall Islands
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

This Climate Change Policy Assessment (CCPA) takes stock of the Federated States of Micronesia (FSM)'s climate response plans, from the perspective of their macroeconomic and fiscal implications. The CCPA is a joint initiative by the IMF and World Bank to assist small states to understand and manage the expected economic impact of climate change, while safeguarding long-run fiscal and external sustainability. It explores the possible impact of climate change and natural disasters and the cost of FSM's planned response. It suggests macroeconomically relevant reforms that could strengthen the national strategy and identifies policy gaps and resource needs.

FSM has recognized that climate change is an existential threat and made significant strides to counter it but more action and sustained international support is required. Increasing frequency and intensity of coastal storms threatens infrastructure and livelihoods, as do increased risks of coastal flooding and drought. FSM has recognized this by engaging forcefully in international discussions, setting out an ambitious agenda for mitigation and putting in place a wide range of adaptation policies and strategies. However, significant gaps remain particularly with regard to a National Adaptation Plan and a comprehensive Disaster Resilience Strategy (DRS). The challenges facing the country remain daunting and will require sustained international support along with increased private sector participation and domestic revenue mobilization. International support should focus on grant financing for adaptation investments and disaster response and capacity building to complete strategies and improve public investment management.

Investment thus far has been skewed towards mitigation, despite FSM's negligible contribution to global emissions. FSM has made progress towards its NDC mitigation pledge by beginning to expand renewable power generation and improve its efficiency. The authorities plan to continue this and encourage the take-up of energy efficient building design and appliances. Short-term mitigation options for the transport sector are more limited, but there is scope to raise taxes on fuel and reform the taxation of vehicles to encourage the use of fuel-efficient vehicles.

Accelerating adaptation investments is paramount, which requires addressing critical capacity constraints and increasing grant financing. FSM's overall planning for adaptation is fragmented and individual sectoral projects include varying levels of adaptation measures. Progress has been hindered by capacity constraints, particularly in investment project execution at the state level. However, FSM has a financing gap of $400–500 million over the next 15 years between its ambitious climate change investment plans and currently available grant funding and increased domestic financing is constrained by the fiscal cliff facing the authorities due to the expiry of Compact grants in 2023. Improvements in public financial management, such as more rigorous project appraisal and prioritization, improved budget classification and chart of accounts will support an acceleration of adaptation investment in a fiscally sustainable manner.

FSM needs to increase its capacity to address natural disaster risks following the expiry of Compact-related assistance in 2023. FSM has some elements of an effective risk financing strategy in place but is currently not well prepared for the post-2023 context, for which provision of support

through the Compact Agreement is unknown. While some contingency funds have been established, indemnity and catastrophe insurance is under-used, and the government relies on the provision of disaster funding from the United States through the Compact Agreement. FSM could be better prepared for post-2023 by putting in place a National Disaster Risk Financing Strategy as a central element of a broader DRS. This would guide future policy making with regard to risk transfer and retention, including trade-offs between options and provide a framework for seeking increased international support.

Key recommendations of the CCPA are summarized below, with short-term priorities (to be addressed in 2019 and 2020) highlighted.

A. Recommendations—Summary

General Preparedness	
1. Improve climate data collection and use, including on the costs of high and low intensity disasters and disaster response expenditure	**Short term**
2. Develop a comprehensive Disaster Resilience Strategy (DRS) in cooperation with IMF, World Bank and other development partners.	Medium term
3. Prepare for end of Compact by strengthening capacity for weather services and emergency management at the State and National level	Medium term
Mitigation	
4. Continue expanding renewable power generation	**Short term**
5. In the context of a transport mitigation strategy Introduce a moderate excise tax applied to road fuels (gasoline and diesel) and consider an excise tax or feebate system for passenger vehicles (medium term).	Medium term
Adaptation	
6. Develop an overarching National Adaptation Plan which reconciles GCF workplan and Infrastructure Development Plan	**Short term**
7. Undertake hazard mapping for key infrastructure to identify areas that are vulnerable to climate and disaster risk.	**Short term**
8. Address capacity shortage in order to accelerate infrastructure investment and integrate climate adaptation measures into sectoral strategies	Medium term
9. Develop and enforce a land use policy and a national building code that take into account climate risks, and incorporate energy efficiency requirements	Medium term
Financing	
10. Mobilize external grant financing to avoid further worsening of fiscal and debt sustainability	**Short term**
11. Speed up implementation of adaptation investment projects.	**Short term**

Risk Management	
12. Continue to develop contingency financing options and consider regional parametric insurance	**Short term**
13. Formalize a national disaster risk financing strategy, including an inventory of public assets, clarify budget processes and engage development partners on financing modalities for a risk buffer.	Medium term
14. Clarify regulations for accessing disaster relief funds at the conclusion of the current Compact Agreement term	Medium term
15. Explore insurance options for key government infrastructure and developing insurance markets for housing, flood risk and agriculture	Medium term
National Processes	
16. Improve chart of accounts, budget classification and budget presentation to identify and track mitigation and adaptation spending.	**Short term**
17. Establish standard methodology for investment project appraisal and selection. Build climate resilience into project screening and design process.	**Short term**
18. Strengthen the institutional and staff capacity in public investment and focus implementation resources on high priority projects	Medium term

INTRODUCTION

This report for FSM is the fifth pilot Climate Change Policy Assessment (CCPA) for Small States. The CCPA is a joint initiative by the IMF and World Bank to assist small states to understand and manage the expected economic impact of climate change, while safeguarding long-run fiscal and external sustainability.

1. **This joint World Bank-IMF Climate Change Policy Assessment was prepared in collaboration with the Government of Federated States of Micronesia (FSM).** It reviews the government's plans for mitigating and adapting to the effects of climate change, in line with FSM's Nationally Determined Contribution (NDC) under the Paris Agreement, and gives recommendations on how to strengthen policies while maintaining a sustainable macroeconomic framework. Its findings are intended to help policy making, support the preparation of updates to the NDC and assist in financing discussions.

2. **FSM faces intense challenges from climate change.** The climate of FSM is tropical, and its islands are located on the southern edge of the typhoon belt. Under current conditions, the primary extreme events are droughts, typhoons, flooding, landslides and wave action from storms. The western edge of the Micronesia region is the most active tropical cyclone basin in the world and the impacts of climate change are projected to lead to increasing rainfall, temperatures, sea level rise and ocean acidification.

3. **FSM is subject to significant uncertainty related to the post-2023 relationship with the United States, with critical implications on its capacity to address climate change.** Under the Compact Agreement with the United States, which was originally signed in 1986 and amended in 2004, the U.S. government has full authority and responsibility for security and defense matters in FSM. Under the Compact, the United States also provides the FSM with various economic supports until 2023: (i) annual grants to support specific public services, including education, health, and infrastructure development (the so-called Compact grants); (ii) annual contributions into the Compact Trust Fund, aimed at building up revenue sources for post-2023 and supporting the FSM's budgetary self-reliance; and (iii) assistance for various public services, including post-disaster relief and reconstruction by the Federal Emergency Management Agency (FEMA) and United States Agency for International Development (USAID), which effectively ensures FSM against natural disaster risks. Assessments in this report are built on the assumption that FSM will lose access to these supports in 2023—this will materialize unless the arrangements in the Compact stipulating them are renewed or extended.

4. **FSM is expected to face a fiscal cliff in FY2024, severely constraining fiscal space including for climate resilience investment.** The fiscal balance is projected to remain in surplus through FY2023 (ending September 2023), as grants and fishing license fees remain buoyant. However, under the Compact Agreement, Compact grants amounting to 20 percent of GDP will expire in FY2023 and be replaced by investment returns accruing to the Compact Trust Fund, projected at around 11 percent of GDP in FY2024. As a result, the overall balance is projected to turn

from a surplus of around 4½ percent of GDP in FY2023 to a deficit of 4½ percent of GDP in FY2024. Because of this, the IMF-World Bank Debt Sustainability Analysis assesses FSM's risk of debt distress to be high. The government has accumulated its own trust fund called the FSM Trust Fund (57 percent of GDP in FY2019), with the aim to provide an additional financing source to ensure long-term fiscal sustainability, but it is not available for drawdown until 2030.

An Overview of the Report

5. **For easy reference, the report broadly replicates the recommended structure of the NDC:** it first discusses general preparedness for climate change; the mitigation commitment and strategy; adaptation needs and strategy; financing strategy, risk management, and national processes. However, the focus of the report is on the macroeconomic challenges that may be confronted in dealing with climate change, and policy recommendations for responding adequately to these.[1] The guiding template for CCPAs is attached as Appendix I.[2]

CLIMATE CHANGE RISKS AND PREPAREDNESS

FSM is likely to suffer serious adverse environmental, social and economic losses as a result of natural disasters and slower moving impacts of climate change. These could significantly impact economic growth and debt sustainability. FSM has made good progress in putting in place plans to address this, but implementation has lagged, particularly in the adaptation area, mainly due to capacity constraints. FSM's ability to respond to natural disasters is currently good, but this is due to access to financial and institutional support under the Compact. Developing a disaster resilience strategy that enables FSM to manage natural disaster post-2023 is a priority.

A. Impact of Climate Change Risks on the Macro-Framework/Long-Term Outlook

How Vulnerable Is the Economy to Climate Change?

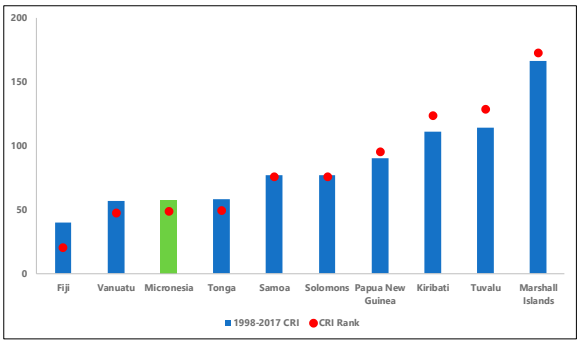
6. **FSM is highly exposed to climate change and natural disaster risks (Annex I)**. FSM is particularly vulnerable to the impacts of climate change and is likely to suffer serious adverse environmental, social and economic losses as a result of climate change-induced hazards. Increases in temperature and intensified extreme weather have the potential to lower agriculture output, increase vulnerability of critical infrastructure that threatens loss of access to basic services, depress labor productivity, and affect human health. Continued sea-level rises will impact coastal infrastructure and settlements located on or near the coast will be threatened. The Global Climate

[1] The CCPA will be attached to the papers for the IMF's 2019 Article IV Consultation.

[2] The high-level terminology in the report follows the NDC approach and that used in previous CCPAs for consistency purposes. This results in some differences in classification of topics than in other World Bank and IMF work.

Risk Index (CRI)[3] ranks FSM as the third most at risk country amongst peers in the Pacific island countries (PICs) considering the long-term CRI (1998–2017).[4] Figure 1 provides details—a lower index value indicates higher risk. In terms of fatalities per 100 thousand inhabitants, FSM is ranked in the top 3 percent. Annex I provides more details.

Figure 1. Micronesia: Long-term Climate Risk Index for Pacific Island Countries



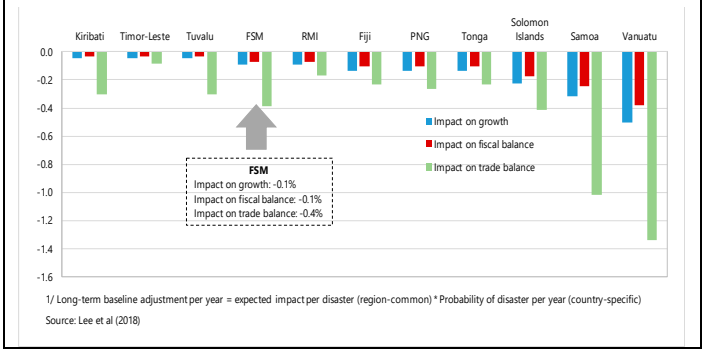
Source: Global Climate Risk Index 2019.

What Impact Could Climate Change Have on Macro-Sustainability?

7. **FSM's GDP is expected to be critically impacted by climate change**. An increase in temperature has adverse macroeconomic consequences especially in countries with relatively hot climates. This will occur through various channels. Agricultural output could be lower, labor productivity could be depressed in sectors more exposed to the weather, capital accumulation could be reduced, and human health can be poorer. These effects are especially strong in countries with relatively hot climates, such as FSM. Using the 1950–2014 data, World Economic Outlook (2017) estimates that countries with high temperatures incur more negative effect on per capita GDP from a given size increase in temperature.

8. **Natural disasters affect the economy through a negative impact on growth as well as fiscal and trade balances.** Lee et al. (2018)[5] estimate the macro economic impact using a panel regression for twelve PICs and propose an adjustment to the baseline economic projection (the non-disaster projection) by the product of the expected impact per disaster (region-common) and the probability of a disaster per year (country-specific). For FSM, a downward adjustment by 0.1 percentage point to annual growth in the baseline would be warranted, which is broadly in line with other PICs except Vanuatu, Samoa, and Solomon Islands (Figure 2). In addition, a downward adjustment to annual projections of the trade balance by 0.4

Figure 2. Micronesia: Impact of Natural Disasters: Cross-Country Context[/1]
(in percentage points)



1/ Long-term baseline adjustment per year = expected impact per disaster (region-common) * Probability of disaster per year (country-specific)

Source: Lee et al (2018)

[3]The Global CRI analyzes quantified impacts of extreme weather events – both in terms of fatalities as well as economic losses that occurred. The countries ranking highest are the ones most impacted and should consider the CRI as a warning sign that they are at risk of either frequent events or rare, but extraordinary catastrophes.

[4] https://www.germanwatch.org/en/16046.

[5]Lee and others, 2018, "The Economic Impact of Natural Disasters in Pacific Island Countries: Adaptation and Preparedness," IMF Working Paper No.18/108.

percentage points and fiscal balance by 0.1 percentage point would be warranted. The fiscal impact is insignificant, cushioned by the large share of grants as a proportion of total revenue in FSM through 2023.

9. **The risk of an extremely large disaster should also be considered.** Lee et al. (2018) propose conducting analysis of a largest-disaster impact as an alternative scenario in the debt sustainability analysis. The large-disaster adjustment is the product of the average estimated impact per disaster and the ratio of the country-specific largest damage and the average damages from severe natural disasters in the PICs. If a natural disaster is considered such as Typhoon Maysak[6] in 2015, which caused about 3.5 percent of GDP in damages, GDP could fall by up to 5 percentage points in FSM. Similarly, fiscal and trade balances would deteriorate by 3.4 percentage points and 13.4 percentage points, respectively. Much larger events remain a possibility; modeling suggest that a cyclone causing damages of around 50 percent of GDP is to be expected once every 100 years, which would have much more significant impacts on GDP, fiscal and trade. The IMF-World Bank Debt Sustainability Analysis confirms that natural disaster shocks pose major risks to FSM's debt sustainability (see "Financing Strategy for Mitigation and Adaptation Programs" below).

10. **Growth impacts could be worse given spillovers from FSM-specific channels.** El Niño and La Niña events will continue to occur in future,[7] raising uncertainty and volatility in the fishery sector and fisheries-related government revenue. In addition, rising temperature and sea-level rise will dampen the authorities' efforts to revive sustainable agriculture growth in FSM. Agriculture contributes significantly to the livelihoods and food security of a large proportion of FSM's population and is identified as a key productive sector for sustainable economic growth.[8]

B. General Preparedness

Is the Climate Response Strategy Consistent with Broader Development Goals?

11. **FSM is taking steps to mainstream climate adaptation into its broader development plans.** Over the past decade, FSM has made considerable advances in documenting climate-related risks, developing relevant policies and plans, and establishing and strengthening national and state institutions responsible for managing climate related risks. The overarching context is set by the 2004–2023 Strategic Development Plan. This was supplemented by the adoption by congress of the Nation-Wide Integrated Disaster Risk Management and Climate Change Policy (2013) and the FSM Climate Change Act (2014). The NDC was developed in this context. It focuses on FSM's pledges to reduce emissions as a contribution to global efforts to address climate change and sets out an

[6]Typhoon Maysak passed through FSM's Chuuk and Yap states between March 29 and April 1, 2015, causing substantial damages and declaration of a state of emergency. The estimated loss of 3.5 percent of GDP is only slightly higher than the long-term average annual loss of 2.8 percent of GDP expected from tropical cyclones, according to probabilistic catastrophic modeling (PCRAFI Country Risk Profile: Federated States of Micronesia (2010)).

[7] Pacific-Australia Climate Change Science and Adaptation Planning Program, Current and Future Climate of the FSM, 2015.

[8] FSM 2023 Action Plan.

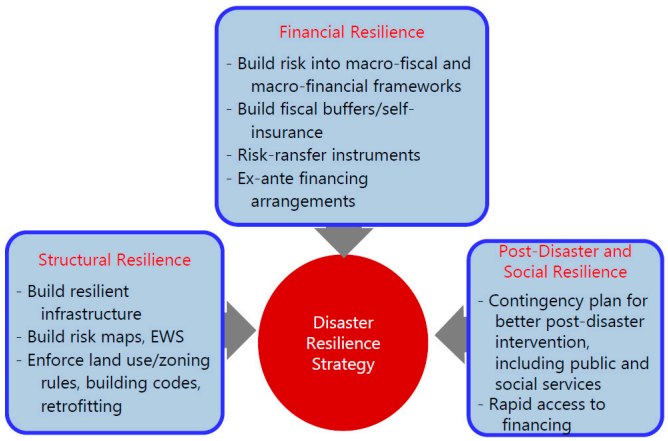
ambitious agenda for usage of renewable energy to achieve FSM's carbon emission reduction targets.

12. **Adaptation actions were not included in the NDC but have subsequently been addressed in various strategic documents.** At the state level, Joint State Action Plans (JSAPs) for disaster risk management and climate change adaptation have been developed and adaptation has been addressed in varying degrees of detail in sectoral plans and strategies, although the implementation of these plans is still at an early stage. Although not only focused on climate change, the Infrastructure Development Plan (IDP) (2016–2025) is a comprehensive and costed infrastructure investment plan that includes both mitigation and adaptation investments (though the costs of adapting to climate change have not been costed consistently).

13. **Institutional changes have been made to raise the profile of climate adaptation.** In 2018 the government established the Department Environment, Climate and Emergency Management (DECEM) as a signal of its heightened commitment to climate change adaptation issues. These were previously covered under the broader remit of the Department of Resources and Development. DECEM is responsible for developing and mainstreaming climate change adaptation and disaster management policies. It oversaw the development of a country work program for the Green Climate Fund (GCF), which refined and built on the projects in the IDP (see Subsection B under "Adaptation Plans" below). However, despite these advances there is not yet a comprehensive and consolidated National Adaptation Plan, which is a significant gap in FSMs adaptation strategy.

