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Report No: PAD2068

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL IDA GRANT

IN THE AMOUNT OF SDR 12 MILLION
(US$ 16.2 MILLION EQUIVALENT)

AND

RESTRUCTURING

TO THE

FEDERATED STATES OF MICRONESIA

FOR THE

PACIFIC REGIONAL CONNECTIVITY PROGRAM PHASE 2: FSM CONNECTIVITY PROJECT

May 9, 2017

Transport & ICT Global Practice
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective MARCH 31, 2017)

Currency Unit	=	
	=	US$1
US$ 1.35685	=	SDR 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

$	All dollars are in United States dollars unless otherwise indicated
ADB	Asian Development Bank
AF	Additional financing
Agreement for the AF and A&R FA	Agreement Providing for the Additional Financing and the Amendment and Restatement of the Financing Agreement
BMH	Beach manhole
BU	Branching Unit
C&MA	Construction and Maintenance Agreement
CAPEX	Capital expenditure
DA	Designated Account
DoFA	Department of Finance and Administration (FSM)
DTCI	Department of Transportation, Communication and Infrastructure (FSM)
EMC	East Micronesia Cable
EMCPSC	East Micronesia Cable Project Steering Committee
ERR	Economic rate of return
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESSIP	Environmental and Social Safeguard Instrument for the Pacific
FM	Financial management
FSM	Federated States of Micronesia
FSMTC	FSM Telecommunications Corporation
Gbps	Gigabits per second
GDP	Gross domestic product
GRS	World Bank Grievance Redress Service
ICB	International competitive bidding
ICT	Information and communication technologies
IRU	Indefeasible right of use
LIB	Limited international bidding
Mbps	Megabits per second
NPV	Net present value
O3B	Other three billion (satellite service provider)
OAE	Open Access Entity
OEEM	Office of Emergency and Environmental Management

OPEX	Operating expense
RFS	Ready for service
TA	Technical assistance
TRA	Telecommunications Regulatory Authority

Vice President:	Victoria Kwakwa
Country Director:	Michel Kerf
Senior Global Practice Director:	Jose Luis Irigoyen
Practice Manager/Manager:	Jane Lesley Treadwell
Task Team Leader:	James L Neumann

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FEDERATED STATES OF MICRONESIA
PACIFIC REGIONAL CONNECTIVITY PROGRAM PHASE 2: FSM CONNECTIVITY PROJECT
ADDITIONAL FINANCING
(P161363)

Contents

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ADDITIONAL FINANCING DATA SHEET

Micronesia, Federated States of

Pacific Regional Connectivity Program Phase 2: FSM Connectivity Project: Additional Financing
(P161363)

EAST ASIA AND PACIFIC
GTI09

Basic Information – Parent			
Parent Project ID:	P130592	Original EA Category:	B - Partial Assessment
Current Closing Date:	31-Jan-2020		

Basic Information – Additional Financing (AF)			
Project ID:	P161363	Additional Financing Type (from AUS):	Restructuring
Regional Vice President:	Victoria Kwakwa	Proposed EA Category:	
Country Director:	Michel Kerf	Expected Effectiveness Date:	31-Mar-2018
Senior Global Practice Director:	Jose Luis Irigoyen	Expected Closing Date:	30-Nov-2022
Practice Manager/Manager:	Jane Lesley Treadwell	Report No:	PAD2068
Team Leader(s):	James L. Neumann, Natasha Beschorner		

Borrower				
Organization Name	Contact	Title	Telephone	Email
Department of Finance and Administration	Sihna Lawrence	Secretary	691-320-2640	sofafsmng@mail.fm

Project Financing Data - Parent (Pacific Regional Connectivity Program 2: Palau-FSM Connectivity Project-P130592) (in USD Million)

Key Dates

Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P130592	IDA-D0040	Effective	17-Dec-2014	06-Mar-2015	11-Mar-2015	31-Jan-2020	30-Nov-2022

Disbursements

Project	Ln/Cr/TF	Status	Currenc	Original	Revised	Cancelled	Disburse	Undisbu	%

			y				d	rsed	Disburse d
P130592	IDA-D0040	Effective	XDR	32.10	32.10	0.00	6.75	25.35	21.04

Project Financing Data - Additional Financing P2: Palau-FSM Connectivity Project: AF Kosrae Connectivity (P161363)(in USD Million)					
[ ]	Loan	[ ]	Grant	[X]	IDA Grant
[ ]	Credit	[ ]	Guarantee	[ ]	Other

Total Project Cost:	16.2	Total Bank Financing:	16.2
Financing Gap:	0.00		

Financing Source – Additional Financing (AF)	**Amount**
IDA National Grant (SDR 1.2 million)	1.6
IDA Regional Grant (SDR 10.8 million)	14.6
Total (SDR 12 million)	16.2

Policy Waivers	
Does the project depart from the CAS in content or in other significant respects?	No
Explanation	
Does the project require any policy waiver(s)?	No
Explanation	