14. **FSM has institutions and plans to deal with natural disasters but lacks a comprehensive disaster resilience strategy (DRS)**. A national DRS would be an important part of the broader climate adaptation strategy that would be articulated in the National Adaptation Plan (Figure 3). Such an overarching strategy would synthesize and supplement existing policies and plans in order to present a consolidated and prioritized strategy for building resilience to natural disasters, including those unrelated to climate change such geohazards. It would cover, inter alia, the infrastructure and other investments needed to limit the impact of disasters; the financial arrangements needed to respond to disasters; and the institutional arrangements needed to respond effectively when a disaster strikes. This CCPA provides advice in a

Figure 3. Micronesia: National Disaster Resilience Strategy



Source: IMF 2019, Building Resilience in Developing Countries Vulnerable to Large Natural Disasters.

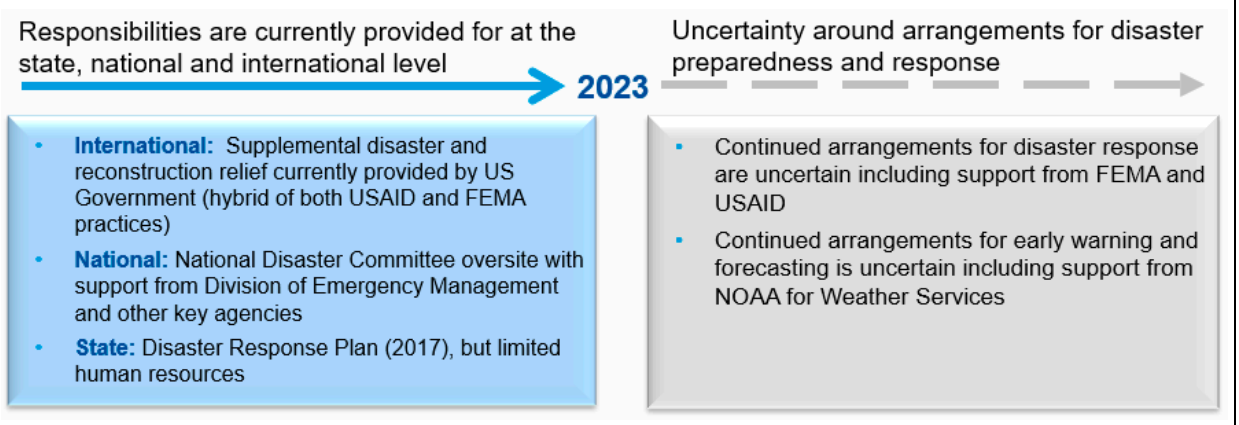
number of areas that will be key to developing an effective DRS. The next section focuses on post-disaster resilience, while subsequent sections identify investment, financing, risk management and government process improvements that would need to be incorporated into the DRS.

How Well-prepared is the Country to Cope with Possible Intensified Disasters?

15. **Primary responsibility for saving lives and preserving public health after a natural disaster rests with the Government of FSM**. The Government of FSM is responsible for pre-disaster planning; immediate pre-disaster emergency mobilization, evacuation and sheltering; and immediate post-disaster relief operations, particularly in the first days and weeks after a disaster event. Immediate post-disaster responsibilities include reestablishing local, state, national, and international communications; clearing airport runways; reestablishing airport, road, and port operations; and providing emergency medical and other services.[9]

16. **However, under the Compact, USAID and FEMA provide the majority of finance for disaster management and reconstruction.** Under this arrangement, disaster preparedness, response, and recovery assistance are provided to FSM by USAID while FEMA is responsible for funding that assistance (see Annex II for details). Early warning and weather services are supported by the National Oceanic and Atmospheric Administration (NOAA). Thus, support from the United States under the Compact Agreement provides a significant element for the Government of FSM's disaster preparedness and response capability. The uncertainty about post-2023 arrangements for these services is a significant factor in the preparedness of FSM to cope with possible intense disasters in the future. See Figure 4 for details.

Figure 4. Micronesia: Capacity to Cope with Intensified Disasters



Source: Staff analysis.

17. **Formal plans and strategies for addressing natural disasters have been put in place.** The national provisions for disaster response are included within the Disaster Relief Assistance Act

[9] USAID/FEMA Operational Blueprint for Disaster Relief and Reconstruction in the Federated States of Micronesia (FSM) and the Republic of the Marshall Islands (RMI), January 31, 2017.

(1989) and the Nation Wide Integrated Disaster Risk Management and Climate Change Policy (2013). A National Disaster Response Plan was developed in 2016, which provides for the establishment of national institutional arrangements for the FSM government for responding to emergency and disaster events within the country. It establishes the National Disaster Committee, and includes arrangements for preparedness, monitoring for potential events and response at the national level to manage national level events and support state level events. It also outlines arrangements to guide state disaster response plans and their connection to the national level arrangements. FSM is also a signatory to the Sendai Framework for Disaster Risk Reduction (2015–2030) and its predecessor the Hyogo Framework for Action (2005–2015).

18. **However, FSM's capacity to respond to a major disaster without major outside support is limited.** DECEM plays a key role in preparedness and operational response arrangements at the national level and also supports state level arrangements. However, it is not resourced adequately to provide adequate ex-ante multi hazard preparedness and post disaster response. State emergency preparedness and response facilities are critically under resourced, with only one or two staff responsible for emergency response at each of the four states. Priority attention is required in terms of human and financial resources, because the operational capacity of FSM to respond to disasters varies among states with regard to skills and training of staff.

19. **Further development of systems for identifying, collecting and reporting information on damage and losses would aid disaster and climate adaptation planning.** For the purposes of planning for disaster risk reduction investment, it is critical for FSM to have access to good quality hazard and risk information and appropriately downscaled climate models (rather than drawing only on global climate models). Such country-specific and localized information on hazard, risk, and climate would assist the government to provide evidence-based rationale for resilient infrastructure and climate adaptation investments already identified under the government's IDP and GCF Work Plan. This will strengthen the ability to mobilize funding support for investments as well as strengthen future land use planning.

20. **Current systems provide only partial data and would benefit from standardization.** In terms of data collection, FSM has a system for collecting information on damages and losses sustained by different sectors for high-intensity events. However, the development of this system was influenced by the sectors that are included for support under the Compact Agreement, rather than the needs for a functioning damage and loss database. Information on high-frequency, low-intensity events is not reported in detail across ministries. Steps have been taken to improve data management, through establishment of the Division of Statistics. Systems for adequate data management for post disaster data could be improved through the use of a standardized approach and templates for collecting, reporting and sharing of weather and post disaster data. A new database in line with the standard damage and loss assessment methodology across departments is recommended, along with guidelines on how and when to enter information. This would allow line agencies at national and subnational levels, as well as local authorities, to report damage and losses easily. It would also enable the government to access critical information for recovery planning and for reconstruction and retrofitting of existing infrastructure. Such a database would also be useful in

backing up financing requests to donors. Although this initiative could be launched in the short term, a comprehensive database would take time to be fully completed.

Recommendations for General Preparedness	Priority
1. Improve climate data collection and use, including on the costs of high and low intensity disasters and disaster response expenditure.	Short term
2. Develop a comprehensive Disaster Resilience Strategy (DRS) in cooperation with IMF, World Bank and other development partners.	Medium term
3. Prepare for end of Compact by strengthening capacity for weather services and emergency management at the State and National level.	Medium term

CONTRIBUTION TO MITIGATION

FSM plans to meet its mitigation pledge for the Paris Agreement by expanding renewable power generation, improving the efficiency of power generation and encouraging the take-up of energy efficient building design and appliances by households and government. Short-term mitigation options for the transport sector are more limited, but there is scope to raise taxes on fuel and reform the taxation of vehicles to encourage the use of fuel-efficient vehicles.

FSM's NDC aims for a reduction in carbon dioxide (CO_2) emissions (in the energy and transport sectors) by 28 percent below 2000 levels by 2025; with additional technical and financial support from the international community, FSM aims for an additional 7 percent reduction in emissions.

How does FSM Intend to Progress on Its Emissions Reduction Targets?

21. **FSM's contribution to global greenhouse gas (GHG) emissions is miniscule (0.003 percent),[10] but progress on mitigation remains important**. Implementing their mitigation commitments can give small states credibility in international dialogue on the Paris process, potentially leverage external finance, mobilize domestic revenues (though modestly in FSM's case) through higher taxes on fuel, and reduce dependence on expensive imports from volatile international oil markets.

[10]FSM Government, Second National Communication to the United Nations Framework Convention on Climate Change (2015).

Table 1. Micronesia: Mitigation Objectives and Proposed Actions

Sector	Mitigation Objective	Proposed actions
Renewables	Increase share of renewable energy sources to 30% of the generation mix	Investment in renewable generation leading to an additional 45 MW of solar power over the next 20 years
Electricity	Reduce energy losses such that generation efficiency increases by 20%	Commissioning of more fuel-efficient diesel generators and other measures to reduce technical losses (e.g. upgrading of overhead lines)
	Increase energy efficiency by 50% by 2020	Energy awareness campaign for households; procurement of inverter air conditioners for government; small program subsidizing loans for energy efficient home design

Source: NDC.

22. **For the electricity sector, FSM has a detailed and ambitious plan to meet its renewable energy target, but progress towards energy efficiency objectives has been limited.** The main goals of the 2012 national energy policy, developed by the Authorities (Table 1) are to (i) increase the share of renewable energy from 19 percent in 2018, to at least 30 percent of total energy production by 2020; and (ii) increase electricity efficiency by 50 percent. Other goals relating to electricity services include: increasing household access and improving energy efficiency of power generation by 20 percent. These overarching goals informed the development of the energy master plan, which focuses on electricity and outlines priority projects for increasing renewable energy generation over the next 20 years.[11] In contrast, the policy actions designed to achieve the electricity efficiency targets are less well-developed. The actions include: public awareness campaign by utilities, state and national governments; a pilot project to procure energy-efficient air conditioning units for government buildings and a small program of loan subsidies to encourage energy efficient home design.[12] More substantial measures such as a consistent national, building code have not yet been considered; and even if codes were established there are concerns about the ability of regulators to monitor compliance.

23. **Mitigation measures for the transportation sector have not been implemented**. The national energy policy action plan includes measures for reducing fuel consumption in the transportation sector, but these have not been actioned. The activities include: setting standards for

[11] The energy master plan was developed under the World Bank Energy Sector Development Project and adopted by the Government of FSM in April 2018. The master plan sets out a technically feasible, financeable, and implementable pathway for each state to provide reliable and environmentally sustainable electricity service to all residents.

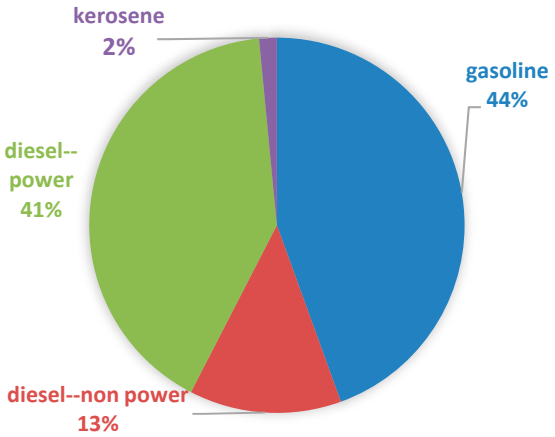
[12] FSM Development Bank offers a Home Energy Loan Program (HELP) which subsidizes the home loan interest cost by between US$ 6,000–US$ 10,000 for households which construct new homes or renovate existing homes in an energy-efficient manner.

public transportation to minimize fuel consumption, congestion and pollution and implementing incentives for the use of mass transit system and carpooling.

A. Clean Energy Plans

24. **The expansion of renewables has helped to reduce GHG emissions from electricity generation; transportation is now the main source of emissions**. Emissions from the use of diesel in electricity generation have fallen by around a third between 2000 and 2018, as the penetration of renewable generation increased from 4.3 percent in 2009 to its current level of 19 percent. Diesel plants account for all non-renewable generation supply and solar accounts for the large majority of renewables other than a hydro facility in Pohnpei and a wind farm in Yap. In contrast, emissions from the transportation sector have grown slightly over the same period, becoming by far the largest source of emissions. The majority of these emissions are from the use of gasoline in passenger vehicles (see Figure 5). Indeed, the number of registered vehicles in FSM has increased from 7,658 vehicles in 2009, to 8,775 vehicles in 2015.[13]

Figure 5. Micronesia: Energy-related CO_2 Emissions by Fuel Type



Source: IMF Staff Estimates.

25. **Quantitative evaluation of policy options provides useful information for choosing mitigation instruments and their stringency**. This capability would help policymakers understand the trade-offs between different policy options, and their design, in terms of their impacts on energy use, energy prices, emissions, revenue, and fuel import bills (around 8 percent of GDP in 2018), while achieving national growth and prosperity goals. A streamlined tool, parameterized to FSM, is used for some preliminary analysis here (see below). The tool projects fuel use by energy sector using projections of GDP and assumptions about how higher GDP affects energy demand and about the rate of technological change (e.g., that gradually improves energy efficiency over time). The impacts of mitigation policies on fuel use and emissions depend on their proportionate impact on energy prices and assumptions about the price responsiveness of energy use. Annex III contains a description of the model and its parameterization for FSM.[14]

26. **Continuing the expansion of renewables is critical for FSM to meet its NDC targets.** Increasing the share of renewables to 30 percent by 2025 would reduce CO2emissions enough to allow FSM to meet its conditional NDC goal. This expansion is not expected to cause problems with

[13] FSM Department of Statistics. The growth in vehicle numbers is expected to moderate going forward given stagnant population growth.

[14] The spreadsheet tool can be provided upon request.

power supply given that the state energy master plan has a higher target of 44 percent by 2020. While this higher target will be challenging to achieve within the tight timeframe, the utilities are working to implement the projects identified in the plan, which are a mix of new solar, battery, and stand-alone solar systems (for the outer islands), as well as upgrading of existing diesel generation. Access to enough sites for renewables varies across the islands, particularly in Chuuk, where there have been challenges with securing land for renewables and other investments.

27. **Donor funding has been secured for around half of planned renewables investment.** Between 2019–2023, the plan calls for US$101 million of investment (both for generation and the distribution network) and the authorities estimate that donor funding has been secured for around US$ 50–60 million. A smaller component of the investment needs will be filled by Independent Power Producers (IPPs). For example, Pohnpei Utilities Company has entered into an IPP arrangement for solar generation and storage. Although there is a funding gap, the electricity demand projections underlying the plan appear to be based on overly optimistic GDP and household formation projections, and thus investment needs for the main grid may be overestimated.

B. Fuel/Carbon Taxation

28. **Electricity prices in FSM are among the highest in the Pacific, while fuel prices are in the mid to lower end of comparator countries (see Figures 6 and 7).** Residential electricity prices varied across states but were all higher than almost all other Pacific Island countries (Figure 8). Similarly, residential electricity prices are eclipsed only by 3 countries. In contrast, the price of gasoline, at US$4.50/gallon (around US$1.2/liter), is relatively low compared to other Pacific Island countries. The price of diesel is in the middle of other comparator countries.

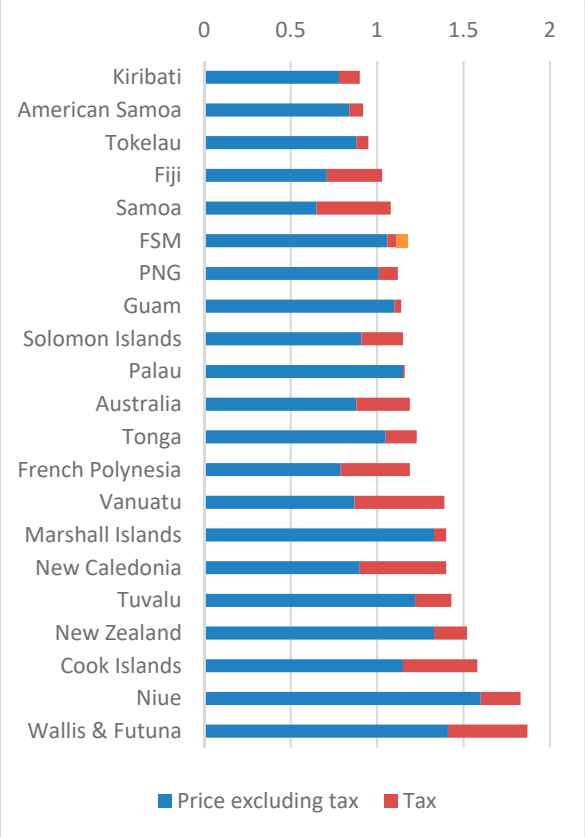
Does the Current Tax System Deliver Appropriate Carbon Pricing?

29. **Current fuel and motor vehicle taxes will not deliver mitigation commitments.** FSM levies fuel taxes at the federal and state levels. These taxes make up a small component of the total cost of gasoline (the main fuel used for road transportation) compared to other Pacific Island countries (see Figure 6). At the federal level, a 5c per gallon import tax is applied to all types of imported fuel. At the state level, a sales tax is applied on the first commercial sale. The sales tax rate varies across states, but average around 5c per gallon. Similarly, motor vehicle taxes are levied at the federal and state level. At the federal level, an import tax of 4 percent is levied with an additional tax at state level of around 5 percent. These sales taxes are applied for the first commercial sale, so that subsequent resales are not subject to tax. There is no tax applied on the sale of electricity.

30. **Under current mitigation policies, FSM is unlikely to meet its NDC target**. Staff analysis suggests that baseline or business as usual (BAU) fossil fuel CO_2 emissions are forecasted to be 2 percent lower in 2025 than in 2018 and 3 percent lower in 2030 (Table 2). This is 5 percent above FSM's conditional NDC target. Emissions are falling despite the growth in real GDP due to an increase in the global price of fuel, improving energy efficiency (e.g., as older, less efficient capital is replaced by newer capital) and an assumption that the demand for electricity and fuels rises by less

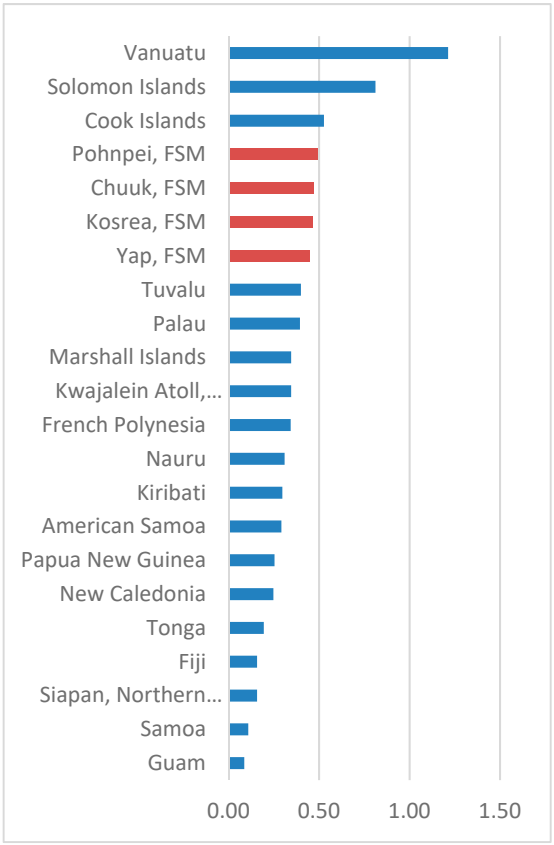
than GDP.[15] At the same time, the declining energy intensity of GDP implies a steady decline in fuel tax revenues from gasoline and diesel relative to GDP, from 0.3 percent of GDP in 2018 to 0.2 percent in 2025 and 2030. The lift in global fuel prices means that the imported fuel bill (excluding jet fuel) increases in the BAU, from 6.5 percent of GDP in 2018, to 7 percent in 2025, and 7.1 percent in 2030.

Figure 6. Micronesia: Retail Gasoline Prices, Selected Countries, 2018 (US$/liter)



Source: SPC Pacific Fuel Price Monitor.

Figure 7. Micronesia: Residential Electricity Supply Prices, Selected Countries, 2016 (US$/kWh)



Source: Pacific Power Association.

[15] Electricity demand is assumed to rise by less than the growth of GDP for the commercial and government sector, but it is expected to rise in line with GDP for households.

Table 2. Micronesia: Comparison of Alternative Mitigation Policies

Metric	sector	year	BAU	Renewables	Fuel tax	Vehicle feebate	Combination
CO_2 emissions, tons of CO_2 equivalent	total	2025	103488	97495	102308	100754	93752
		2030	102427	92195	101296	99799	88596
	electricity	2025	42810	36816	42810	42810	36816
		2030	42635	32403	42635	42635	32403
	transport & other	2025	60678	60678	59499	57944	56936
		2030	59792	59792	58661	57164	56194
Renewables share	electricity	2025	0.19	0.30	0.19	0.19	0.30
		2030	0.19	0.38	0.19	0.19	0.38
Gasoline & Diesel tax revenue, percent of GDP	total	2025	0.2	0.2	0.6	0.2	0.6
		2030	0.2	0.2	0.6	0.2	0.5
Fuel import bill, percent of GDP	total	2025	7.0	6.6	6.9	6.8	6.3
		2030	7.1	6.4	7.0	6.9	6.1

Source: IMF staff estimates, drawing on fuel use, price, and tax data from the FSM authorities. See Annex III.

How Could FSM's Tax System be Reconfigured for More Effective Carbon Pricing?

31. **Introducing taxes on electricity will only have modest impacts on demand, given that electricity prices in FSM are already high.**[16] High electricity prices are driven by the cost of diesel, which accounts for around 55 percent of the cost of electricity). A more appropriate mitigation strategy for the sector is to continue to focus on expanding the share of renewables in the generation mix. This can have the added benefit of bringing down electricity costs; according to the energy master plan, operational costs (excluding up-front capital costs) from solar can be less than half of those from diesel generation. On the other hand, renewables have large capital costs, which can potentially lead to higher tariffs without proactive planning. However, the master plan envisages that foreign grants and concessional financing would cover part of the capital investment. If all of

[16] A 10c/kWh tax on electricity would increase prices by 24 percent (and make FSM have the third highest electricity prices in the Pacific) but lead only to a 8 percent reduction in demand.

the capital expenditure included in the master plan were covered by grants, then electricity tariffs would fall significantly.

32. **There is scope to increase taxation of fuel and motor vehicles, to encourage the adoption of fuel-efficient vehicles.** This section outlines a few key options for the FSM authorities to consider. Each option would need to be analyzed further before adoption to ensure that impacts on income distribution, competitiveness and other variables are understood. For example, the importation of affordable second-hand vehicles has enabled low-income households to commute to town centers and broaden their employment opportunities. This consideration supports the adoption of a revenue-neutral feebate on motor vehicles (rather than an excise tax), which would not increase the tax burden on the average household. On the other hand, the feebate is more difficult to administer than an excise tax. The excise tax can be largely implemented using the existing system used to collect import taxes (e.g. the HS code used to classify imports can already be used to identify the engine size of vehicles).

33. **An excise tax on gasoline and diesel that mimics a carbon tax would help reduce emissions from the transport sector.** An excise tax of 25c/gallon would bring the tax burden on diesel and gasoline to around 35c/gallon. This is equivalent to a carbon tax of US$ 35 per ton of CO_2, which is about half the price that is broadly consistent at the global level with the 2 degree target.[17] Similar to other taxes on fuel, the excise tax can be collected through Petrocorp, a state-owned enterprise, as it is the sole importer of fuel products in FSM and already remits import and sales taxes to the national and state governments, respectively. The analysis considers a one-off increase in the excise tax, rather than a gradual increase. The excise tax[18] would increase energy prices from:

- US$4.50 per gallon for gasoline (which includes taxes of around 10c per gallon) to US$4.75 per gallon.
- US$4.81 per gallon for diesel (which includes taxes of around 10c per gallon) to US$5.06 per gallon.

As indicated in Figure 6, the excise tax would have modestly affected FSM's fuel price competitiveness relative to other countries in the Pacific, if it had been applied in 2016.

34. **The excise tax would mobilize extra revenue, but the emissions reductions from this policy alone would fall far short of what is needed for the Paris mitigation target**. The tax described above would be feasible to implement as it utilizes existing tax administration structures and could raise extra revenues of 0.4 percent of GDP in 2025 and 0.3 percent in 2030. Economywide CO_2 emissions would be reduced by an estimated 1 percent below BAU levels in 2025 and 2030. This reflects the proportionate increase in fuel prices above BAU levels—5–6 percent for gasoline and

[17] Combusting a gallon of gasoline and diesel produces 0.009 and 0.010 tons of CO_2, respectively.

[18] The excise tax proposed does not apply to aviation fuel.

diesel fuel and a typical assumption (in energy models) that each 1 percent increase in the fuel price reduces fuel consumption by around 0.45 percent over the medium to longer term.[19] Carbon taxation is the most economically efficient policy to achieve emission reductions—this is because, by reflecting carbon charges across the board in energy prices, it promotes, and strikes the cost effective balance across, the full range of potential behavioral responses for reducing fuel use and emissions. However, there is no public transportation system in FSM, hence the behavioral response to higher fuel prices would be more limited compared to larger, more urbanized countries.[20]

35. **More aggressive carbon pricing would be challenging as it could lead to energy prices in FSM being among the highest in the Pacific region (including Guam).** Petrocorp was first established because policymakers believed the price differential between Guam and FSM was higher than what would be implied by a pure cost differential. This likely reflects the markup applied by the private monopoly provider of fuel to FSM. Analysis of potentially negative distributional impacts from higher fuel prices and the need for enhanced social safety nets would need to be assessed along with measures to ease transitions for firms and workers.

36. **An alternative option would be a motor vehicle excise tax that increases in line with the age and engine size of the vehicle.** The current flat rate of import and sales taxes on vehicles does not provide an incentive for consumers to purchase a more fuel-efficient vehicle. Differentiated excise tax rates is a common way of encouraging consumers to purchase, smaller and newer cars which are generally more fuel efficient. FSM's passenger vehicle fleet is comprised mainly of small used cars but they tend to be older and less fuel efficient. Taking account of this, the excise on older cars could be around 30 percent higher than the excise on newer cars to equalize costs on emissions. The excise regime can also have differentiated rates between hybrid cars and non-hybrid cars. In Fiji for example, hybrid cars attract a much lower import duty and this led to a significant increase in the number of such cars in the vehicle fleet.[21]

37. **Another option is to introduce 'feebates' which reward consumers for choosing fuel-efficient vehicles.** Feebates are sliding scales of fees/rebates designed to shift demand towards more energy-efficient (and lower-emitting) vehicles and products. They increase the price of products with relatively low energy efficiency while decreasing them for products with relatively high energy efficiency. In this way, they provide similar incentives to higher energy prices (and similar rewards/penalties for products with high/low energy efficiency). Feebates forgo the new revenues from higher energy taxes—the usual recommendation is to design them such that revenues from fees collected on low efficiency products balances outlays for rebates on high efficiency products. However, it may be more politically acceptable to provide much stronger incentives for improving

[19] CO_2 emissions tend to be much more price responsive in countries that consume a lot of coal because carbon pricing causes a dramatically larger proportionate increase in the price of coal than for petroleum products.

[20] Currently, the only alternative to private vehicles is a pooled taxi service.

[21] Recently Fiji increased taxes on hybrid and new non-hybrid cars in response to the increase in congestion and accidents because of a large influx of these vehicles. The preferential tariff difference for hybrid cars is maintained under the new structure.

energy efficiency under feebate schemes—through aggressive fees and rebates—than from raising fuel taxes, because they do not impose a new tax burden on the average household. That said, feebates on vehicles alone would not be a panacea. They are less environmentally effective than raising energy prices in that they do not encourage people to drive less.[22] Annex IV provides more details on practical design issues for feebates.

38. **Expanding renewables and strengthening fuel taxation and a system of feebates for vehicles would reduce emissions further, raise revenue and cut the fuel import bill**. By 2025, this combination cuts economy-wide CO_2 emissions by 38 percent below its level in 2000, leads to an additional 0.3 percent of GDP in revenue compared to the BAU and reduces the fuel import bill below BAU levels by 0.64 percent of GDP in 2025 and 0.93 percent of GDP in 2030.

C. Complementary Policies

39. **Broader mitigation strategies need to be developed for the transport sector.** Taxation of fuel and motor vehicles have limited effects when alternatives to private vehicle transportation are scarce. In addition, taxation of fuels has only modest impacts given that prices are already high. Both factors point to the need for a broader mitigation strategy in the transport sector that includes non-fiscal measures such as the development of affordable public transportation and the provision of facilities for walking and cycling. The lack of a unified transport strategy is common in the Pacific islands, with only Fiji and the Marshall Islands (RMI) having explicit targets for reducing fuel dependency in the transport sector.[23] Fiji's mitigation actions center on the adoption of electric vehicles as the key measure to reduce emissions, but also includes: public transportation, cycling, biofuels and improving efficiency of vehicles.[24] Similarly, RMI's transport strategy includes policies to encourage greater use of public transport, cycling and walking, as well as electrification of the transport fleet (potentially solar-powered electric vehicles).[25] RMI has also established the Micronesian Center for Sustainable Transport, a collaboration between the Government and the University of the South Pacific, tasked with coordinating the move towards low-carbon transport solutions particularly in the area of sea transportation.

40. **The transport mitigation strategies would need to take into consideration the potential for higher renewable generation, as envisaged in the energy master plan.** Fuel costs are likely to increase with the rise of renewable generation. This reduction in fuel imports from the energy sector can potentially increase retail prices (as the fixed costs of importing fuel is spread across a smaller sales volume). This brings an opportunity, over the long term, to increase the

[22]In fact, by lowering average energy costs per unit of product use, feebates may encourage greater use of energy-consuming products, the so-called 'rebound effect'. Empirical studies suggest this effect is generally modest however. See, for example, Kenneth Gillingham and others, 2016, "The Rebound Effect and Energy Efficiency Policy," *Review of Environmental Economics and Policy,* 10: 68–88.

[23] Nuttall (2015).

[24] Fiji Low Emission Development Strategy 2018–2050, Ministry of Economy.

[25] Tile Til Eo: 2050 Climate Strategy, September 2018.

penetration of electric vehicles, which would utilize the new renewable generation capacity and reduce the impact of higher fuel costs on households. The short distances travelled in FSM also improves the feasibility of an electric fleet. The World Bank is currently working on a study to assess the practicality of an electric fleet in FSM.

41. **Regulatory approaches can also support the promotion of energy-efficient buildings**. Regulatory approaches may be more suitable from an administrative perspective for the specific case of promoting more energy-efficient buildings, as building codes may combine, for example, requirements for walls, floors, ceiling insulation, windows, air leakage, duct leakage, rather than a single energy efficiency rating (which is amenable to fees and rebates). Given that the building codes need to be developed to reflect adaptation requirements, this should include the energy-efficiency requirements (see Adaptation Plans section for recommendations).

Recommendation for Mitigation	Priority
1. Continue expanding renewable power generation.	Short term
2. In the context of a transport mitigation strategy Introduce a moderate excise tax applied to road fuels (gasoline and diesel) and consider an excise tax or feebate system for passenger vehicles (medium term).	Medium term

ADAPTATION PLANS

FSM's planning for adaptation is fragmented across several plans and documents and individual sectoral projects include varying levels of adaptation measures. In addition, progress is hindered by capacity constraints, particularly in investment project execution at the State level. Progress is being made on preparation of supporting policies and regulations, although capacity to implement and regulate policies is constrained. Preparation of an overarching National Adaptation Plan, including costed sectoral investments with a focus on resilient infrastructure investments such as power systems and development and implementation of a National Building Code which includes disaster and climate resilient provisions would enhance FSM's adaptation capacity.

Has FSM Developed an Adequate Strategy to Adapt to Climate Change?

A. Policy Framework and Sectoral Strategies

42. **FSM has made significant progress towards articulating a policy framework and sectoral strategies for resilience-building but there are a number of gaps and inconsistencies**. Climate change adaptation is a priority for the Government of FSM, as a signatory to the United Nations Framework Convention on Climate Change and having endorsed the Framework for Resilient Development in the Pacific. Figure 8shows the key plans and strategies, described in the above sections, and also identifies the critical gaps.

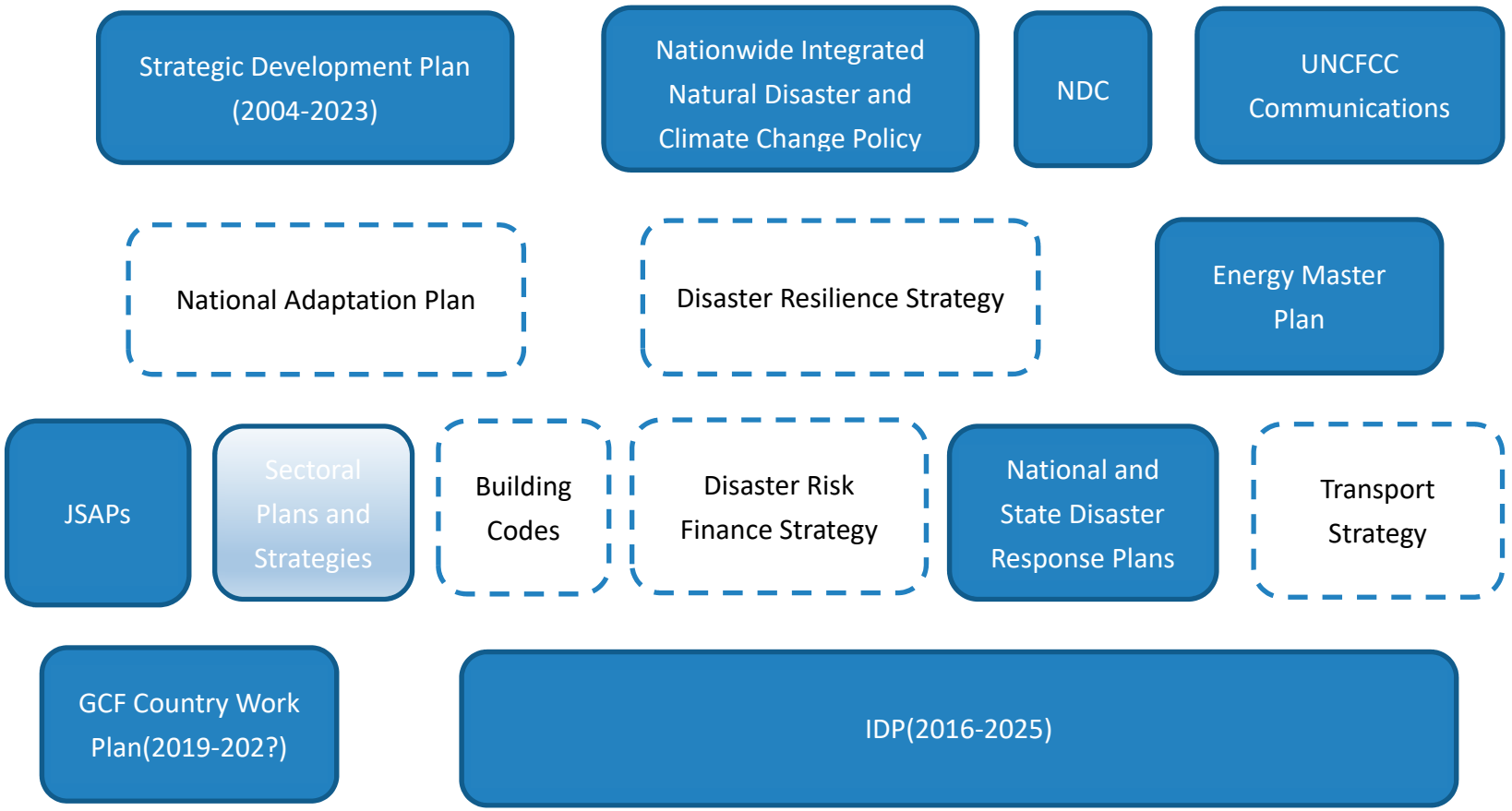
43. **There is currently some fragmentation between state and national responsibilities and across various plans and documents.** Primarily, investments for adaptation are currently included in the GCF Work Plan, the JSAPs and the IDP (2016–2025), although the IDP does not consistently focus on climate resilient infrastructure and consideration is not given to the context of climate adaptation and vulnerability to extreme weather and climate change. There is some overlap between these documents, and the methodology of estimating and factoring in the cost of adaptation to sectoral investments has not been incorporated systematically.

44. **There is a need to develop an overarching National Adaptation Plan (NAP), which would provide a strategic, coordinating framework for building climate resilience in FSM.** A NAP could serve as an umbrella document, which consolidates the prioritized climate change adaptation activities taken from existing national, state and sectoral plans that have been developed already by the government. It could also provide the framework for further integration of climate change considerations into planning and budgetary processes to "climate-proof" public and private investments. The NAP could also provide an opportunity for bringing greater clarity to the multiple adaptation plans that currently exist and provide a more realistic and prioritized implementation schedule which would assist in fundraising.

45. **Although nationwide sectoral policies and plans are quite well-developed, implementation has been slow due to capacity constraints.** Where sectors have outlined clear climate change adaptation policies or strategies, the main hurdle to implementation lies in access to funding and human resources to implement the necessary activities. Sector staff have cited that a lack of human and financial capacity has been a stumbling block in implementation of technical projects. Some progress is being made in a number of a reason supporting climate adaptive policies and regulations, such as:

- The Department of Transport, Communication and Infrastructure has developed a Climate Adaptation Guide for Infrastructure.
- The National Climate Change and Health Action Plan (2012) details climate-sensitive health risks and adaptation needs.
- The Energy Policy and Action Plan (2010) and the Energy Master Plan (2018) seek to increase renewable energy, energy conservation and efficiency, and mitigation activities, albeit with limited reference to climate change adaptation.
- The Agriculture Policy (2012–2016) includes consideration of climate change impacts on the agriculture sector. The policy is currently expired but is being renewed.