Team Composition

Bank Staff

Name	**Role**	**Title**	**Specialization**	**Unit**
James L. Neumann	Team Leader (ADM Responsible)	Senior Counsel		GTI11
Natasha Beschorner	Team Leader	Senior ICT Policy Specialist		GTI09
Zhentu Liu	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist		GGO08
Stephen Paul Hartung	Financial Management Specialist	Financial Management Specialist		GGO20
Andrea Ruiz-Esparza	Team Member	Senior Program		GTI09

		Assistant		
Annette Gaye Leith	Team Member	Senior Operations Officer		EACNQ
Carlo Maria Rossotto	Peer Reviewer	Lead ICT Policy Specialist		GTI11
Carmenchu D. Austriaco	Team Member	Finance Officer		WFALN
Doyle Gallegos	Peer Reviewer	Lead ICT Policy Specialist		GTI11
Duangrat Laohapakakul	Counsel	Senior Counsel		LEGES
Loren Jayne Atkins	Counsel	Associate Counsel		LEGES
Lorraine D. James	Team Member	Country Program Assistant		EACNQ
Maria Isabel A. S. Neto	Peer Reviewer	Senior Energy Specialist		GEE09
Natasha Caroline Allan	Team Member	Team Assistant		EACNF
Nicholas John Valentine	Team Member	Consultant		GSU02
Penelope Ruth Ferguson	Safeguards Specialist	Consultant		GENDR
Ross James Butler	Safeguards Specialist	Senior Social Development Specialist		GSU02
Sharon Louise Riley	Team Member	Consultant		GEE09
Zaid Safdar	Peer Reviewer	Senior Operations Officer		GTI11
Zhuo Yu	Team Member	Finance Officer		WFALN

Extended Team

Name	Title	Location

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Palau		Republic of Palau			
Micronesia, Federated States of		Weno Town			
Micronesia, Federated		State of Yap			

States of					
Micronesia, Federated States of		Tonachau			
Micronesia, Federated States of		State of Pohnpei			
Micronesia, Federated States of		State of Kosrae			
Micronesia, Federated States of		State of Chuuk			
Guam		Guam			
Micronesia, Federated States of		Colonia			

Institutional Data
Parent (Pacific Regional Connectivity Program 2:Palau-FSM Connectivity Project-P130592)
Practice Area (Lead)
Transport & ICT
Contributing Practice Areas
Additional Financing P2: Palau-FSM Connectivity Project: AF Kosrae Connectivity (P161363)
Practice Area (Lead)
Transport & ICT
Contributing Practice Areas

Consultants (Will be disclosed in the Monthly Operational Summary)
Consultants Required? Consulting services to be determined

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PROJECT PAPER

I. INTRODUCTION

1. This Project Paper seeks the approval of the Executive Directors to provide an additional grant in an amount of SDR12.0 million ($16.2 million equivalent) to the Federated States of Micronesia for the Pacific Regional Connectivity Program Phase 2: FSM Connectivity Project (P130592) (Grant Number D004-FM), as requested by the Government of the Federated States of Micronesia (FSM).

2. In addition, this Project Paper seeks the approval of the Executive Directors of a Level 1 restructuring comprising of: (a) revision of the Project Development Objective (PDO); (b) modification of activities under Component 1C (East Micronesia Cable System and terrestrial works) of the Project and scaling up of activities under Component 2 (Technical Assistance) and Component 3 (Project Management) of the Project; (c) revision of the implementation covenants of the Project to reflect the proposed restructuring and additional financing, and the recent development of the FSM's ICT sector; (d) deletion of Category 1(b) of the withdrawal table in Section IV.A.2 of Schedule 2 to the Financing Agreement and reallocation of funds under such Category, which was never disbursed, to Category 1(a); (e) revision of the results framework to measure the outcomes associated with the revised PDO, revised scope of activities and the extended Project duration; (f) revision to apply the new Procurement Regulations to the procurement activities required under Component 1C, Component 2 and Component 3 of the Project; (g) revision of the name of the Project from "Pacific Regional Connectivity Program Phase 2: Palau-FSM Connectivity Project" to "Pacific Regional Connectivity Program Phase 2: FSM Connectivity Project," and (h) extension of the closing date of the original IDA grant (IDA Grant No. D004-FM) from January 31, 2020 to November 30, 2022.

3. The proposed additional grant would help finance the costs associated with the restructuring and scaling up of the project as follows: (a) modification of Component 1C of the Project to finance the costs to the FSM of its share of the proposed East Micronesia Cable (EMC) system that will connect Kiribati (Tarawa), Nauru and FSM (Kosrae) to Guam via the existing HANTRU-1 cable system and landing point in FSM (Pohnpei), including ancillary works, equipment and facilities; (b) scaling up of Component 2 of the Project to provide additional technical assistance to FSM for Project advisory services; and (c) scaling up of Component 3 of the Project to support additional Project management and administrative support services to strengthen the capacity of the Government of FSM to deliver these new and additional activities.

II. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING IN THE AMOUNT OF SDR12.0 MILLION

4. The existing Project is financed through an IDA grant (D004-FM) in the amount of $47.5 million, which was approved in FY15 and became effective as of March 11, 2015. The Project is the FSM portion of a series of IDA interventions in the Pacific Region which aim to reduce the cost and increase the availability of Information and Communication Technology (ICT) services needed to support social and economic development for some of IDA's most remote clients. The Project's development objective is to reduce the cost, and increase the availability of, information and communication technology services needed to support social and economic development in the Recipient's country. It finances new international connectivity infrastructure ($44.5 million) in the form of submarine fiber optic cable connectivity for Yap (subcomponent 1A) and Chuuk (subcomponent 1B), and a one-time partial purchase

of international bandwidth for Kosrae (subcomponent 1C). The Project was prepared with the Asian Development Bank (ADB) which provided cofinancing to Palau in an amount of $25 million for the costs of connecting Palau to Guam in collaboration with FSM (Yap). The Project also provides support for technical assistance and project management. Project components and overall implementation ratings are summarized in Table 1.

Table 1. Existing Project Components and Implementation Ratings

Component 1: International connectivity infrastructure ($44.5M) *1A*: Palau-Yap-Guam Cable System *1B*: Chuuk-Pohnpei Cable System *1C*: Kosrae Connectivity	Moderately Satisfactory
Component 2: Technical Assistance ($2.25M) *2A*: Design and ownership structure of existing and new infrastructure *2B:* Reform and development of FSMTC *2C:* Sector regulation and regulatory capacity development	Moderately Satisfactory
Component 3: Project Management ($0.75M)	Moderately Satisfactory
Overall	Moderately Satisfactory

5. The Project was restructured in early 2016 in order to allow FSM to buy capacity on the South East Asia-United States (SEA-US) West cable system being installed between Indonesia, Philippines, and Guam—in effect, connection to a "cable of opportunity" which avoided the need for FSM and Palau to construct a standalone cable to Guam. The restructuring specifically revised the language in Part 1(a) of the Financing Agreement to provide financing for the construction of a new cable system and/or the procurement of capacity rights to connect Yap to the global telecommunications network, provided for a one-time lifting of the withdrawal conditions set forth in Section IV.B.1.(b) of Schedule 2 to the Financing Agreement to allow for one-time payments under Category 1(a) in an amount not to exceed $5.2 million for Part 1(a) and $4.2 million for Part 1(b), and revised those provisions of the Financing Agreement which prescribed the joint procurement by FSM and Palau of cable system assets financed by IDA and ADB.

6. At this point in the Project's five-year implementation period, as at the beginning of May 2017, $28.5 million (60 percent) of funds have been committed and $9.2 million (21 percent) have been disbursed.

7. Two contracts for connectivity infrastructure and capacity for Yap have been signed and entered into force: (1) for a long-term Indefeasible Right of Use (IRU) for capacity on the SEA-US West Cable System until such time as the SEA-US West Subsystem is decommissioned; and (2) for the supply and installation of a cable spur connecting Yap to the SEA-US West Subsystem. An amendment to the contract for the supply and installation of the cable spur for Yap has also been executed to provide for the supply of a cable to connect Chuuk to Pohnpei.

8. Specialist legal, technical and financial advisers have been retained under Component 2 and have completed an evaluation of options for promoting private sector investment pursuant to the FSM Telecommunications Act, which in 2014 ended the right of the FSM Telecommunications Corporation

(FSMTC) to be the sole provider of telecommunications services in FSM. The final report was delivered to Government in December 2016 and set out a detailed examination of options for restructuring FSMTC, licensing new entrants and establishing the Open Access Entity (OAE), which is provided for under the Telecommunications Act 2014. It also recommended that the OAE own and operate core ICT infrastructure in FSM on a wholesale-only basis to reduce access costs and improve incentives for effective competition in downstream markets. Specialist advisers have also been retained under Component 3 to support project management.

9. There has been a delay in finalizing the creation of the OAE and implementing the associated sector restructuring steps because of concerns from FSMTC regarding the impact of competition on its operations and its ability to meet its obligations to third parties. During the first quarter of 2017, Government completed further consultations with stakeholders and proposes seeking an appropriation from Congress to meet the initial capital requirements for the establishment of the OAE. Work has also progressed to finalize the approach for establishing the TRA, including the commencement of the recruitment process for an international adviser to assist with setting up this new agency. These reforms are necessary in order to satisfy Withdrawal Conditions and implementation covenants prescribed under the original Project. Prompt implementation by Government of these ICT sector reforms, as provided for under the Telecommunications Act 2014, is essential for the success of the Project. Ongoing implementation activities for the Yap and Chuuk submarine cable systems also depend on cooperation from FSMTC (e.g., for colocation agreements, interconnection arrangements, land and facilities access) and a deed granting the OAE rights of access to FSMTC facilities is being prepared.