Figure 8. Micronesia's Climate Change Plans and Gaps



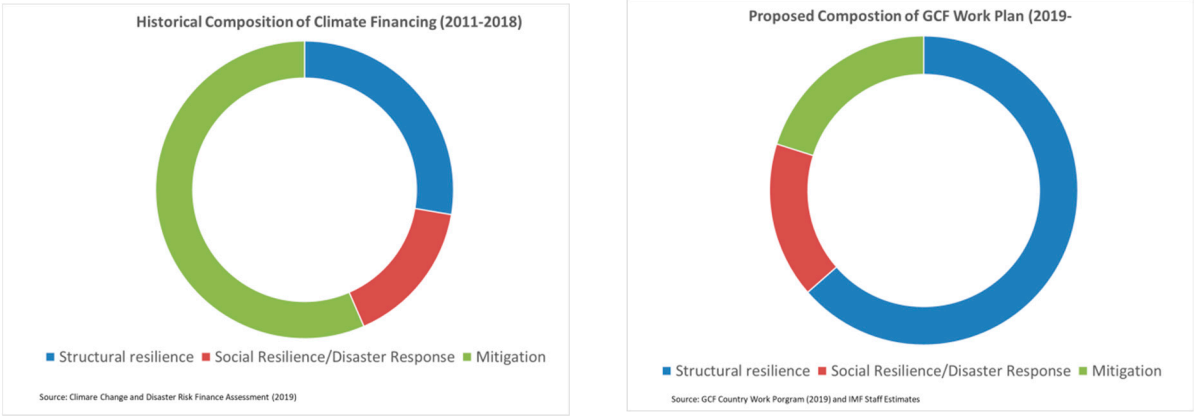
Source: Staff analysis. Unshaded boxes reflect gaps in current architecture.

B. Public Investment

Has the Country Developed an Adequate Investment Strategy to Adapt to Climate Change?

46. **FSM's spending on climate change has thus far been tilted towards mitigation (see Figure 9)**. A recent regional study has estimated that over the 2011–2018 period FSM spent around US$8 million per year on climate related projects.[26] This equated to around 2.7 percent of 2018 GDP. However, over half of this expenditure was aimed at mitigation projects, in particular, in building renewable energy provision. The amount spent on adaptation, around 1.2 percent of GDP annually, appears broadly comparable to current levels observed in the other countries where CCPAs have been conducted (around 1–2 percent of GDP annually).[27] However, the methodology followed is somewhat different—it includes partial valuing of likely a broader range of projects—so this conclusion needs to be treated carefully.

Figure 9. Micronesia: Composition of Climate-Related Expenditure



47. **Until recently there was no clear costed investment strategy for climate adaptation**. Detailed investment plans with project by project costings did exist, but the extent to which these were climate-related was difficult to ascertain. The two main sources of information are:

[26] Federated States of Micronesia Climate Change and Disaster Risk Finance Assessment, 2019, prepared by the Pacific Community and Pacific Islands Forum Secretariat.

[27] Belize, Grenada, Seychelles, and St. Lucia.

- *IDP (2016–2025*). This detailed and costed plan, with provisions at both state and national levels, was prepared to facilitate implementation of infrastructure-related compact capital grants. It was not primarily aimed at climate change adaptation but does explicitly take account of the need for climate-proof investments.

- *JSAPs*. Each state has produced its own climate change adaptation plan—a JSAP, which includes an itemized and costed investment plan. However, it is not clear whether these are consistent with the provisions of the IDP.

48. **The recent GCF work program provides the clearest indication of adaptation spending requirements.** The program identifies investments of around US$1.1 billion, aimed primarily at adaptation and disaster resilience projects (Table 3). It takes a broad definition of climate-related investments. The work program is largely based on the IDP, although a project by project reconciliation has not been provided. Staff's initial analysis of the work program suggests that there are 2 key differences: introduction of programs not included in the IDP, and an increase in costs for some projects that were included in the IDP, likely to include the additional costs of ensuring infrastructure investment is resilient to climate change. The GCF work plan appropriately does not include elements of the IDP that are not related to climate change, even under its broad definition. A broad reconciliation suggests that consolidating the IDP and GCF results in a total investment plan in the region of around US$1.3 billion. The investments in the IDP that are not included in the GCF are mainly in the health, education and air infrastructure sectors. The time frame is not specified and is likely to need to extend beyond the IDP's initial horizon of 2025.

Table 3. Micronesia: Composition of GCF Workplan

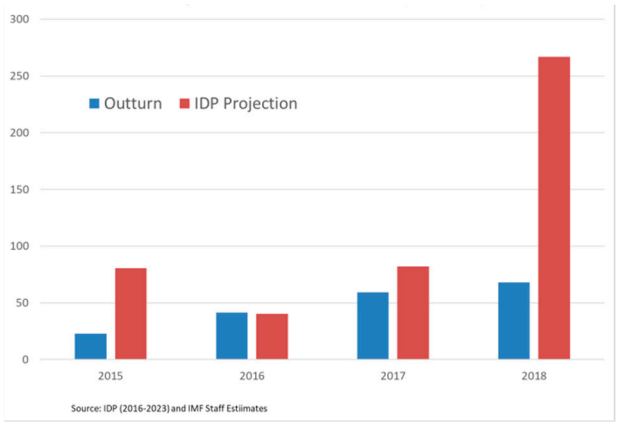
Jurisdiction	Program	Estimated Cost ($ millions)
Nationwide	1. FSM Food and Water Security Program	10
	2. FSM Renewable Energy Investment Program	125
	3. FSM National College Resilient Infrastructure Development Program	64
	4. Nation-wide Climate Change and Disaster Risk Management Coordination and Communications Program	43
	Total:	**242**
Yap State	1. Resilient Transport and Private Sector Development in the main and outer-islands of Yap Program	93
	2. Yap Renewable Energy Investment Program Phase 3	96
	3. Resilient Infrastructure for Health and Education Delivery Program	14
	Total:	**203**
Chuuk State	1. Chuuk State Resilient Critical Infrastructure Program	349
	Total:	**349**
Pohnpei State	1. Pohnpei State Resilient Critical Infrastructure Program	142
	2. Pohnpei State Resilient Social Protection Program	25
	3. Pohnpei State Resilient Tourism Development Program	3
	Total:	**170**
Kosrae State	1. Kosrae State Inland Road Completion Project	36
	2. Building Resilient Communities in Kosrae State Program	97
	Total:	133
	Overall total	**1,097**

Source: FSM GCF work program.

49. **The rising cost of the infrastructure investment program is at odds with FSM's highly constrained implementation capacity.** The first three years of the IDP have seen implementation fall well behind its ambitious plans (Figure 10). This has not been due to funding availability; compact capital grants form the majority of the IDP's funding and have been made available on schedule. However, implementation has been slow and there is currently around US$200 million of unused Compact capital grants, with more coming on stream each year. Implementation delays stem from a number of sources, including land titling and tenure issues (particularly in Chuuk state),

contracting issues with procurement agents and difficulties in adequately staffing project management offices, particularly at state level (see National Processes section). While steps have been taken to address some of these, including through the contracting of the Army Corps of Engineers to assist with project implementation, many of the problems are more systemic. Addressing these problems, in particular, the challenges of accelerating investment in an extremely dispersed country, with highly decentralized governance arrangements, will be key to meeting the climate adaptation challenge. Lessons could be drawn from other small states, for instance Dominica recently established a Climate Resilience Execution Agency that leverages local and foreign expertise to plan and execute projects.

Figure 10. Micronesia: IDP Targets and Investment Outturns
(US$ millions)



Source: IDP and IMF Staff estimates.

C. Other Public Programs

50. **FSM lacks a comprehensive land use policy that takes into account hazard risk.** It is critical for FSM to have access to good quality cadastral data and hazard mapping to inform decisions on land use planning, and resilient infrastructure. Hazard mapping should be undertaken for key infrastructure to identify areas that are vulnerable to climate and disaster risk. Updated, digitized and geolocated national cadastral data should be obtained. In addition, a land use policy should be developed to guide resilient development of infrastructure and growth areas in the future.

51. **FSM also lacks a National Building Code and land zoning regulations.** Currently, large scale infrastructure is generally designed in accordance with international codes, standards and guidelines, but with only limited account taken of the specific circumstances of FSM. Some construction guidelines have been developed for specific aspects of adaptation including seismic and wind loading (summarized in Climate Adaptation Guide for Infrastructure), but there is no mechanism in place to ensure private construction adheres to international codes/standards. Some states (e.g. Pohnpei) have taken steps to develop building codes but they have not yet been put in place and capacity to enforce them would be very limited. In order to contribute to risk reduction objectives, the government would need to support: (i) an enabling legal framework to give Codes the force of law, (ii) a mechanism by which compliance with codes can be accessible and affordable, especially in regard to private dwellings, and (iii) development of sufficient institutional capacity and financial resources to enforce such codes.

52. **A National Building Code should be developed, with State specific requirements incorporated where appropriate**. Such a Code should be based on the International Building Code

and other U.S. based codes and standards, taking account of the requirements of FSM and incorporating existing state and national guidelines. The Code should also include considerations for climate and disaster resilience. In the longer term, financing would be needed to support the technical and staff resources required to ensure compliance with such a code. In the interim to development of a National Building Code, standards and practices that are appropriate to the infrastructure being developed, including aspects relevant to climate change adaptation and energy efficiency standards, should be adopted for public and private infrastructure.

D. Financial Sector Preparedness

How is the Financial Sector Contributing to the Climate Response Effort?

53. **Currently, FSM's financial sector does not contribute significantly toward climate change resiliency.**

- With no law requiring insurance for properties such as cars or houses, insurance penetration in FSM has remained low, and most public and private assets are not insured from natural disasters. The lack of insurance coverage has been substituted by the USAID/FEMA assistance under the Compact Agreement, which provides for post-disaster reconstruction of private and public assets. Thus, a strategy for increasing insurance provision by financial sector should be developed over the medium term.

- Private sector credit in FSM remains low, with the loan-to-GDP ratio as low as 15 percent. Private sector credit is mostly extended to existing businesses and consumer loans, secured by steady income or cash assets. Commercial banks do not provide mortgage for housing. FSM Development Bank's Home Efficiency Loan Program which provides interest subsidy of up to US$10,000 for energy efficient residential house is an encouraging step toward climate change resiliency.

Recommendation for Adaptation	Priority
1. Develop an overarching National Adaptation Plan which reconciles GCF workplan and Infrastructure Development Plan.	Short term
2. Undertake hazard mapping for key infrastructure to identify areas that are vulnerable to climate and disaster risk.	Short term
3. Address capacity shortage in order to accelerate infrastructure investment and integrate climate adaptation measures into sectoral strategies.	Medium term
4. Develop and enforce a land use policy and a national building code that take into account climate risks and incorporate energy efficiency requirements.	Medium term

FINANCING STRATEGY FOR MITIGATION AND ADAPTATION PROGRAMS

Boosting public investment on climate change adaptation would benefit FSM by softening the economic and fiscal impacts of severe natural disasters. Nonetheless, FSM has a financing gap between its ambitious climate change investment plans and grant funding levels in recent years. In the short to medium term, implementation capacity rather than financing is the main constraint, calling for prioritizing investment projects and shifting the focus of investment further towards adaptation. Given FSM's high risk of debt distress, further mobilizing external grants is crucial to implement the climate change strategy while maintaining fiscal sustainability.

A. Institutional Issues

54. **The key institutional issue with regard to financing is related to the uncertainty surrounding the post-2023 relationship with the United States.** The expected fiscal cliff in 2023, which reduces fiscal space and places FSM at high risk of debt distress, severely constrains FSM's ability to focus more of its own resources on climate change. The potential related withdrawal of institutional support for project implementation is also likely to have an impact.

55. **FSM's federal structure also provides challenges**. Much of the financing available for climate change adaptation, and in particular, U.S. Compact grants, is tied to specific states rather than made available at the national level. This fragmented financing structure, which is inevitable given the federal architecture, means that financing gap analysis at the national level can mask surpluses and much larger gaps at state level. The federal structure also contributes to implementation capacity constraints, with many roles needing to be replicated in five separate administrations and many key posts, particularly at state level, remaining vacant.

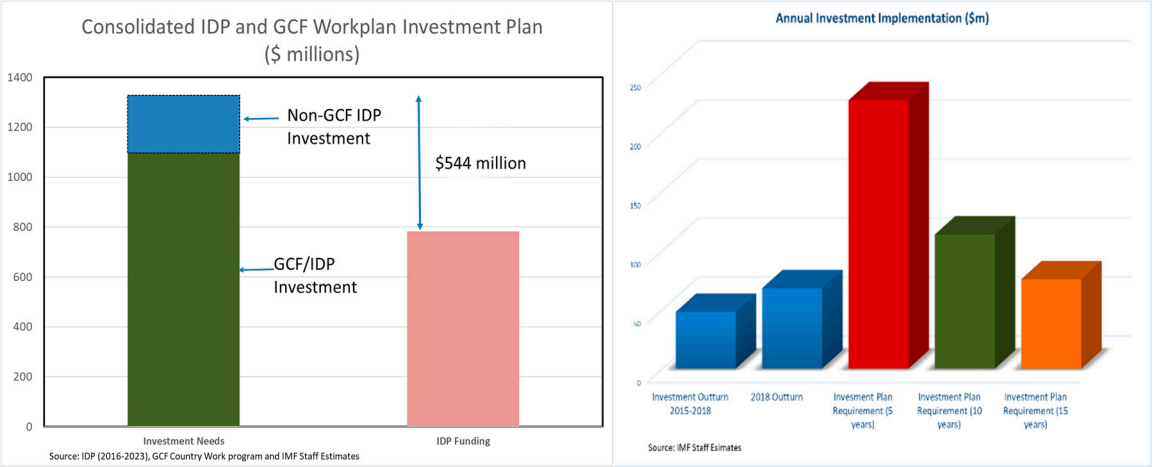
A. Current State of Financing

Does FSM Have Adequate Financing to Meet the Needs of Its Climate Change Strategy?

56. **FSM has a financing gap between its ambitious climate change investment plans and the grant funding realized in the recent years.** The consolidated cost of the IDP and GCF workplans for 2016–25 is estimated to be around US$1.3 billion (360 percent of 2018 GDP) and the financing identified in the IDP is around US$0.8 billion until 2025. However, completing the ambitious investment program over this time frame would require a step up in investment that is not plausible given recent performance. Implementing over the next 15 years, up to 2035, is more consistent with the status quo with the limited implementation capacity and the availability of grants from the U.S. and other development partners. A reform scenario, implementing the IDP and GCF workplans over the next 10 years and completing by 2030, would be desirable but highly challenging: this would require about a 50 percent increase in government capital expenditure on an

annual basis over the 2018 outturn and additional financing of about US$40 million (10 percent of GDP) per year over 2020–30.

Figure 11. Micronesia: Investment Plans, Financing and Implementation



Source: IMF Staff estimates.

B. Climate Change Spending Effects and its Consistency with Financing Plans and Fiscal and External Debt Sustainability

Are FSM's Climate Change Plans Consistent with Fiscal and External Debt Sustainability?

57. **With the fiscal cliff expected to put public debt on an upward trajectory from 2024, FSM is assessed as high-risk of debt distress.** FSM's public debt, all of which is external, is currently low at around 20 percent of GDP. The fiscal balance has been in surplus since 2012 due to increases in fishing license fees and corporate income taxes, allowing the government to build up the FSM Trust Fund to US$210 million (57 percent of GDP) by 2018. The government also maintains a policy to keep debt below 30 percent of GDP. Nonetheless, U.S. Compact grants amounting to around 20 percent of GDP are expected to expire in 2023 unless the Compact Agreement is renewed. As a result, the fiscal balance is projected to turn to a deficit of 4½ percent of GDP in 2024, putting debt on a rising path. With thresholds under the IMF and World Bank Debt Sustainability Analysis (DSA) breached in 2030s, the risk of debt distress is assessed to be high. The FSM Trust Fund is not available for drawdown until 2030 (Law No. 20-185).

58. **Further mobilizing external grant financing is therefore crucial to implement the climate change strategy while maintaining fiscal sustainability.** Assuming that implementation capacity improves significantly, FSM has several options to finance higher capital spending under the reform scenario while safeguarding fiscal and debt sustainability. First, efforts can be stepped up to unlock a significant backlog of U.S. Compact capital grants, which a currently amount to about US$200 million and can be utilized after 2023 under the current Compact Agreement. Second, the

government can maximize access to available grants, in particular, from climate and environmental funds. Further, in case availability of grants is limited, they will need to be combined with enhanced domestic revenue mobilization, for example through higher excise taxes on gasoline and diesel. Incentivizing private sector investment to support climate resilience could also contribute. Finally, judiciously drawing down on the FSM Trust Fund to finance major projects after 2030 can be justified for safeguarding the living standards of future generations. Regardless of which options to take, the authorities should prioritize the IDP and GCF workplans, including shifting the focus of available financing from mitigation to adaptation.

59. **Natural disasters could have a significant negative impact on growth and debt sustainability.** Damages to public infrastructure and private capital as well as drops in total factor productivity would cause a loss to GDP, while higher spending on post-disaster rehabilitation and reconstruction of damaged infrastructure would lead to higher fiscal deficit and public debt. Considering FSM's vulnerability to natural disasters, the DSA included a tailored stress test for a natural disaster shock: a one-off increase of 10 percentage points in debt-to-GDP ratio and reductions in the growth rates of real GDP and exports by 5 and 3.5 percentage points, respectively, in the year of a disaster. The stress test results in an upward shift in the post-disaster debt trajectory, with the public debt in 2030 higher by about 30 percent of GDP than under the no-disaster scenario.

60. **Boosting investment on climate change adaptation would moderate the economic impacts of severe natural disasters.**

- In the short-term, an increase in spending boosts growth through fiscal multiplier effects.
- In the medium- and long-term, the gradual increase in resilience from adaptation investment would lower reconstruction costs and output losses in the event of natural disasters. This leads to a lower fiscal deficit compared to the scenario without adaptation spending.
- Also, in the medium- and long-term, more resilient public infrastructure can raise returns to private investment, increasing private capital accumulation and contribution to growth.
- Strong climate change policies, especially on adaptation, would likely improve the country's access to grant financing, which would allow the envelope of capital spending to expand and further increase growth.

61. **An illustrative scenario analysis for FSM points to the benefit of speeding up adaptation investment in mitigating natural disaster shocks.** Figure 12 illustrates the public debt path under an illustrative scenario where higher public investment strengthens climate resiliency, qualitatively mimicking the reform scenario discussed in Section B above. In this scenario, higher public investment, financed by grants, shores up GDP levels through fiscal multiplier effects, before a natural disaster hits FSM in 2030. Due to improved resiliency, the magnitude of the GDP loss and

debt hike in 2030 is assumed to be 40 percent smaller than under the status quo scenario.[28] The figure shows that the post-disaster path of the debt-to-GDP ratio under the high adaptation investment scenario is significantly below the path under the status quo scenario. While caution is warranted to gauge the size of the difference in the two debt paths, which depend on assumed parameter values and are not anchored by rigorous macroeconomic models such as a debt investment growth model, this analysis illustrates the benefit of higher adaptation spending in mitigating natural disaster risks for FSM's fiscal and debt sustainability. This analysis points to the importance of giving particular priority to accelerating implementation of the state-level critical infrastructure programs in the GCF workplan (see Table 3).

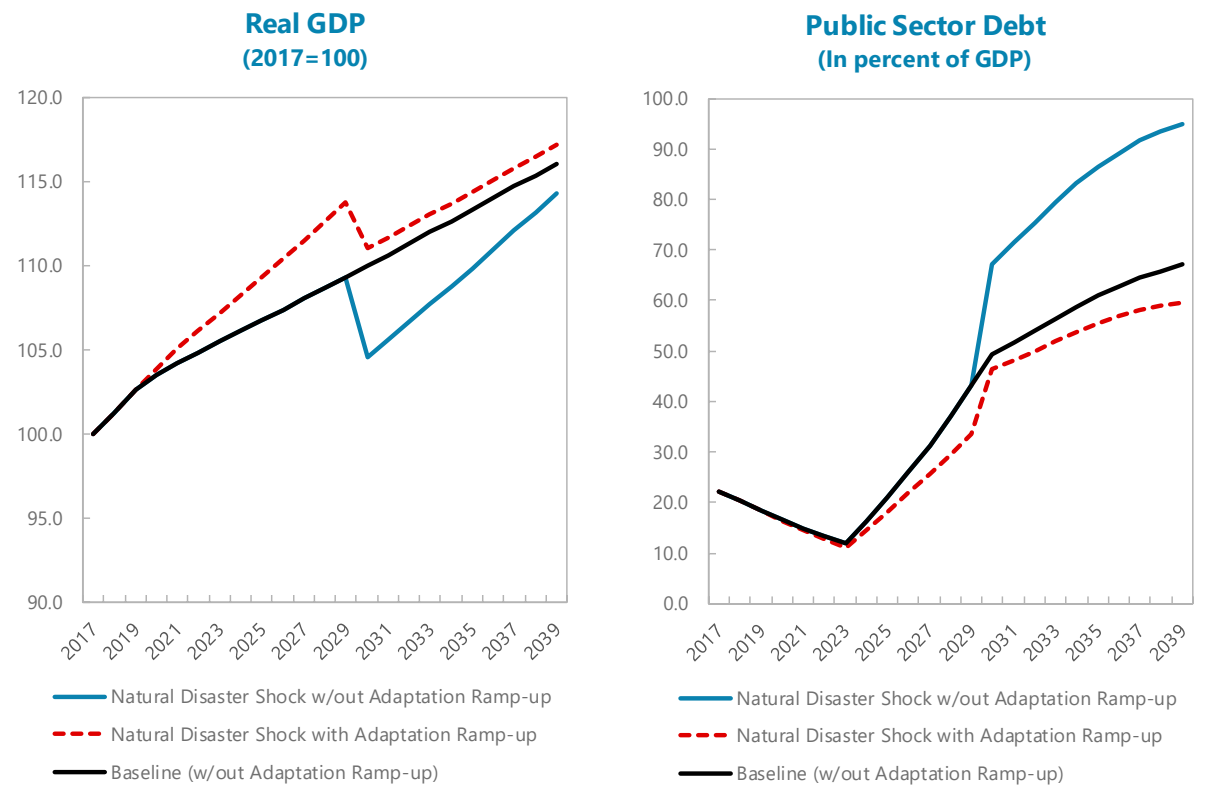
C. Other Macro-Considerations

Would Implementation of the Climate Change Plans Have Any (Good or Bad) Spillover Effects to the Macro-economy?

62. **Implementation of mitigation and adaptation policies can improve the balance of payments and government revenue.** The policy to increase the share of renewables in the national energy mix can improve the trade balance by reducing fuel import, which amounted to 7 percent of GDP in FY2018, while higher imports of investment goods originating from mitigation and adaptation investment would be neutral to the balance of payment as long as they are financed by foreign grants. Additional government revenues raised by strengthening fuel and vehicles taxation can create fiscal space for reducing the post-2023 fiscal deficit and/or boosting public investment for climate change resiliency.

[28] See "Climate Adaptation: Seizing the Challenge, Chapter 2: Economics of Climate Adaptation," by David Bresch, World Economic Forum, 2014. According to this study, adaptation infrastructure investment can avoid up to 65 percent of projected losses in developed countries. In the case of FSM, a 40 percent smaller impact is used as a conservative estimate, considering the low development level of the country. The same assumption was used by IMF staff analysis for Solomon Islands based on a debt investment growth model (see "Solomon Islands: Selected Issues," March 2018, IMF Country Report No. 18/73).

Figure 12. Micronesia: Scaling up Climate Change Adaptation Spending and Macroeconomic Implications



Sources: IMF staff calculations.

Notes: the figure shows an illustrative simulation on the impact of natural disasters on GDP growth and public debt, comparing scenarios with and without a ramp-up in adaptation investment. Main features are as follows. Without adaptation investment ramp-up: GDP growth remains at its potential, estimated at 0.6 percent under the baseline. When a disaster hits FSM in 2030, real GDP declines by 5 percent whereas public debt rises by 10 percent of GDP. Starting 2031, real GDP growth increases to 1.0 percent annually (compared to 0.6 under the baseline) throughout the implementation period reflecting expected growth dividends of post-disaster reconstruction. With adaptation investment ramp-up: reflecting higher adaptation investment over 2020–30, GDP growth increases to 1.0 percent during this period. When a disaster hits in 2030, real GDP declines by only 3 percent whereas public debt rises by only 6 percent of GDP, which are lower than in the scenario without adaptation by 40 percent, as higher adaptation investment would lower reconstruction costs and output losses in the event of a natural disaster.

Recommendations for Financing	**Priority**
1. Mobilize external grant financing to avoid further worsening of fiscal and debt sustainability	Short term
2. Speed up implementation of adaptation investment projects.	Short term

RISK MANAGEMENT STRATEGY

FSM has some elements of a risk layering strategy in place but is currently not well prepared for the post-2023 context. While some contingency funds have been established, indemnity and catastrophe insurance is under-used, and the only risk transfer mechanism utilized by the government is through the provision of funding from USAID and FEMA through the Compact Agreement, which is set to expire in 2023 unless renewed. FSM could enhance its risk management approach and prepare for after 2023 by developing a National Disaster Risk Financing Strategy as a central element of the broader DRS. This would guide future policy making with regard to risk retention and transfer, including trade-offs between options, and provide a framework for seeking increased international support.

A. Risk Assessment Procedures

56. **FSM, with the help of development partners and regional climate change entities, has identified natural disaster and climate risks well, but this falls short of a comprehensive risk and contingent liability assessment**. FSM has an impressive set of technical assessments of vulnerability (see for instance, the Second National Communication, 2010), followed up with clear analysis. However, it lacks a framework that defines the government's contingent liabilities in case of disasters.

57. **The Pacific Catastrophe and Risk Financing Initiative (PCRAFI) estimates that it is likely that FSM will incur on average US$8 million per year in losses from earthquakes and tropical cyclones.**[29] In the coming 50 years, FSM has a 50 percent chance of experiencing natural disaster losses exceeding US$105 million and casualties larger than 220 people. In addition, there is a 10 percent chance of experiencing a loss exceeding US$470 million and casualties larger than 600 people. Estimates show the likelihood of the occurrence of one natural disaster per year for FSM is 24.3 percent.[30] The impact can be further exacerbated given projections that in the future some weather events may be more intense. There are also broader macro and fiscal impacts (see section "Climate Change and Preparedness" for details).

B. Self-Insurance and Risk Retention (Government Financial Buffers Including Contingency Provisions, Reserves, and Beyond)

To What Extent Does the Government Self-insure Against Risks?

58. **Supplementary assistance to disaster management and reconstruction efforts provided under the Compact Agreement is the Government's main self-insurance strategy.** Annex II describes this response and reconstruction assistance. Little planning has been undertaken to investigate options to transfer risks and cover larger potential costs in preparation for the

[29] Federated States of Micronesia, Country Risk Profile (2011), Pacific Catastrophe and Risk Financing Initiative.

[30] Lee, D., Zhang, H., and Nguyen, C., 2018. The Economic Impact of Natural Disasters in Pacific Island Countries: Adaptation and Preparedness. IMF Working Papers, 18/108, International Monetary Fund, Washington.

expected expiration of this USAID/FEMA support in 2023. Consequently, there are important gaps in FSM's current measures for self-insurance against risks, and consideration should be given to a longer-term strategy in the post-Compact context. Table 4 provides an overview of the provisions that are in place for smaller and larger disaster events under the term of the current Compact agreement.

Table 4. Micronesia: Provisions Utilized by the Government of FSM to Finance Disaster Response Activities

Disaster severity/frequency	Summary of Provisions for financing response/recovery
Small, higher frequency disasters	• Provisions are in place to reallocate and expand budget spending for short-term disaster relief and some recovery expenditures • Some national reserves are in place including the Disaster Relief Fund and Disaster Assistance Emergency Fund • Contingent financing (through donor products such as the World Bank Contingency Emergency Response Component or ADB contingent financing).
More severe, lower frequency disasters	• Current reliance on support provided under the US Compact Agreement for the provision of more substantial reconstruction financing • Can to draw on Disaster Assistance Emergency Fund for access to quick disbursing funds totaling USD100k per event.

Source: Staff Analysis.

59. **The Disaster Assistance Emergency Fund (DAEF) is the main vehicle for financing immediate disaster response.** Both the FSM and U.S. governments contribute US$200,000 each annually, to provide FSM with access to quick disbursing funds totaling US$100,000 per event. However, this funding is insufficient to cover significant reconstruction needs, and merely provides a stop gap while awaiting the provision of more significant funds for recovery and reconstruction under the Compact Agreement. It is expected that FSM will retain a balance of US$6–8 million in the DAEF at the completion of the current term of the Compact Agreement**.** In order to supplement these funds, the authorities have established a Disaster Relief Fund (DRF), which has consolidated contributions made by development partners to address previous disasters and still has balances that can be used in the future.

60. **Budgetary reallocations are required to fill the gap between DAEF response and Compact-funded response and reconstruction**. This gap can often be lengthy as detailed approval processes within the U.S. government are required. Funds for short-term disaster relief and some recovery expenditures are therefore currently reallocated from existing recurrent or capital expenditures and accounted for in a supplementary budget. The DRF is used to finance some of these expenses but the government is still forced to reallocate funds from essential development activities to crisis response. At the completion of the current Compact Agreement term, the remaining funds in the DAEF is expected to provide a small measure of self-insurance in addition to the DRF for the Government.

61. **FSM has taken steps to strengthen contingent financing arrangements with development partners.** This includes current contingent financing arrangements through a Contingency Emergency Response component in a World Bank International Development Association (IDA) grant for the Maritime Investment Project, and via contingent financing through the Asian Development Bank. In the future, contingent financing could be further enhanced via tools such as the World Bank's Catastrophe Deferred Drawdown Option (CAT-DDO, see Box 1) which would further allow the government to quickly access a portion or all of a predefined amount of concessional funding.

C. Risk Reduction and Transfer, Including Other Insurance and Pooling Arrangement

To What Extent Does FSM Transfer Risk?

62. **There are important gaps in FSM's approach to risk management, both in risk retention and risk transfer instruments.** Figure 13 below illustrates the options in the World Bank's risk-layering framework, including both instruments used (shown in green) and not used by FSM (red).[31] In sum, FSM retains much of its risk, with little risk transfer apart from via the mechanisms provided under the Compact Agreement.

63. **FSM currently has almost no insurance for public or private assets.** Both the private and public sectors are underinsured, with coverage falling far short of expected damages. This may be

[31]The World Bank has developed a risk-layered framework for optimizing disaster financing. Typically, a mix of financial instruments is more cost-effective than a singly instrument to meet disaster related contingent liabilities. In practice, this means that—having quantified potential costs of disasters—governments could provision for the costs of small and frequent disasters through a reserve fund, given the opportunity cost of such funds; the cost of moderate disasters can be financed through ex-ante contingent credit instruments and sovereign insurance; the largest disasters can be partially covered by insurance, while remaining risk will continue to be addressed by ad hoc grants and loans from the international community. See *"Financial Protection Against Natural Disasters: An Operational Framework for Disaster Risk Financing and Insurance,"* World Bank, 2014.

Box 1. The World Bank's Cat DDO

The Development Policy Loan with a Cat-DDO is a contingent credit line that provides immediate liquidity in the aftermath of a natural disaster. A country can fund the CAT-DDO through its core concessional IDA allocation envelope. Of the total CAT-DDO amount requested, only 50 percent is funded by the country's core IDA allocation, with the remaining 50 percent matched by IDA's overall (global) resources – this doubles the amount accessible to the country. Under the World Bank funded Cat DDO, IDA borrowers can secure immediate access to financing up to US$20 million or 0.5 percent of GDP (whichever is higher). Upon drawdown, IDA concessional rates will apply to both the national and global IDA.

The Cat DDO has a "soft" trigger, as opposed to "parametric." Funds become available for disbursement after the declaration of a state of emergency due to a natural disaster. It also has a revolving feature, as amounts repaid during the drawdown period are available for subsequent withdrawal. The three-year drawdown period may be renewed up to four times, for a maximum of 15 years in total. To gain access to the Cat DDO, the borrower must implement a disaster risk management program, which the World Bank will monitor periodically.

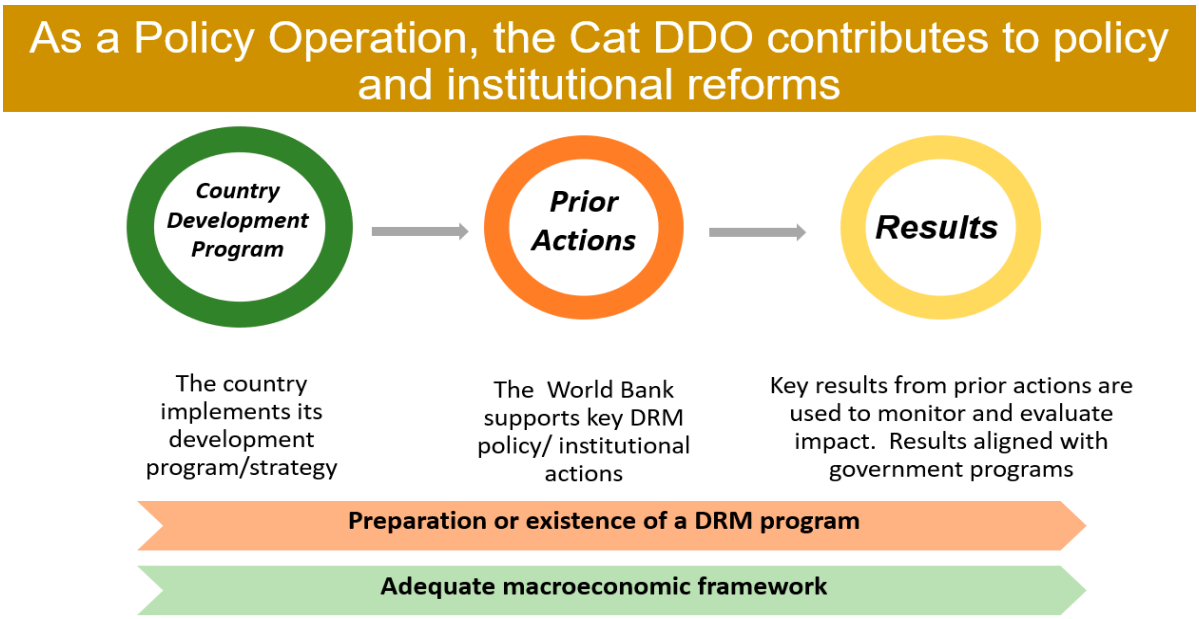
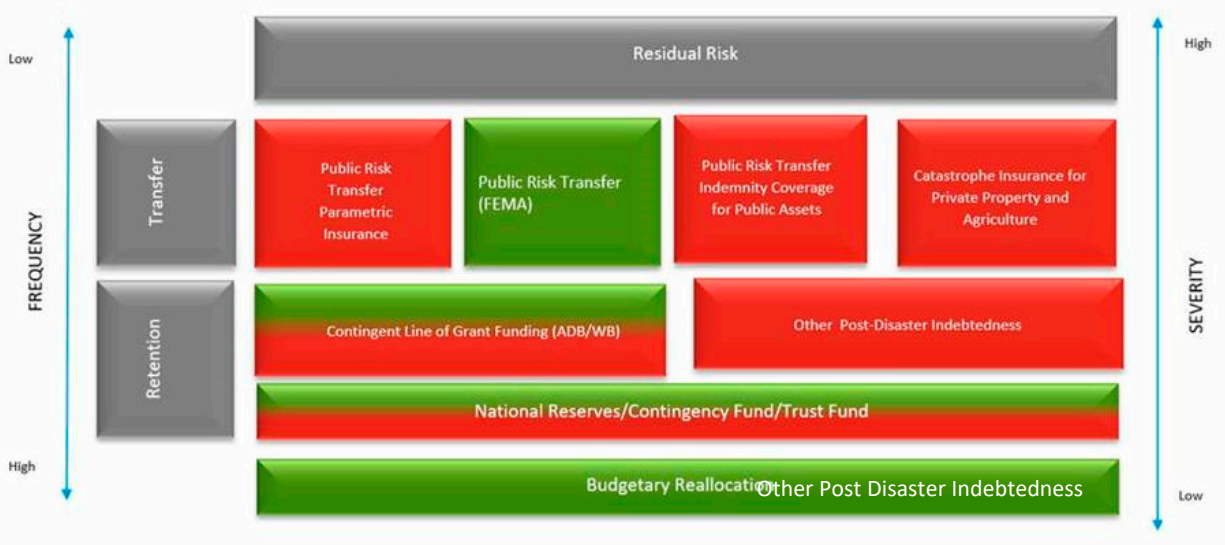


Figure 13. Micronesia: Disaster Risk Financing Layering



Source: Staff Analysis.

linked to the support provided under the Compact Agreement, which provides funds to repair/rebuild domestic assets in the event of a disaster. The support provided by USAID and FEMA under the Compact Agreement is a cost-effective measure for FSM's government and population. However, the government should consider preparing for the expected expiration of this support in 2023. The following factors should be considered with regards to insurance for public and private assets in FSM as part of a DRS:

- The domestic insurance industry is under developed, with low demand and low product supply. There is scope for collaboration with private insurers regarding development of the traditional market, including for housing, and socially-desirable services such as food and agriculture insurance.

- Most public assets, including critical assets such as hospitals and schools, are not currently insured against natural disasters. With the notable exception of Petrocorp energy plant facilities (which are insured), the Government of FSM can more cost effectively mitigate natural disaster risk by insuring public assets and consolidating coverage into larger policies that reduce premiums.

- FSM does not participate in the Pacific Catastrophe Risk Insurance Company (PCRIC) disaster risk insurance program, which is the only currently available pooled parametric risk insurance scheme for the Pacific region (see Box 2).

Box 2. Pacific Catastrophe Risk Insurance Company (PCRIC) Disaster Risk Insurance

PCRIC currently provides parametric insurance to four nations: the Cook Islands, Republic of the Marshall Islands, Tonga, and Samoa, with each benefiting from parametric earthquake and cyclone protection from the facility.