10. The lead implementing agency for the Project is the Division of Communications within the Department of Transportation, Communication & Infrastructure (DTCI). DTCI has been responsible for project preparation and implementation since inception and is therefore thoroughly familiar with all aspects of the Project. Provided Congressional approval is obtained during the next session, work will begin to establish the independent Telecommunications Regulatory Authority (TRA) and the OAE. The OAE will take over as implementing entity for Component 1 and the TRA will take over as implementing entity for subcomponent 2C. The AF does not propose to make any changes to these implementation arrangements, and has included, among others, the establishment and operationalization of the OAE and the TRA as conditions of effectiveness of the AF. Additional institutional arrangements with respect to the activities to be financed under the proposed AF are provided in the Appraisal Summary, Section IV, under implementation and institutional arrangements. Overall, the project implementation team within DTCI is staffed and operational, and has accumulated experience in the procurement of major submarine cable civil works and sector reform. The Project has maintained a Moderately Satisfactory rating for both Progress toward the Development Objective and Implementation Progress in all ISRs, including in the most recent ISR from October 2016.

11. Under the Project, as originally designed, enhanced satellite connectivity was identified as the preferred solution for the state of Kosrae due to the high costs of a standalone cable serving only Kosrae. However, the preparation of the Kiribati Connectivity Project (P159632) has created a new opportunity for broader regional cooperation and greater economies of scale. A cable is considered a more appropriate long-term solution to meet the estimated bandwidth demand for all FSM states and to promote inter-state equity. The EMC system would substantially reduce the costs of connecting Kosrae to a fiber optic cable, improve resilience and reliability, and lead to significantly improved development impacts through lower costs for international connectivity and improved service quality. It will be financed by restructuring and increasing the existing SDR2.4 million of funds available under

Component 1C by providing an additional SDR9.2 million for a total cost of SDR11.6 million. Additional financing will also be provided to increase the level of financing under Component 2 (technical assistance) by an additional SDR1.3 million and under Component 3 (Project management and administration) by an additional SDR1.5 million for total costs of SDR2.8 million and SDR2.2 million respectively. The AF will use National and Regional funding windows under IDA17 as set out in Table 2.

Table 2. Additional Financing Calculations (IDA) (in SDR million)

	Additional Financing Cost			Original Project Cost	Total Cost
Component	**Total**	**National**	**Regional**		
Component 1: International Connectivity Infrastructure					
1A. Palau-Yap-Guam	0	0	0	27.7	**27.7**
1B. Chuuk-Pohnpei					
1C: Kosrae Connectivity	9.2	0.3	8.9	2.4	**11.6**
Component 2					
Technical Assistance	1.3	0.5	0.8	1.5	**2.8**
Component 3					
Project Management	1.5	0.4	1.1	0.5	**2.0**
Total	**12.0**	**1.2**	**10.8**	**32.1**	**44.1**

12. The full project costs of the EMC system, which includes the financing costs of Nauru and Kiribati, are set out in Table 3.

Table 3. Total Cost of the Project (in $ million)

Component	Kiribati	Nauru	FSM	Total
	IDA P159632	ADB 50348-001	IDA P161363 & IDA P130592	
Submarine Cable system (EMC)	17.0	15.0	15.66	47.66
Technical Assistance	2.0	0	1.76	3.76
Project Management & Administration	1.0	0	2.03	3.03
Total	**20.0**	**15.0**	**19.45**	**54.45**

13. FSM has been instrumental in leading the technical design and the regional partnership of Kiribati, Nauru and FSM in order to develop a viable solution for connecting Kosrae to a submarine fiber optic cable and end its reliance solely on satellite. The proposed AF is consistent with the current Country Partnership Framework for FSM which emphasizes the importance of improved connectivity and the FSM Government's National Development Strategy which prioritizes connecting all four states to fiber optic cable system(s) to ensure equality of access. Without the AF and deployment of the EMC system for Kosrae, only three states (of the four FSM states) would be connected to the submarine fiber

optic cable system (Yap, Pohnpei, Chuuk), while the fourth state (Kosrae) would continue to depend solely on satellite, further deepening the "digital divide" between Kosrae and the rest of FSM.

14. The deployment of the EMC system would lead to both financial and economic improved benefits for Kosrae, FSM and the whole region. From a financial point of view, the EMC system would enable Kosrae to shift from an increasingly expensive satellite connection to a more reliable, more effective and more sustainable and profitable fiber optic connection. The expected net economic impact on GDP for Kosrae alone as well as for the three countries combined is positive and significantly higher in both cases with the EMC project (despite its higher initial investment) than the lower-initial-investment satellite "O3B option" which provides a negative net economic impact for Kosrae. The optic fiber connection will lower the bandwidth prices and thus entail a better coverage, giving momentum to the network effect and eventually entail a rise in bandwidth consumption.