PCRIC is designed to increase the financial resilience of Pacific Island Countries against natural disasters by improving their capacity to meet post-disaster funding needs. This is done by using parametric insurance to ensure access to immediate funds in the aftermath of a disaster. Parametric insurance is unlike traditional insurance, which requires an assessment of individual losses on the ground for settlement. Parametric insurance instead assesses losses using a predefined formula based on variables that are exogenous to both the individual policy holder and the insurer – that is, the physical parameters of the event – but that are strongly correlated to losses.

Payouts received thus far under the PCRIC/PCRAFI scheme included:

- a pay-out of US$1.3 million to Tonga in 2014 following Tropical Cyclone Ian (annual premium of US$300,000/year),
- a payout of US$1.9 million to Vanuatu following Tropical Cyclone Pam in 2015 (annual premium of US$300,000/year), and
- a second payout of US$3.5 million to Tonga in 2018 following Tropical Cyclone Gita (annual premium of US$500,000/year).

Established in June 2016, PCRIC is a result of region-wide efforts to address climate and disaster risks across 14 Pacific Island Countries (PICs). Catastrophe risk insurance for PICs began as a pilot in 2013 to 2015 through the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI), which laid the foundation for a regional catastrophe risk pool to offer governments affordable parametric insurance. PCRIC is a captive insurance company owned by the Pacific Catastrophe Risk Insurance Foundation (PCRIF), which is directed by participating Pacific Island Countries. Initial capital funds were provided by the PCRAFI Program Multi-Donor Trust Fund with contributions from Germany, Japan, the United States and the United Kingdom.

Improving Risk Layering in FSM

64. **A National Disaster Risk Financing Strategy should be developed to assess how to close existing and future gaps for FSM in the most cost-effective way.** Disaster risk financing is a key pillar of disaster risk management. Strengthening financial protection mechanisms will fill existing critical gaps and enable cost-effectively planning for disaster response. In addition, effective financial protection measures can reduce the impact of natural hazards on the economy.

65. **A disaster risk financing strategy should focus on building complementarities between the various risk retention and risk transfer instruments**. It should also make sure policies are in place that ensure any quick liquidity from such instruments after a disaster can be spent efficiently and in a transparent manner.

66. **FSM needs to build a risk buffer large enough to provide timely financing for the fiscal costs of disasters.** Drawing on grant financing to increase investment in resilient infrastructure would over time reduce the needed size of this buffer. The layered buffer should include risk

retention mechanisms (some of which are already in place), in particular, a natural disaster contingency fund, risk transfer mechanisms such as PCRIC cover (or another parametric insurance product which may emerge between now and the conclusion of the current term of the Compact Agreement), and private sector insurance mechanisms. It can also include contingent financing mechanisms.

67. **Building buffers and improving regulations on their usage should be an integral part of the strategy**. Key short-term priorities to build buffers towards the optimal level are to develop adequate insurance coverage, in particular, through optimizing parametric coverage by broadening the use of indemnity and catastrophe insurance. It will also be important to further build the DRF and to establish clear regulations for its use. Similarly, the framework for contributing and accessing the DAEF following the conclusion of the current Compact Agreement needs to be clarified. Regulations should clearly specify the circumstances in which it each can be used. Finally, the Government of FSM should enhance access to rapid and cheap contingent financing that can be triggered in the event of a natural disaster.

68. **The FSM Trust Fund (FSMTF)can provide a further buffer for a catastrophic disaster**. This large buffer (currently over 50 percent of GDP) could be used in the event of a catastrophic natural disaster. However, the FSMTF needs to be accumulated further and prudently managed in view of the significant post-2023 uncertainty and expected fiscal cliff. Against this background, FSM has followed a prudent policy to save revenue windfalls into the FSMTF in recent years and enacted a law prohibiting drawdown until 2030. It should therefore be viewed as a last resort, and the measures proposed above to build buffers and reduce risk should be given priority to ensure that the potential use of the FSMTF is minimized. The role of the FSMTF as a buffer for a catastrophic natural disaster needs to be clarified in the context of the FSMTF's governance framework and as part of the National Disaster Risk Financing Strategy.

Recommendations for Risk Management	Priority
1. Continue to develop contingency financing options and consider regional parametric insurance.	Short term
2. Formalize a national disaster risk financing strategy, including an inventory of public assets, clarify budget processes and engage development partners on financing modalities for a risk buffer.	Medium term
3. Clarify regulations for accessing disaster relief funds at the conclusion of the current Compact Agreement term.	Medium term
4. Explore insurance options for key government infrastructure and developing insurance markets for housing, flood risk and agriculture.	Medium term

NATIONAL PROCESSES

FSM has made good progress in developing climate change policies and related development plans. However, the insufficient link between policy and resource allocation as well as weak project management capacity have considerably affected policy implementation. Further improvements in public investment and financial management, such as policy-based budgeting, enhanced fiscal risk analysis, more rigorous project appraisal and prioritization, and improved budget classification and chart of accounts, will support the effective implementation of climate resilience policies.

A. Integration of Climate Change into National Planning Processes

Have Climate-related Projects Been Mainstreamed into National Planning?

69. **FSM has largely integrated climate resilience into national planning, though it still misses an overarching national adaptation plan.** The National Strategic Development Plan 2004-2023 includes strategic goals related to climate resilience, such as mainstreaming environmental considerations, including climate change in national policy and planning as well as economic development activities. The goals also include reducing energy use and converting to renewable energy resource to minimize emission of greenhouse gases. All the four states of FSM have developed the JSAP to address climate change risks across priority areas. Climate change resilience issues have also been mainstreamed in agriculture and health sectoral policies and plans but, for instance, not in the energy sector which focuses only on mitigation. FSM has also recently developed its GCF country program by consolidating large scale and cross-sectoral priority projects, though limited progress has been achieved on financing. However, as noted above there is a lack of overarching national adaptation plan to consolidate all climate resilience policies and projects.

70. **The recent establishment of DECEM should help strengthen the mainstreaming process.** This department is the central coordinating agency at the national level for all government activities on climate change. Although the establishment of DECEM has helped to integrate policy development, climate financing continues to be fragmented. For example, while DECEM is the focal point for Adaptation Fund and Global Environment Fund, the Department of Foreign Affairs is the focal point for regional organizations and bilateral partners supporting climate change projects, Department of Finance and Administration (DoFA) is responsible for multilateral banks and GCF projects, and Overseas Development Assistance for EU projects. Furthermore, the Council on Climate Change and Sustainable Development, an overarching coordination body currently chaired by the Secretary of DECEM, has difficulties to ensure that it meets regularly and has appropriate representation from members (heads or their designated representatives of all national government departments, as well as the FSM Association of the Chamber of Commerce).[32]

[32]Pacific Community and the Pacific Islands Forum Secretariat, 2019, FSM Climate Change and Disaster Risk Finance Assessment.

71. **Improving natural disaster and climate change resilience is a project screening criterion of the IDP (2016–2025).** Taking into account the strategic statements in the IDP 2004 and more recently the 2023 Action Plan and the challenges presented by climate change, IDP 2016 adopted climate resilience as one of its strategic objectives. All priority infrastructure projects have been rated against these objectives, including climate resilience, to ensure the overall alignment of IDP investments with IDP objectives. But, in practice, it is unclear how much weight is given to climate resilience in the project prioritization and selection process.

B. Adequacy of the Public Investment Management System

Are Adequate Public Investment Management Systems in Place (Effective Procedures for Identifying, Evaluating, Selecting and Implementing Projects), to Ensure Climate-Related Investments Will be Well-spent?

72. **While FSM has recently improved public investment management (PIM), it still relies heavily on development partner expertise and there are a number of gaps to be filled.** The implementation of IDP 2016 has strengthened preliminary project screening by adopting a multi-criteria assessment. The roles and responsibilities of different agencies involved in infrastructure investment management, particularly those of the World Bank-related project management unit (PMU) and project management offices (PMOs) at state level, have been clarified. Recent reforms of its public financial management (see the following subsection C) would further support FSM's public investment management. Nevertheless, FSM's PIM has obvious gaps as discussed below, contributing to slow project execution. This partly reflects inadequate staffing capacity for project preparation and implementation. For example, a PMO has advertised an engineer position for three years, but it still cannot be filled. In addition, FSM heavily relies on external organizations, such as development patterners, and consultants to prepare and implement projects. As a result, local capacity building and institution development have proceeded slowly.

73. **A summary assessment of FSM's PIM using the IMF's evaluation tool, Public Investment Management Assessment (PIMA), is reported below (see Annex V):**[33] FSM scores 2.0, compared to the low-income developing country average of 1.9[34]and the average for six small states of1.7[35] (against the top score of 3.0). However, this score is based on the fact that most of FSM capital projects are financed by the Compact and development partners and follow their procedures. If the assessment was limited to the management of local revenue financed projects,

[33] The PIMA tool is a detailed questionnaire covering 15 aspects of public investment management and seeks to identify the institutional features that minimize major risks and provide an effective process for managing public physical investments (see http://www.imf.org/external/np/fad/publicinvestment/pdf/PIMA.pdf). The assessment described in the text was not a full PIMA evaluation, because it did not take stock of the effectiveness of the procedures but used interviews to determine what has/has not been put in place.

[34] Based on the 21 low-income developing countries assessed by June 2019. This does not include PIMAs based on desk assessments.

[35] Based on the assessment of six small states, three of which are desk assessments.

FSM's score would be significantly lower especially for the institutions related to project appraisal and selection. Key elements of the PIM system are outlined below.

Planning

- FSM's fiscal policy is guided by its explicit debt ceiling of 30 percent of GDP and the principle of balancing budget. As most capital spending is financed by grants from the Compact Agreement and development partners, the Government's expenditures are in practice not constrained by the debt ceiling and balancing budget principle.
- Both the national and state governments prepare national and sectoral strategies/plans, some of which identify investment projects and estimate their costs. While some strategies/plans have certain information about outcomes and outputs of investments, others do not.
- FSM has a highly decentralized PIM system. Its national government uses the annual budget consultation as the forum to coordinate with the four state governments on capital investments. Although each government reports its own contingent liabilities in the financial reports, the information is not consolidated or reported in the national government's budget documents.
- The national government does not have a well-defined standard methodology for project appraisal and there is limited central support for project appraisal. Nonetheless, major projects are mostly financed by the Compact and donors. They are subject to rigorous technical, economic and financial analysis and usually undergo independent external review.
- Infrastructure investments are mostly conducted either by government or public corporations (PCs). There are very limited private investments in infrastructures, though the legislature does not restrict private sector's participation. There is no consolidated report on the investment plans of PCs.

Allocation

- The total construction costs of major projects are approved by the congress. There is three-year break down cost information for each of the capital projects included in the budget. However, information on consolidated capital projects is not available as many projects are not included in budget and capital spending is mixed with expenditures on maintenance, conference, training, etc., under the category of "Capital Improvement & Human Resource Development." Further, there is no multiyear ceiling on capital expenditures.
- Public capital projects, regardless of financing sources, need to be approved by the congress individually. But the projects financed by development partners are not included in the budget. Both capital and recurrent budgets are prepared by DoFA and presented together. While there are economic and administrative classifications, no functional or program classification is available.

- Although appropriations are annual, multiyear commitments are allowed and funding for ongoing projects is protected over the medium term when projects are approved by the congress. Total project cost is not included in budget documentation. Virements from capital to current expenditures are prohibited.

- There are no standard methodologies for determining either maintenance needs or major improvement needs. It is not easy to clearly identify maintenance expenditures, as they could be either under the "Contract Services" or "Capital Improvement & Human Resource Development," and there are no consistent codes or names for these types of expenditures.

- Uniform project selection criteria seem currently missing in FSM, though IDP has some guidance for the projects covered in IDP. As for infrastructure projects, the appraisals of major projects are reviewed by Department of Transportation, Communication and Infrastructure (DTCI). If these projects are financed by the Compact, the U.S Army Engineer Association (AEA)conduct independent review. There is no a comprehensive pipeline of appraised projects. Projects are selected by the cabinet based on the annual budget consultation.

Implementation

- Major projects, which are mainly financed by the Compact and donors, are tendered in a competitive process and the tender information is open to public. However, there is neither a procurement database nor an independent body responsible for reviewing procurement complaints.

- Financing for capital spending at the national government level is usually made available in a timely manner, given that the commitment ceiling is the total project costs and the national government does not face cash constraints. State governments may sometimes be short of cash. External funding of capital projects is largely held in separate commercial bank accounts.

- Several units within the national government have oversight functions, though it is not clear how effective these oversight functions have been conducted. As investment projects are appropriated at their commence and there are no cash constraints, there is no need to reallocate between investment projects during implementation. Ex-post reviews are not required for both Compact-financed projects and domestic revenue financed projects.

- Capital projects are mainly implemented by subnational governments. The slow implementation rates reflect capacity constraints of the Project Management Offices (PMOs) of state governments. While IDP has general policies on project adjustments, there seems no clear guidance on fundamental review and reappraisal. Projects are usually audited, but the audit reports are not always sufficiently scrutinized by the congress.

- FSM has a relative strong performance in recording and reporting nonfinancial assets. Asset inventory is conducted once every two years. Capital assets are reported in financial statements and depreciated over their useful lives.

C. Adequacy of PFM Systems for Managing CC Financing and Outlays

Are Adequate Public Financial Management Systems in Place, to Protect Climate-related Funding?

74. **Public financial management (PFM) in FSM has some desirable features and has been improving in recent years.** The budget calendar, roles, and responsibilities are clear and consistently followed. The hearings of the Congress Standing Committees are open to the public. Consolidated financial statements are relatively comprehensive with information on revenues, expenditures, assets and liabilities. They are completed as well as audited on time and are all accessible by the public via the website of the office of the National Public Auditor. The PFM reform gained momentum after the 2016 Public Expenditure and Financial Accountability (PEFA) self-assessment, a follow up of the 2011 PEFA assessment. The PFM reform roadmap 2017–2020 lays out key actions, such as implementing a new financial management information system (IFMIS), completing a review of the Financial Management Regulation (FMR), improving reporting standards and continuing capacity development. The new FMR has been effective since March 2019 and efforts in other areas are ongoing.

75. **Nevertheless, further PFM enhancements are needed to ensure effective management of climate-related spending.** There are several reform priorities in the short to medium term to support the implementation of climate change policies. The financial management regulations of the four states are largely out of date and urgently need to be updated. The macroeconomic forecasting and fiscal strategy should factor in the impact of climate change and natural disasters. As limited information on fiscal risk is currently published in FSM, developing a comprehensive fiscal risk statement would be an effective way to organize such information, including the fiscal risks originated from natural disasters and climate change. In addition, budget documentation should clearly link the policies and strategies, such as the climate change and natural disaster policy, to budget allocation. The budget classification and chart of accounts need to clearly differentiate capital expenditures from recurrent expenditures, such as maintenance and human resource development expenditures. They should also be updated to easily track climate resilience expenditures as well as recovery and reconstruction spending by source, location and economic activity. The government's procurement processes should be more transparent and the complaint management system should be established. More frequent and timely in year budget execution reporting as well as more rigorous congress scrutiny of audit reports would help improve effectiveness of monitoring climate resilience spending.

Recommendations for National Processes
1. Improve chart of accounts, budget classification and budget presentation to identify and track mitigation and adaptation spending. 2. Establish standard methodology for investment project appraisal and selection. Build climate resilience into project screening and design process. 3. Strengthen the institutional and staff capacity in public investment and focus implementation resources on high priority projects.

TAKING STOCK: PRIORITY NEEDS TO BE MET

What Resources Does FSM Need to Mobilize, to Achieve its Climate-change Strategy?

76. **An indicative tally of the priorities identified in this Assessment points to additional resource needs of over US$500 million over the next 15 years.** These resource needs have been developed by the authorities in the context of the Paris Agreement NDC and in the IDP as well as GCF work program. In addition to the investment financing gap of $400–500 million, smaller levels of support will be required for capacity building and possibly for financing risk layering, for instance for parametric insurance premia. The areas where the authorities need international support to implement the recommendations of this CCPA are identified below, with identification of the type of support needed. Tentative estimated values for the volume of support required are provided only where possible.

- **General preparedness (see Chapter III for more detail)**
    - Development of a comprehensive Disaster Resilience Strategy (capacity building)
    - Strengthened human resources for disaster preparedness and response at the State and National level (capacity building).
    - Development of localized hazard, risk and climate information (capacity building).
    - Improvement of climate data collection and use (capacity building and financial support).
- **Mitigation (see Chapter IV for more detail)**
    - Private investment of around US$ 170 million by 2035, mainly in renewable energy generation to fill the financing gaps in the energy master plan.

- Possible government financial involvement to resolve problems impeding private investors (financial support).
- Development of a mitigation strategy for the transport sector (capacity building).
- Expanded policy measures to improve energy efficiency (capacity building).

- **Adaptation (see Chapter V for more detail).**
  - Filling financing gaps of up to US$400–500 million in a public investment envelope of US$ 1.3 billion by 2035 (financial support), to allow investment resilient infrastructure, food and water security**,** wastewater and solid waste**,** tourism facilities and social protection.
  - Development of an overarching National Adaptation Plan (capacity building).
  - Development of an enabling legal framework, such as land use policy and building codes (capacity building).
  - Improved capacity at state level to enable acceleration of implementation of infrastructure investment (capacity building).

- **Risk management (see Chapter VI for more detail)**
  - Formalized national disaster risk financing strategy (capacity building).
  - Clarified regulations for accessing the DRF and DAEF at the conclusion of the current Compact Agreement term (capacity building).
  - Collaboration with a regional parametric insurance scheme, should arrangements for supplementary post disaster assistance from the United States change upon the completion of the current Compact Agreement term (capacity building and financial support).

- **National processes (see Chapter VII and Annex V for more detail)**
  - Improvement of the budget presentation to clarify the linkage between climate resilience policy and resource allocation (capacity building).
  - Updated COA and budget classification to identify and track mitigation and adaptation spending (capacity building).

- Establishment of standard methodology for project appraisal and selection with climate resilience as a key screening criterion (capacity building).

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Annex I. Main Impacts of Climate Change in Micronesia

1. **FSM's climate is tropical, with heavy, year-round rainfall, especially in the eastern islands**. Its islands are located on the southern edge of the typhoon belt, and between the 1977 and 2011 seasons, 248 tropical cyclones developed within or crossed FSM's Exclusive Economic Zone (EEZ). Climate and weather-related events such as droughts, forest fires, landslides, typhoons, storm surges, and sea level rise pose stress on the already vulnerable ecosystems in FSM.[1] Climate change projections for FSM predict that average annual temperature is likely to increase, extreme rainfall days are likely to occur more often, sea levels are likely to continue to rise, El Niño and La Niña events will continue to occur in the future, and typhoons are likely to be less frequent but more intense.

2. **The Pacific-Australia Climate Change Science and Adaptation Planning Program project the increase in temperature to be in the range of 1.1–2.0°F (0.6–1.1°C) by 2030 under a very high emissions scenario**. Global climate models indicate an increase in annual and seasonal mean surface air temperature by up to 4.5°F under a high emissions scenario by 2090.[2] A similar rate of warming is projected for ocean surface temperatures. Little change in rainfall is predicted by 2030, but by 2090, the majority of models simulate an increase of at least 5 percent in wet season, dry season and annual rainfall under a high emissions scenario. In addition, under a very high emissions scenario, the rise in sea level is projected to be in the range of 16.1–35.4 inches (41–90 cm) by 2090.