15. The EMC project will support improved national cohesion by bridging FSM's digital gap with Kosrae, since all four states of FSM will be connected through submarine optic fiber cables. It will also provide new opportunities for broader regional cooperation and international integration. Notwithstanding particularly challenging conditions (low population, remoteness, numerous actors), the EMC project's financial prospects are good while providing a safer and better service with higher valued consequences: social welfare, information for business, education and public services, disaster response and lower risk of connection failure. The EMC project would guarantee conditions for a long-term, steadier development of Kosrae and FSM, while encompassing a wider geographic area including an additional 18,000 beneficiaries across the project areas in Kiribati, Nauru, and FSM through the inclusion of Nauru and FSM in a regional cable project with Kiribati.

III. PROPOSED CHANGES

Summary of Proposed Changes

The Project Paper seeks the approval of the Executive Directors for a Level 1 restructuring and an Additional Financing grant in an amount of SDR12.0 million to modify and scale up activities of the Pacific Regional Connectivity Program Phase 2: Palau-FSM Connectivity Project (IDA Grant No. D004-FM). Specifically, the detailed proposed changes will include:

(a) Revise the Project Development Objective (PDO) from "The development objective of the Project is to reduce the cost and increase the availability of information and communication technology services needed to support social and economic development in the Recipient's territory" to "The development objective of the Project is to reduce the cost and increase the availability of information and communication technology services in the Recipient's territory."

(b) Modify the proposed activities in Component 1C, which originally provided SDR2.4 million for improved satellite connectivity for Kosrae, to provide financing in the amount of SDR11.6 million to: (i) support the costs to the Recipient of its share of the proposed submarine cable system that will connect Kiribati (Tarawa), Nauru and FSM (Kosrae) to Guam via the existing HANTRU-1 cable system and landing point in FSM (Pohnpei) and/or the procurement of capacity rights to connect Kosrae to the global communications network; and (ii) support the construction of the cable landing station, beach manhole, ancillary facilities, ducts and other equipment in connection with such new EMC cable system, including acquisition and installation of onshore equipment, carrying out of terrestrial works and upgrading of facilities. The total amount of additional

financing required for this modification is SDR9.2 million.

(c) Scale up activities under Component 2, which originally provided financing of SDR1.5 million, to provide financing in the amount of SDR2.8 million to strengthen the capacity of the Recipient to achieve the Project Development Objectives. Activities include technical assistance for ICT sector development, including: (i) the design of the ownership structure of existing and new connectivity infrastructure; (ii) the construction, ownership and management of the EMC, including the drafting and negotiation of appropriate contractual arrangements thereof; (iii) the promotion and introduction of private sector participation in the ICT sector; (iv) mechanisms to expand ICT access throughout the Recipient's territory, including climate change resilience and disaster risk management arrangements thereof, improve domestic connectivity and close the last mile for delivering high-speed data services to people, households, businesses and public institutions throughout FSM, and to reduce the digital divide for remote and vulnerable communities especially on the Outer Islands; and (v) the preparation of policy and legislative instruments to support the development of the ICT sector, including electronic transactions to facilitate citizen access and use of broadband services, cybersecurity, data protection and confidentiality; (b) reform and capacity development of FSMTC and capacity building for the Open Access Entity; and (c) developing and strengthening regulation of the ICT sector over the long term, including regulatory capacity development. The total amount of additional financing required for this scale up is SDR1.3 million.

(d) Scale up activities under Part 3, which originally provided financing of SDR0.5 million, to provide financing in the amount of SDR2.0 million for technical assistance, goods, and operating costs to strengthen the capacity of the Recipient to implement the Project, including for Project management and coordination, financial and contract management, procurement, auditing, general Project reporting, administrative costs associated with Project implementation, communications, outreach, monitoring and evaluation, gender, and environmental and social safeguards management. The total amount of additional financing required for this scale up is SDR1.5 million.

(e) Revise the implementation arrangement covenants of the Project to reflect the proposed restructuring, additional financing and recent development of the Recipient's ICT sector.

(f) Revise the results framework to measure the outcomes associated with the revised PDO and scope of activities and the extended Project duration.

(g) Delete Category 1(b) of the withdrawal table in Section IV.A.2 of Schedule 2 to the Financing Agreement and reallocate funds in the amount of SDR2,400,000 under such Category, which was never disbursed, to Category 1(a). Financing for Kosrae is no longer subject to category-specific disbursement conditions and accordingly disbursements for Part 1(a) do not need to be divided into separate categories.

(h) Revise those provisions of the Financing Agreement to apply the new Procurement Regulations for IPF Borrowers which became effective on July 1, 2016, to procurement activities under Component 1C, Component 2 and Component 3 of the Project. Procurement activities under Component 1A and 1B will continue to be carried out in accordance with the old Procurement and Consultants Guidelines.

(i) Revise the name of the Project from "Pacific Regional Connectivity Program Phase 2: Palau-FSM Connectivity Project" to "Pacific Regional Connectivity Program Phase 2: FSM Connectivity Project". This change is necessary for consistency with the expanded regional scope of the Project which will also include Kiribati and Nauru under the EMC system.