3. **Many factors contribute to FSM's vulnerability**. These include traditional land use and tenure, unstable slopes in the high islands, complexities in groundwater availability, conflicting plans for watershed use by owners and various groups, limited understandings on climate change risks, data gaps, and a lack of adequate financing. There is little public land, and land ownership is a complex and traditional foundation of political power in FSM. These issues converge to place FSM, especially communities on atoll islets and in other coastal settings, at the forefront of risk from climate change.

4. **The negative impacts of climate change are already evident in FSM**. Frequent natural disasters and climate change will continue to impose high costs and may even threaten the physical viability of some areas of both the main islands and more remote outer islands. Such events can and do cause severe damage to infrastructure and other economic assets and have adverse impacts on livelihoods.

- Saltwater intrusion from rising sea levels and increasing extreme weather events such as storm surges has the potential to damage crops and contaminate freshwater supplies. Many people live within the coastal zone and are therefore vulnerable to climate related changes in precipitation, sea level, storms and coastal erosion. In addition, as drought and sea level

[1] Centre of Excellence in Disaster Management and Humanitarian Assistance, FSM, Disaster Management Reference Handbook, November 2016.

[2]Figures are from Phase 3 of the Coupled Model Intercomparison Project database (known as the CMIP3).

rise are impacted by regional El Nino-Southern Oscillation processes, formerly self-sustaining atoll communities now rely on imported food and water during times of stress. Exacerbated by sea level rise, extreme king tides are causing intense coastal inundation that damages taro beds, soil, agro-forestry resources, and critical infrastructure along the coast, particularly on low lying atoll islets.

- Both the oceanic and coastal fisheries in FSM depend on the natural habitats of the Pacific Ocean to sustain them, including coral reef ecosystems, mangroves and wetlands among others. These habitats also serve the important function of protecting villages and communities from storms and flooding, the intensity of which is expected to increase with climate change. Increases in sea level rise, strong winds, ocean temperature and acidification have the potential to impact on natural resources, economy and livelihoods, with climate change impacts drastically reducing coastal fish catches as well as shifting oceanic fisheries out of their historical waters around FSM. Some projections indicate climate change will lead to Skipjack tuna biomass moving East by 2035 to 2050.[3] The simulated effect of climate change on coral reefs is likely to reduce production of coastal fisheries, but to enhance habitats for freshwater fisheries and aquaculture. According to the analysis, the potential economic benefits overall to the pacific region from an eastward shift in skipjack tuna could exceed the threats, if careful management of tuna fisheries is ensured.

- FSM is vitally dependent on access to well-functioning and reliable transportation systems, in particular, maritime and air transport systems. When extreme events strike, which will become more likely and frequent with a changing climate, maritime transport becomes a critical lifeline for outer islanders to access food, water, energy supply, and emergency response services, making citizens of FSM who live on outer islands, particularly vulnerable to climate change risks.

- Telecommunications infrastructure in FSM is currently not well prepared to withstand the impacts of disasters or climate change. Impacts on critical infrastructure such as the FSMTC building on Pohnpei, have the potential to disrupt the majority of off-island communication, mobile and fixed services on Pohnpei and mobile and fixed services in the other states. A more competitive telecom sector will add additional resilience by diversifying infrastructure and systems. The move to submarine and underground fiber (vs. satellite and communications lines on power poles) will also increase resilience.

[3] Bell, et al. 2013. *Mixed responses of tropical Pacific fisheries and aquaculture to climate change.* Nature Climate Change.

Annex II. Post-Disaster Assistance from the U.S. Government

Current Arrangements

1. **Under the terms of the Compact Agreement with the USA, the United States entered into a Federal Programs and Services Agreement with FSM. Article X of the Federal Programs and Services Agreement (known as "Article X") commits the United States to provide disaster preparedness, response, and recovery assistance to FSM.** Following an agreement to amend Article X 2008, primary U.S. Government responsibility for FSM implementation of disaster assistance transferred from the Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) to the United States Agency for International Development (USAID), while FEMA retained responsibility for funding that assistance. At that time, in order to help prepare for this transition, in 2008, USAID and FEMA agreed upon an Operational Blueprint (OBP) to explain how the U.S. Government would achieve its disaster relief and reconstruction responsibilities in FSM. The purpose of the OBP is to provide a general operational framework, under the terms of the Compact and the subsidiary Services Agreement, for USAID and FEMA coordination and delivery of United States Government supplemental disaster assistance to FSM following a Presidential Disaster Declaration (PDD). In 2017, USAID and FEMA revised the Operational Blueprint.

2. **This unique system of assistance includes a hybrid of both the USAID and FEMA practices and experience in previous disasters.** USAID is responsible for providing disaster assistance and coordinating the U.S. Government response to disasters in the FSM. Following a U.S. Presidential Disaster Declaration, FEMA will provide funds to USAID for carrying out disaster activities related to the declared event. In addition, FEMA may provide subject matter expertise throughout the disaster operation, as appropriate. Assistance will be provided by USAID in coordination with FEMA per the approved Disaster Relief and Reconstruction Plan (DRRP).

3. **Currently, USAID has the lead responsibility for disaster mitigation, relief and reconstruction in FSM under the Compact Agreement.** Fundamental to USAID's disaster mitigation, relief, and reconstruction program are the following aspects:

- USAID's Office of U.S. Foreign Disaster Assistance (OFDA) is the lead federal entity for coordinating the US Government's humanitarian assistance efforts overseas.

- USAID maintains a significant presence in the FSM through a Disaster Assistance Coordinator (DAC) who works as a member of the U.S. Embassy county team in FSM. The DAC serves as a liaison with the FSM Government and coordinates U.S. Government relief activities in FSM.

- A Critical pillar of USAIDs relief lays within a cooperative agreement between USAID and its primary relief and reconstruction partner within FSM - the International Organization of Migration (IOM). The IOM operates offices in Pohnpei, Chuuk and Yap state in FSM, and an office in nearby Majuro, in the Republic of the Marshall Islands.

4. **Additionally, Article X established a Disaster Assistance Emergency Fund (DAEF), with an annual deposit of $US200,000 by the Government of FSM, to be matched by a contribution of the same amount by the U.S. Government, starting in 2005 and ending with a contribution in 2023**. Thus, a total of $400,000 per year per will accrue toward the FSM contingency fund. The rules governing its use are set forth in Article X. The expectation is that the fund will grow and permit the FSM to address lesser-magnitude disasters with increasing effectiveness and self-reliance, and without U.S. Government assistance.

Assistance from the U.S. Government Following a Presidential Disaster Declaration[1]

5. **Following an eligible event, USAID may provide initial assistance of $US100,000 for immediate relief.** Should the emergency require greater response, needing more resources than those available through the DAEF, the international community and USAID combined, the President of FSM may request a U.S. Presidential Disaster Declaration (PDD). Following a Presidential disaster declaration, USAID will implement the relief and reconstruction activities in accordance with a relief and reconstruction plan to be developed by the U.S. Government in consultation with the FSM government. The funding will be provided by FEMA, which will remain available as a "safety net" of last resort.

6. **The following steps must occur before the U.S. President will make a determination regarding a Presidential Disaster Declaration (PDD)**:

a) The President of FSM has declared a national state of emergency/disaster.
b) FSM has utilized its own resources including its DAEF pursuant to the conditions of Annex A to Article X to address the disaster by expending either: (a) up to 50 percent of the DAEF balance at the time of the declaration of a state of emergency/disaster; or b) another amount that the FSM and the US Government deem appropriate to satisfy this requirement.
c) The Compact Nation has requested assistance from the UN in writing, e.g. email or letter. USAID verification of this request fulfills this requirement.
d) The U.S. Chief of Mission has, under his/her authority, declared a disaster that has triggered a request for a contribution of assistance from USAID under the Chief of Mission disaster declaration.
e) Based on the findings of a Joint Damage Assessment (JDA), the President of FSM determines that supplemental assistance is needed even after national, international, and other U.S. Government sources to date have been factored in, and the information from the JDA supports that determination.
f) The President of the FSM has made an official request for a PDD.

[1]USAID/FEMA Operational Blueprint for Disaster Relief and Reconstruction in the Federated States of Micronesia (FSM) and the Republic of the Marshall Islands (RMI) (January 31, 2017).

Case study: Reconstruction Response to Typhoon Maysak

7. **Typhoon Maysak made landfall on Micronesia's Chuuk islands on March 29, 2015 and on Yap islands on March 20 and April 1, 2015**. Damage was significant, with an initial assessment indicating in Chuuk's state capital of Weno, 60–80 percent of houses were badly damaged, over 800 homes destroyed and more than 6,000 people were displaced from their homes. Crops were also significantly damaged. Yap's Ulithi Atoll took the most direct hit from the typhoon, resulting in the destruction of most homes and widespread damage to crops and infrastructure.

8. **The Governors of both states and the President of FSM declared a state of emergency and requested assistance from the US Government under the terms of the Compact arrangements**. On April 28, 2015, the President of the United States issued a Presidential Disaster Declaration. Under the terms of the Compact agreement between the United States and the Government of FSM, the Declaration mobilized U.S. federal funding for immediate emergency relief and reconstruction assistance. Consequently, USAID and the Government of the FSM coordinated with the U.S. FEMA, the Department of Agriculture, Food and Nutrition Services, and the Small Business Administration for this reconstruction program, which was implemented by the International Organization for Migration.

9. **The reconstruction efforts covered a three-year period and cost US$42 million**. Key features of the recovery program In Chuuk and Yap, supported by USAID included:

- construction of over 400 new homes and over 150 public facilities (including schools, clinics, and rain catchment systems);
- provision of materials and vouchers worth nearly $2.8 million to over 1,350 beneficiaries who lost their homes, possessions, and livelihoods; and
- training of almost 1,500 local residents to rebuild their homes and communities using resilient designs and high-quality materials.

Annex III. Spreadsheet Model to Assess the Impacts of Mitigation Policies for the Federated States of Micronesia

1. **The spreadsheet model of fossil fuel consumption used to assess mitigation possibilities for FSM is similar to an IMF model applied recently to carbon mitigation policies for 135 countries.** The reader is referred to this study[1] for a more detailed (mathematical) description on the model and data sources used to justify typical parameter assumptions (e.g., the price responsiveness of fuels and the responsiveness of energy products to higher income)—though some simplifications and other adjustments were made in applying the model to FSM. Basic data on fuel use, prices, and fuel excises were obtained from various documents and sources provided by the authorities including: the Department of Finance, Pohnpei Utilities Company and Petrocorp. Many of the parameters are uncertain for FSM, most notably the price responsiveness of fuel use, so the model results should not be taken too literally as they provide only a broad quantitative sense of the impacts of alternative mitigation policies—sensitivity analysis with the spreadsheet tool is straightforward however, and there is ample scope for more detailed modelling in future (e.g., on specific possibilities for technology adoption) to provide more refined analysis.

2. **The model specifies demand functions for electricity consumption by household, industrial, and commercial sectors, gasoline, road diesel, and diesel used in power generation.** The model does not incorporate capital of different vintages (which would require considerable analytical complexity) and therefore does not distinguish between responses to fuel price changes in the shorter and longer term, but this may not be a major drawback given the focus on medium to longer term targets, and that the implications of more limited price responsiveness assumptions are transparent.

3. **The demand for electricity rises over time in the business as usual (BAU) case relative to 2018 levels, but the demand for road fuels fall.**[2] GDP expands by 8.4 percent between 2018 and 2030 based on IMF forecasts and extrapolation**.** The income elasticities for these products (i.e., the percent increase in electricity or fuel demand in response to each one percent increase in GDP) are taken to be between 0.6 and 1 based on empirical literature and judgement. For example, households have an electricity income elasticity of 1, whereas gasoline is assumed to have an income elasticity of 0.6. However, electricity and fuel use are assumed to decline autonomously by 0.5 percent a year due to gradual retirement of older, less efficient capital.

[1] See IMF, 2019, *Fiscal Policies for Paris Climate Strategies: From Principle to Practice*, Washington, DC.

[2] Total electricity consumption in 2018 is about 58.6 gigawatt-hours. And 2018 fuel use is 4.2 million gallons for diesel used in power generation, 5.3 million for gasoline, 1.35 million for non-power diesel. Approximately 1.8 million gallons of jet fuel is imported into FSM but this does not form part of our analysis.

4. **International oil prices are assumed to increase by 22 percent between 2018 and 2030, in real terms, and this moderates fuel demand.**[3] In line with this, retail road fuel prices[4] and electricity prices[5] are also expected to increase over the same time period by 10 percent and 9 percent, respectively. Higher electricity and fuel prices affect energy demand through changes in average energy efficiency (e.g., due to shifting of demand towards more efficient appliances and vehicles) and from reductions in the demand for fossil energy-using products (e.g., from less use of air conditioning, lighting, or vehicles). Each 1 percent increase in electricity or fuel prices is assumed to reduce electricity/fuel demand by 0. 45 percent, with 2/3 of the response from efficiency improvements and 1/3 from reduced product use.[6]

5. **In the BAU scenario, the share of renewable generation in electricity supply remains at 19 percent.** Changes in electricity demand lead to changes in generation from diesel and renewables equal to the change in demand times the respective supply shares for these fuels. In the policy scenarios, an expansion of the renewables supply share leads to a corresponding reduction in the diesel fuel generation share. The effect of higher renewables share on electricity prices has not been incorporated in the analysis, because the effect of such an increase depends on the source of financing for the investment (i.e. grant financed would imply a fall in electricity prices relative to the BAU whilst a loan on commercial terms could imply an increase in prices.).

6. **CO_2 emission rates are taken to be 0.0088 (metric) tons per gallon for gasoline and 0.0103 ton per gallon for diesel fuels.** Total emissions in a year is fuel use times the emission rate and aggregated over fuels. Revenues are computed by fuel use times the relevant fuel excise tax[7] and aggregated over fuels.

[3] Oil price forecasts average over IMF forecasts (which are essentially flat as they are based on futures markets) and those by the International Energy Agency (where prices rise over time as predicted by a global oil demand and supply model).

[4] 2018 prices are US$ 4.50 per gallon for gasoline, US$ 4.81 for diesel, and US$ 2.96 for diesel used in power generation.

[5] Between US$ 0.43 and US$ 0.55 across households, industry, and commerce and averaging US$ 0.4 across all users.

[6] The vehicle driving response, for example, is limited due to limited possibilities for using other travel modes like public transport, cycling and walking.

[7] Excises in US$ per gallon (which are fixed to 2030 in the BAU) are 0.10 for gasoline and diesel.

Annex IV. Applying Feebates to Key Sectors in FSM

1. **This Annex provides some detail on how feebates might be applied in FSM.** For FSM, large fuel tax hikes have only modest effects given that fuel prices are already high and there are limited alternatives for transportation. In addition, large fuel tax increases are politically difficult, and, if undertaken unilaterally, potentially damaging to competitiveness, the CCPA (Chapter IV) recommends introducing feebates—which achieve some of the price-incentive effects of good carbon taxation without an increase in energy prices. Feebates are potentially:

- *Effective* at reducing energy use, if they are: (i) comprehensively applied across imported products, such as cars, trucks, buses, washing machines, light bulbs, air conditioners, and refrigerators; (ii) set to provide continuous (rather than discrete) rewards for higher efficiency (see below); and (iii) appropriately scaled;
- *Cost-effective*, if there is a uniform reward for saving energy across different types of products;
- *Limit administrative burdens,* as they can be incorporated into existing procedures for collection of excise (or other taxes) on imported products;
- *Consistent with fiscal objectives*, as an ad valorem component of excises (unrelated to energy efficiency) can be retained to meet revenue needs and to prevent the need to provide refunds, which the tax administration has limited experience in implementing;
- *Limit burdens on vulnerable households and firms*, as they do not involve a first-order pass through of new tax revenues in higher fuel, electricity, or product prices.

Transportation

2. **The current excise tax system for vehicles provides no incentives for purchase of fuel-efficient vehicles**. Imported vehicles are subject to a flat rate of tax at the federal and state level (discussed in the body of the report). This tax system does not provide any incentives for newer vehicles with small engine capacity and does not reward vehicle characteristics (including smaller cabin size, lighter body materials, better aerodynamics), that also lower emission rates.

3. **Feebates have attractions over a system of vehicle taxes related to engine size and age but are more difficult to administer**. One problem with a system of vehicle taxes is that the more successful it is shifting consumers towards low-tax vehicles the less excise revenue is collected. In contrast, if the excise consists of: (i) a uniform percent tax on all vehicles with the rate set to meet revenue requirements; and (ii) a feebate designed to be revenue neutral, then as the feebate shifts people to more efficient vehicles there will be no revenue loss from the uniform tax component. The uniform rate can also be designed such that the rebate remains below it, so that the tax administrators would never need to process a refund. Another problem is that the excise tax system does not reward a switch towards more fuel-efficient vehicles within an engine size/vintage category

defined by a given tax rate whereas feebates provide continuous rewards for higher fuel efficiency vehicles within current tax rate categories. Since excises are related to engine size rather than fuel consumption rates they do not encourage purchase of vehicles with other attributes that reduce gasoline or diesel consumption rates such as lighter body materials, reduced rolling resistance, smaller cabin size, and better aerodynamics. However, feebates would be more difficult to administer compared to an excise tax. The excise tax can be largely implemented using the existing system used to collect import taxes (e.g. the HS code used to classify imports can already be used to identify the engine size of vehicles).

4. **Compared with regulatory approaches, feebates can be more flexible.** The regulatory alternative is energy-efficiency standards, for example, for the fuel consumption rate averaged across cars sold by a dealer. However, standards are difficult to design in a way that provides uniform rewards for improving efficiency across different product categories (e.g., cars, buses, trucks) and dealers, whereas feebates are straightforward to harmonize such that they provide the same incremental reward for reducing energy consumption across different product categories and dealers. Feebates are in line with IMF and World Bank advice internationally, which is to generally favor more cost-effective, and flexible price-based instruments over regulatory approaches for meeting environmental objectives.[1]

5. **A strong case can be made to shift towards a vehicle excise tax system with an ad-valorem and a feebate component**.[2] The proportional tax in the ad valorem component can be set to meet a revenue target and does so without distorting the choice among different vehicles (because it leaves the relative price of different vehicles unaffected). The feebate involves levying a tax on relatively fuel-inefficient vehicles in proportion to the difference between their fuel consumption rate (i.e., the inverse of fuel economy) and a 'pivot point' fuel consumption rate, and conversely providing a subsidy to relatively efficient vehicles in proportion to the difference between the pivot point and their fuel consumption rate (or, equivalently, the fees and rebates can be levied on CO_2 emission rates per mile). That is, a vehicle receives a fee/rebate according to the simple formula $t \cdot (gallons/mile - \overline{gallons/mile})$, where the bar denotes the pivot point fuel per mile, and t is a charge per gallon per mile (which accounts for expected use of the vehicle—see below). The feebate component can be made (approximately) revenue-neutral by setting the pivot point equal to the average fuel consumption rate of vehicles sold in the previous year and updating it over time as the average fuel consumption rate of the vehicle fleet progressively declines. The tax/subsidy rates in the feebate can be set as aggressively as needed to induce shifting to more efficient vehicles without eroding the revenue base (which depends on vehicle prices). Implementing this tax change would require data on the fuel per mile (the inverse of fuel economy) for different models, but this is

[1]The incentive feebates create for shifting to more energy-efficient products can be strengthened by product labelling requirements informing consumers about the lifetime energy costs of different models.