(j) Revise Section IV.B.2 of Schedule 2 to the Financing Agreement, to provide for an extension of the closing date of the original Project from January 31, 2020 to November 30, 2022, to coincide

with the anticipated closing date of the proposed Kiribati Connectivity Project (P159632), which will co-finance the EMC system. This extension will allow time for implementation of the additional activities provided for under this AF, including installation of the new EMC system by Kiribati, Nauru and FSM.

Change in Implementing Agency	Yes [ ] No [X]
Change in Project's Development Objectives	Yes [X] No [ ]
Change in Results Framework	Yes [X] No [ ]
Change in Safeguard Policies Triggered	Yes [ ] No [X]
Change of EA category	Yes [ ] No [X]
Other Changes to Safeguards	Yes [ ] No [X]
Change in Legal Covenants	Yes [X] No [ ]
Change in Loan Closing Date(s)	Yes [X] No [ ]
Cancellations Proposed	Yes [ ] No [X]
Change in Disbursement Arrangements	Yes [ ] No [X]
Reallocation between Disbursement Categories	Yes [X] No [ ]
Change in Disbursement Estimates	Yes [X] No [ ]
Change to Components and Cost	Yes [X] No [ ]
Change in Institutional Arrangements	Yes [ ] No [X]
Change in Financial Management	Yes [ ] No [X]
Change in Procurement	Yes [X] No [ ]
Change in Implementation Schedule	Yes [X] No [ ]
Other Change(s)	Yes [ ] No [X]

Development Objective/Results

Project's Development Objectives

Original PDO

The development objective of the Project is to reduce the cost and increase the availability of information and communication technology services needed to support social and economic development in the Recipient's territory.

Change in Project's Development Objectives

Explanation:

The phrase "needed to support social and economic development" is removed from the PDO because it is beyond the scope of activities directly supported by the Project.

Proposed New PDO - Additional Financing (AF)

The development objective of the Project is to reduce the cost and increase the availability of information and communication technology services in the Recipient's territory.

Change in Results Framework

Explanation:

Revise the results framework to measure the outcomes associated with the revised PDO and scope of activities and the extended Project duration. This includes: (a) inserting a new intermediate indicator to measure the entry into force of construction and maintenance agreement by the parties to the EMC system; (b) revisions to the indicator pertaining to the length of fiber optic cable built to reflect the addition of the 2,070 km repeatered main trunk cable from Tarawa to the existing Pohnpei Spur on the HANTRU-1 cable at Pohnpei, plus the spur cables to new landing points in Nauru and Kosrae; and (c) extending the End Target dates to November 30, 2022, to coincide with the extended closing date for the Project.

Compliance

Covenants - Additional Financing (P2: Palau-FSM Connectivity Project: AF Kosrae Connectivity - P161363)

Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
IDAT	Section I.B.5 of Schedule 2 to the Agreement for the AF and A&R FA	The Recipient shall cause the FSM Open Access Entity to implement Part 1(c)(i) of the Project in accordance with the Construction and Maintenance Agreement, in form and substance satisfactory to the Association.		☐		New

Covenants - Parent (Pacific Regional Connectivity Program 2:Palau-FSM Connectivity Project - P130592)

Ln/Cr/TF	Finance Agreement Reference	Description of Covenants	Date Due	Status	Recurrent	Frequency	Action
IDA-D0040		Finance Agreement :Competitive Framework-FSM (1)		Not yet due	☐		Revised

		| Description :Ensure implementation of the Telecommunications Act of 2014, in particular those aspects which support a competitive ICT sector, including licensing, wholesale access, guarantees around open access to international communications infrastructure & the creation & operationalization of an independent regulatory authority to oversee market activities--Financing Agreement (FA) Sch 2.I.D. |					

		Frequency :CONTINUOUS					
IDA-D0040	Section I.D of Schedule 2 to the Agreement for the AF and A&R FA	The Recipient shall, and shall ensure that the Office of the Regulator, throughout the Project implementation period, implement the Telecommunications Act to support a competitive ICT sector and promote the long term interests of end users of ICT services.		Not yet due	☒	CONTINUOUS	Proposed
IDA-D0040		Finance Agreement :Competitive Framework-FSM (2) | Description :For FSM Open Access Entity: appoint		Not yet due	☐		Revised

		directors, mgmt., staff; adopt by-laws & governance arrangements, business & marketing plan, organizational plan; put in place financing arrangements ensuring adequate capitalization & operational financing including to address contingencies-FA Sch 2, I, B, 2. | Frequency :CONTINUOUS					
IDA-D0040	Section I.B.2 of Schedule 2 to the Agreement for the AF and A&R FA	Recipient to ensure that the OAE is maintained with a mandate, composition and resources satisfactory to IDA, to be responsible		Not yet due	☒	CONTINUOUS	Proposed

		for Part 1 of the Project, including, to maintain: directors, mgmt., staff; by-laws & governance arrangements, business & marketing plan, organizational plan; and financing arrangements ensuring adequate capitalization & operational financing incl to address contingencies					
IDA-D0040		Finance Agreement :Competitive Framework-FSM (3) | Description :Ensure that FSM Open Access Entity &		Not yet due	☐		Revised

		FSMTC shall not compete against each other in the supply of connectivity services utilizing satellite or submarine fiber optic cable(s); where FSMTC owns or controls capacity rights on HANTRU 1 between Pohnpei and Guam, it shall supply such services to FSM Open Accesss Entity free of charge, including system access, on terms as may be demanded- Sch 2, I, B, 4(h) | Frequency :CONTINUOUS					
IDA-D0040	Section I.B.4(e) of Schedule 2	Recipient to ensure that		Not yet due	☒	CONTINUOUS	Proposed

	to the Agreement for the AF and A&R FA	satellite and submarine fiber optic infrastructure for supply of ICT services under the direct or indirect ownership or control of government, whether by FSMTC or the OAE or otherwise, is used in an economically efficient manner, including, but not limited to, put in place and maintain sufficient arrangements to ensure that OAE and FSMTC shall not compete.					
IDA-D0040		Finance Agreement :Project Coordinator |		Expected soon	☐		Revised

		Description :The Recipient shall appoint, by not later than three months after the Effective Date, and thereafter maintain throughout the period of Project implementation, a Project coordinator within DTCI, with qualifications and experience and under terms of reference acceptable to the Association, to be responsible for supporting DTCI, DoFA and the Project Implementing Entities- FA Sch 2.I.A.3. | Frequency :CONTIN					

		UOUS					
IDA-D0040	Section I.A.2 of Schedule 2 to the Agreement for the AF and A&R FA	Recipient shall appoint, by not later than June 11, 2015, and thereafter maintain throughout the period of Project implementation, a Project coordinator within DTCI, with qualifications and experience and under terms of reference acceptable to the Association, tobe responsible for supporting DTCI, DoFA and the Project Implementing Entities.		Partially complied with	☐		Proposed
IDA-D0040		Finance Agreement :Financial management specialist |		Expected soon	☐		Revised

		Description :The Recipient shall, by not later than three months after the Effective Date, appoint or assign, and thereafter maintain, throughout the period of Project implementation, a financial management specialist within DoFA, with qualifications and experience and under terms of reference acceptable to the Association, to support DTCI with financial management and reporting for the Project-FA Sch 2.I.A.4. |					

		Frequency :CONTINUOUS					
IDA-D0040	Section I.A.3 of Schedule 2 to the Agreement for the AF and A&R FA	Recipient shall, by not later than June 11, 2015, appoint or assign, and thereafter maintain, throughout the period of Project implementation, a financial management specialist within DoFA, with qualifications and experience and under terms of reference acceptable to the Association, to support DTCI with financial management and reporting for the Project		Partially complied with	☐		Proposed
IDA-D0040	Section I.A.1 of Schedule 2	The Recipient shall		Partially complied with	☒	CONTINUOUS	Revised

	to the Agreement for the AF and A&R FA	maintain, throughout the period of Project implementation, a Telecommunications Broadband Task Force, comprised of representatives from DTCI, the Department of Finance and Administration, the DoJ, the Dept. of Resources and Development, the Dept. of Foreign Affairs, FSMTC and the OAE, to serve as an overall steering committee for the Project and provide policy oversight.					
IDA-D0040	Section I.B.4(a) of Schedule 2	The Recipient shall		Not yet due	☒	CONTINUOUS	Revised

	to the Agreement for the AF and A&R FA	transfer, all responsibilities, rights and obligations associated with the implementation of Part 1 of the Project, including the rights and titles to or related to the assets under Part 1 of the Project financed or to be financed under the Agreement, from DOFA and DTCI to the FSM Open Access Entity.					
IDA-D0040	Section I.B.4(f) of Schedule 2 to the Agreement for the AF and A&R FA	Where FSMTC owns or controls capacity rights on HANTRU 1 Cable System between Pohnpei and Guam, the Recipient		Not yet due	☒	CONTINUOUS	Revised

		shall ensure that FSMTC offers to supply capacity services to the FSM Open Access Entity free of charge, including system access, on terms as may be demanded by the FSM Open Access Entity in order to link (i) Chuuk and (ii) the EMC system, including Kosrae, to Pohnpei and to Guam.					
IDA-D0040	Section I.B.4(h) of Schedule 2 to the Agreement for the AF and A&R FA	The Recipient shall cause the FSM Open Access Entity to establish and maintain operator facing facilities		Not yet due	☒	CONTINUOUS	New

		required for interconnection and prepare a reference interconnection offer or other arrangement(s) satisfactory to the Association, including facilities access, to ensure capacity and other facilities are made available to operators on a transparent, cost-based and non-discriminatory basis.					
IDA-D0040	Section I.B.4(g) of Schedule 2 to the Agreement for the AF and A&R FA	The Recipient shall take all measures necessary to maintain arrangements to ensure that: (i) the cable landing		Not yet due	☒	CONTINUOUS	New