[2]See, for example, I. Parry, 2011, "Reforming the Tax System to Promote Environmental Objectives: An Application to Mauritius," Working Paper11/124, International Monetary Fund, Washington, DC.

readily available for other countries.[3] Alternatively, the tax/subsidy rates can be levied on differences between a vehicle's CO_2 emission per mile and a pivot point CO_2 per mile.[4]

6. **A number of countries have introduced feebates, including Denmark, France, Germany, Mauritius, the Netherlands, Norway, Sweden, and the United Kingdom (and many others have elements of feebates).** The pivot points in these schemes are typically equivalent to between about 200 to 250 grams of CO_2 per mile, although the feebate prices differ significantly: for example, about US$10 per gram of CO_2 in France and up to US$155 in Norway.[5] In Mauritius, the feebate introduced in 2011 helped to lower the average fuel consumption rate of imported vehicles from 7 liters/100km in 2011 to 5.8 liters/100km in 2014, while new hybrid vehicle sales registrations rose from 337 to over 1,400.[6] For illustration, a feebate with a pivot point of 250 grams of CO_2 per mile, and a price of US$100 per gram of CO_2, would provide a subsidy of US$5,000 to a vehicle with fuel economy of 45 miles per (U.S.) gallon while imposing a tax of US$10,000 on a vehicle with fuel economy of 25 miles per (U.S.) gallon.

Electricity Sector

7. **An analogous excise to that described above for vehicles, with both ad valorem and feebate components, could be applied to imported appliances and other electricity-using capital.** Again, the ad valorem component could remain at any excise tax rate to maintain revenue. The feebate would involve taxes on products with relatively low energy efficiency in proportion to the difference between their electricity consumption rate and a pivot point consumption rate and conversely provide a subsidy to relatively efficient models in proportion to the difference between the pivot point and their consumption rate. For example, refrigerators would receive a fee/rebate according to the simple formula $t \cdot (kWh/(cubic\ foot\ cooled) - \overline{kWh/(cubic\ foot\ cooled)})$, where *kWh/(cubic foot cooled)* is the electricity consumption rate, a bar denotes the pivot point consumption rate, and t is the charge per kWh/(cubic foot cooled). To illustrate, if the pivot point consumption rate were 5 kWh/month, and the feebate price was US$30 per kWh/month, then a refrigerator with an energy consumption rate of 8 kWh/month would be subject to a tax of US$ 90 while a refrigerator with an energy consumption rate of 2 kWh/month would receive a US$ 90

[3]See www.fueleconomy.gov. Some adjustments might be made for local driving conditions in FSM.

[4]Fuel economy can be converted to CO_2 per mile by inverting and multiplying by CO_2 per gallon—8,850 grams per gallon for gasoline and 10,250 grams per gallon for diesel.

[5] See, for example, Bunch, David S., David L. Greene, Timothy Lipman, Dr. Elliot Martin and Dr. Susan Shaheen, 2011, "Potential Design, Implementation, and Benefits of a Feebate Program for New Passenger Vehicles in California," pp. 59–61, prepared for the State of California Air Resources Board and the California Environmental Protection Agency; Cambridge Econometrics, 2013, "The Effectiveness of CO2-Based 'Feebate' Systems in the European Passenger Vehicle Market Context: An Analysis of the Netherlands and the UK," report for the International Council on Clean Transportation, Cambridge, United Kingdom. In some cases, however (e.g., Denmark), the implicit price on CO_2 is substantially higher for vehicles receiving rebates than for vehicles subject to fees, which results in net revenue losses from the feebate and violates the principle of providing the same reward for reducing emissions across all vehicle classes.

[6]Global Fuel Economy Initiative, 2016. "Fuel Economy State of the World 2016: Time for Global Action."

subsidy.[7] And again the feebate component can be made (approximately) revenue-neutral by setting the pivot point equal to the average electricity consumption rate of models within a product class sold in the previous year, with updating over time as the consumption rate progressively declines. To minimize the cost of reducing electricity use across a range of different product classes, the same incremental reward on kWh (i.e., the tax rate *t*) should be uniform across products.

[7] To take another example, the fee/rebate for air conditioners would be $t \cdot (kWh/(BTU\ of\ heat\ removed) - \overline{kWh/(BTU\ of\ heat\ removed)})$.

Annex V. PIMA Institutional Questionnaire—Interview Responses from FSM

1	**Fiscal Principles or Rules: Are there permanent fiscal principles or rules that support sustainable levels of capital spending?**	
1.a.	Is there a target or limit for government to ensure debt sustainability?	30 percent of GDP is the debt target for general government.
1.b.	Is fiscal policy guided by one or more permanent fiscal rules?	The Budget Procedure Act requires balanced budget for central government.
1.c.	Is there a medium-term fiscal framework (MTFF) to align budget preparation with fiscal policy?	Aggregate expenditure ceilings only for the budget year are approved by government before the first budge circular is issued. The annual budget presents estimate of revenue and expenditure for the budget year and the following fiscal years allocated by administrative and economic classification.
2	**National and Sectoral Planning: Are investment allocation decisions based on sectoral and inter-sectoral strategies?**	
2.a.	Does the government prepare national and sectoral strategies for public investment?	The current main national strategy for public investment is the Infrastructure Development Plan (IDP) 2016–2025. IDP covers projects financed by domestic revenue, U.S. Compact and grants, as well as other bilateral and multilateral development partners. The Joint State Action Plans (JSAP) focus on climate change and nature disaster resilience projects. There are also sectoral plans, such as the energy master plan. There seems no major PPPs in FSM.
2.b.	Are the government's national and sectoral strategies or plans for public investment costed?	IDP, JSAP and energy master plan have the costs of individual projects. IDP identifies total project costs, available funding and fund gaps.
2.c.	Do sector strategies include measurable targets for the outputs and outcomes of investment projects?	Energy master plan includes measurable targets for both outputs and outcomes. IDP has outcomes but JSAP does not.
3	**Coordination between Entities: Is there effective coordination of the investment plans of central and other government entities**	
3.a.	Is capital spending by SNGs, coordinated with the central government?	The national government discusses with SNGs on capital projects during the annual budget consultation. The investment plans may not be published.

3.b.	Does the central government have a transparent, rule-based system for making capital transfers to SNGs, and for providing timely information on such transfers?	Intergovernmental capital transfers are mainly from the Compact. There is some guidance on fund allocation. The states governments are notified the expected transfers after the national congress authorizes the President to submit the Recommended National Government Compact Budget Request to the U.S. in May. It is less than six months before the start of fiscal year (October 1st).
3.c.	Are contingent liabilities arising from capital projects of SNGs, PCs, and PPPs reported to the central government?	National government and subnational governments' loan guarantees to PCs are published in respective government financial reports, but subnational governments don't report these to the national government. Although PPPs are not common in FSM, there are long term power purchase agreements which may become governments' liabilities.
4	**Project Appraisal: Are project proposals subject to systematic project appraisal?[1]**	
4.a.	Are major capital projects subject to rigorous technical, economic, and financial analysis?	Major projects are financed by the Compact and donors. They are subject to rigorous technical, economic and financial analysis and usually undergo independent external review (Army Engineer Association reviews the Compact financed projects). Although projects financed by domestic revenue may not be subject to such rigorous analysis, they are mostly small projects.
4.b.	Is there a standard methodology and central support for the appraisal of projects?	National government does not have a well-defined standard methodology for project appraisal. Appraisal is done separately by each department and state without strong central support.
4.c.	Are risks taken into account in conducting project appraisals?	There are usually risk assessments and mitigation plans in the appraisals for projects funded by the Compact Agreement and development partners.
5	**Alternative Infrastructure Financing: Is there a favorable climate for the private sector, PPPs, and PCs to finance in infrastructure?**	
5.a.	Does the regulatory framework support competition incontestable markets for economic infrastructure (e.g., power, water, telecoms, and transport)?	Although there seem no legal restrictions on private sector's participation in economic infrastructures, they are currently monopolized by public corporations (PCs).

[1] Most of FSM capital projects are funded by U.S. Compact and grants, as well as other bilateral and multilateral development partners. Those projects funded by domestic revenue are usually small. The following assessment focus more on former projects.

5.b.	Has the government published a strategy/policy for PPPs, and a legal/regulatory framework which guides the preparation, selection, and management of PPP projects?	The government of FSM has not yet developed PPP strategies, policies or legal/regulatory framework.
5.c.	Does the government oversee the investment plans of public corporations (PCs) and monitor their financial performance?	Most of the capital projects of PCs (FSM Telecom and Vital FSM Petrocorp) are financed by donors. Those projects should be reviewed and approved by the government. PCs' financial statements are submitted to the congress. But there is no consolidated report on investment plans or financial statements of PCs.
6	**Multiyear Budgeting: Does the government prepare medium-term projections of capital spending on a full cost basis?**	
6.a.	Is capital spending by ministry or sector forecasted over a multiyear horizon?	For those capital projects included in the budget, their costs of budget year and the following two years are included. However, many development partners financed projects are not included in the budget and there is no total capital expenditure identified.
6.b.	Are there multiyear ceilings on capital expenditure by ministry, sector, or program?	There are no multiyear ceilings on capital expenditures.
6.c.	Are projections of the total construction cost of major capital projects published?	The total construction costs of major capital projects are approved by the congress though may not be included in budget. Annual breakdown of these cost is not available.
7.	**Budget Comprehensiveness and Unity: To what extent is capital spending, and related recurrent spending, undertaken through the budget process?**	
7.a.	Is capital spending mostly undertaken through the budget?	PCs' projects and development partners financed projects are not in the budget book. But they are approved by the congress individually.
7.b.	Are all capital projects, regardless of financing source, shown in the budget documentation?	Local revenue and the Compact financed projects are included in budget. However, PCs' projects and developments partners financed projects are not shown in budget.
7.c.	Are capital and recurrent budgets prepared and presented together in the budget?	Capital and recurrent budgets are prepared by DoFA and presented together in the budget documents. However, there is no functional classification.
8.	**Budgeting for Investment: Are investment projects protected during budget implementation?**	
8.a.	Are total project outlays appropriated by the legislature at the time of a project's commencement?	Yes, the congress appropriates the total project outlays at the time of a project commencement.
8.b.	Are in-year transfers of appropriations (virement) from capital to current spending prevented?	According to Financial Management Regulation 2019, reprogramming in or out of any line item for investments capital of the annual budget, among others, is not permitted.

8.c.	Is the completion of ongoing projects given priority over starting new projects?	Ongoing projects had already been appropriated in the past and thus protected from the competition with new projects.
9.	**Maintenance Funding: Are routine maintenance and major improvements receiving adequate funding?**	
9.a.	Is there a standard methodology for estimating routine maintenance needs and budget funding?	There seems no standard metrology for estimating routine maintenance, though FMR requires departments/agencies to include sufficient maintenance in their budget.
9.b.	Is there a standard methodology for determining major improvements (e.g. renovations, reconstructions, enlargements) to existing assets and are they included in national and sectoral investment plans?	Major improvements are included in IDP, but there seems no standard methodology for determining major improvements.
9.c.	Can expenditures relating to routine maintenance and major improvements be identified in the budget?	Maintenance expenditures could be under the "Contract Services" or "Capital Improvement & Human Resource Development". Major improvements are under "Capital Improvement & Human Resource Development".
10.	**Project Selection: Are there institutions and procedures in place to guide project selection?**	
10.a.	Does the government undertake a central review of major project appraisals before decisions are taken to include projects in the budget?	For the infrastructure projects, the appraisals of major projects are reviewed by DTCI. If these projects are financed by the Compact, the AEA conduct independent review. The donors' projects follow donors' procedures.
10.b.	Does the government publish and adhere to standard criteria, and stipulate a required process for project selection?	Although IDP has some criteria for project selection, it is not clear if they have been rigorously followed in practice. There seems no selection criteria for projects outside IDP.
10.c.	Does the government maintain a pipeline of appraised investment projects for inclusion in the annual budget?	There is no a comprehensive pipeline of appraised projects. Projects are selected by the cabinet based on the annual budget consultation.
11.	**Procurement**	
11.a.	Is the procurement process for major capital projects open and transparent?	Major projects, which are mainly financed by the Compact and donors, are tendered in a competitive process. The tender information is open to public.
11.b.	Is there a system in place to ensure that procurement is monitored adequately?	There is no procurement database.
11.c.	Are procurement complaints review process conducted in a fair and timely manner?	There is no an independent body responsible for reviewing procurement complaints.
12.	**Availability of Funding: Is financing for capital spending made available in a timely manner?**	

12.a.	Are ministries/agencies able to plan and commit expenditure on capital projects in advance on the basis of reliable cash-flow forecasts?	The commitment ceilings are for the total project outlays.
12.b.	Is cash for project outlays released in a timely manner?	The national government does not face cash constraints, and cash for project outlays is usually released in a timely manner as long as they meet the financial management requirements. State governments may sometimes be short of cash.
12.c.	Is external (donor) funding of capital projects fully integrated into the main government bank account structure?	External funding of capital projects is largely held in separate commercial bank accounts.
13.	**Portfolio Management and Oversight: Is adequate oversight exercised over implementation of the entire public investment portfolio?**	
13.a.	Are major capital projects subject to monitoring during project implementation?	Compact management unit monitors the Compact financed projects, and CIU within the DoFA monitors the others. The PMU under the DTCI oversight the project implementation of infrastructure projects. However, in practice, it is not clear how effective these oversight function has been conducted.
13.b.	Can funds be re-allocated between investment projects during implementation?	As investment projects are appropriated at their commence and there are no cash constrains, there is no need to reallocate between investment projects during implementation.
13.c.	Does the government adjust project implementation policies and procedures by systematically conducting ex- post reviews of projects that have completed their construction phase?	Ex-post reviews are not required for both the Compact financed projects and domestic revenue financed projects.
14.	**Management of Project Implementation: Are capital projects well managed and controlled during the execution stage?**	
14.a.	Do ministries/agencies have effective project management arrangements in place?	Capital projects are mainly implemented by subnational governments. The Project Management Offices (PMOs) of subnational government are usually short of capacity and cannot manage projects effectively.
14.b.	Has the government issued rules, procedures and guidelines for project adjustments that are applied systematically across all major projects?	IDP has general policies on project adjustments. Adjustments in scope requires the approval of Infrastructure Planning and Implementation Committee (IPIC). There seems no clear guidance on fundamental review and reappraisal.
14.c.	Are ex-post audits of capital projects routinely undertaken?	Though projects are audited, it seems the audit reports are not always sufficiently scrutinized by the congress.
15.	**Monitoring of Public Assets: Is the value of assets properly accounted for and reported in financial statements?**	

15.a.	Are asset registers updated by surveys of the stocks, values, and conditions of public assets regularly?	The government conduct asset inventory once every two years. Stock and conditions are updated accordingly though values are not.
15.b.	Are nonfinancial asset values recorded in the government financial accounts?	Capital assets are recorded in the government financial accounts at historical cost if purchased or constructed. Donated assets are recorded at fair market value at the date of donation. These assets are reported on financial statements.
15.c.	Is the depreciation of fixed assets captured in the government's operating statements?	Capital assets are depreciated using the straight-line method.
A	**IT support.** Is there a comprehensive computerized information system for public investment projects to support decision making and monitoring? No. There is no IT system for investment project management.	
B	**Legal Framework.** Is there a legal and regulatory framework that supports institutional arrangements, mandates, coverage, procedures, standards and accountability for effective PIM? FMR has some general provisions and IDP has some guidance.	
C	**Staff capacity.** Does staff capacity (number of staff and/or their knowledge, skills, and experience) and clarity of roles and responsibilities support effective PIM institutions? There is significant staff capacity constraint and the governments rely on external consultants/companies.	

Appendix I. CCPA Template

1. Climate change risks and expected impacts

Impact of climate change risks on the macro-framework/long-term outlook

- How vulnerable is the economy to climate change?
- What impact could climate change have on macro-sustainability?

Table of recent and expected climatic developments

2. General preparedness for climate change

The NDC and other national resilience-building strategies

- Does the NDC present a comprehensive and costed strategy for climate change response?
- Is the climate change strategy consistent with broader development goals?

Disaster planning and other contingency plans

- How well-prepared is the country to cope with possible intensified disasters?

3. Contribution to mitigation

Statement of NDC pledge

- How does the country plan to meet its emissions reduction target?

Clean energy plans

Carbon taxation and fuel subsidy policies

- Does the current tax/subsidy system deliver appropriate carbon pricing?
- What would the tax system look like with recommended carbon pricing?

Other carbon pricing strategies

- What other carbon-pricing strategies could usefully contribute to mitigation?

Other macro-relevant policies for mitigation

- Are any further large-scale mitigation policies relevant to the country?

4. Adaptation plans

- Has the country developed an adequate strategy to adapt to climate change?

Public investment plans

Table of Costed Climate Change Projects (if costing has been done)	*US$*	*%GDP*
Total		
Mitigation		
Adaptation		

- What, if anything, is missing from the adaptation investment strategy?

Other public programs (regulation reform, zoning…)

- Adaptation isn't just a matter of investment spending; what regulations support it?

Financial sector preparedness

- How is the financial sector contributing to the climate change effort?

5. Financing strategy for mitigation and adaptation programs

Current state of financing

- Does the country have adequate financing to meet the needs of its climate change strategy?

Consistency of climate change spending and financing plans with fiscal and external debt sustainability

- Are the country's climate changes plans consistent with fiscal and external debt sustainability?

Other macro-considerations

- Would implementation of the climate change plans have any (good or bad) spillover effects to the macro-economy?

Institutional issues

6. Risk management strategy

Risk assessment procedures (e.g., fiscal risk statement)

- How well does the government assess risk?

Self-insurance (government financial buffers including contingency provisions, rainy-day funds, NIR …)

- To what extent does the government self-insure against risks?

Risk reduction and transfer (other insurance, pooling arrangements, …)

- To what extent does the economy transfer risk?

7. National processes

Integration of climate change into national planning processes

- Have climate-related projects been mainstreamed into national planning?

Adequacy of public investment management system (effectiveness of procedures for identifying, evaluating, selecting, and implementing projects)

- Are adequate public investment management systems in place, to ensure climate-related investments will be well-spent?

Adequacy of PFM systems for managing CC financing and outlays (transparent on-budget treatment of CC activities, multi-year budgeting, etc.)

- Are adequate public financial management systems in place, to protect climate-related funding?

8. Taking stock: priority needs to be met

- What resources does the country need to mobilize, to achieve its climate-change strategy?

Annexes *contain information important to one or other institution, but which have not necessarily been fully reviewed by both.*