		station, beach manhole and ancillary equipment and facilities in Pohnpei is maintained and operated; and (ii) the HANTRU 1 Cable System and the spur to Pohnpei, is maintained and operated to enable the intended operation of the Chuuk and the EMC systems and ensure connectivity to Guam.					
IDA-D0040	Section I.C.1 of Schedule 2 to the Agreement for the AF and A&R FA	The Recipient shall ensure that the Regulator is maintained with a mandate, composition and resources to be		Not yet due	☒	CONTINUOUS	Revised

		responsible for the implementation of Part 2(c) of the Project, including to maintain: (i) a CEO and such other members as required by the Telecommunications Act, technical and managerial personnel for the Office of the Regulator; and (ii) all arrangements to ensure operational functioning.					
IDA-D0040	Section I.G of Schedule 2 of the Agreement for the AF and A&R FA	The Recipient shall, and shall cause the Project Implementing Entities to, adopt the Project Operations Manual by no later		Not yet due	☒	CONTINUOUS	New

		than May 31, 2018 (or such other date the Association confirm in writing to the Recipient), and ensure that the Project is implemented in accordance with the provisions of the Project Operation Manual.					

Conditions

Source of Fund	Name	Type
IDAT	Section 2.01 (a) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The execution and delivery of the Agreement Providing for the Additional Financing and the Amendment and Restatement of the Financing Agreement on behalf of the Recipient have been duly authorized or ratified by all necessary governmental and corporate actions; and a legal opinion attesting such matter has been received by the Association.

Source of Fund	Name	Type
IDAT	Section 2.01 (b) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The FSM Open Access Entity has been established and made operational; and a legal opinion attesting that the establishment of the FSM Open Access Entity complies with the Recipient's laws has been received by the Association.

Source of Fund	Name	Type
IDAT	Section 2.01 (c) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The FSM Open Access Entity Project Agreement has been entered into; and a legal opinion attesting such matter has been received by the Association.

Source of Fund	Name	Type
IDAT	Section 2.01 (d) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The FSM Open Access Entity Subsidiary Agreement has been entered into; and a legal opinion attesting such matter has been received by the Association.

Source of Fund	Name	Type
IDAT	Section 2.01 (e) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The FSM OAE has obtained all licenses, rights, permits and approvals required for the operation and supply of international and domestic wholesale communication services in the Project areas; and a legal opinion attesting that the FSM OAE has obtained all such required licenses, rights, permits and approvals in accordance with the Recipient's laws has been received by the Association.

Source of Fund	Name	Type
IDAT	Section 2.01 (f) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The FSM Open Access Entity has entered into, or otherwise acquired rights under, one or more Landing Party Agreements in relation to Part 1 of the Project; and a legal opinion attesting such matter has been received by the Association.

Source Of Fund	Name	Type
IDAT	Section 2.01 (g) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The FSM OAE has entered into an agreement with the FSMTC granting indefeasible rights of use in dark fiber, active wave circuits landing station spaces and other matters required for the operation and supply of international and domestic wholesale communication services in the Project areas, in form and substance satisfactory to the Association; and a legal opinion has

been received by the Bank.

Source Of Fund	Name	Type
IDAT	Section 2.01 (h) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The FSM Open Access Entity has entered into an agreement to secure adequate capacity for the cable serving Yap, Chuuk and the EMC, including Kosrae, to connect to the global telecommunications network; and a legal opinion attesting such matter has been received by the Association.

Source Of Fund	Name	Type
IDAT	Section 2.01 (i) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The OAE has entered into the C&MA, satisfactory to the Association, with Kiribati and Nauru (directly or through their respective designated cable operator) and the C&MA has become effective (except for the effectiveness of this Agreement, if it is a condition of effectiveness in the C&MA); and a legal opinion has been received by the Bank.

Source Of Fund	Name	Type
IDAT	Section 2.01 (j) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The legal agreements for Kiribati IDA Financing have become effective and all conditions to the disbursement of funds allocated to the construction of the EMC under such legal agreements have been satisfied (except for the condition in Section 2.01 of the Agreement Providing for the AF, if it is a condition of effectiveness or disbursement in the financing agreement for Kiribati IDA Financing).

Source of Fund	Name	Type
IDAT	Section 2.01 (k) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The Cofinancing Agreement has become effective and all conditions to the disbursement of funds allocated to the construction of the EMC under the Cofinancing Agreement have been satisfied (except for the condition in Section 2.01 of the Agreement Providing for the AF, if it is a condition of effectiveness or disbursement in the Cofinancing Agreement).

Source of Fund	Name	Type

IDAT	Section 2.01 (l) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The Association and the ADB have entered into a memorandum of understanding setting forth the joint arrangements implementation of Part 1(c)(i) of the Project.

Source of Fund	Name	Type
IDAT	Section 2.01 (m) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

All other implementation arrangements required for Part 1 of the Project, satisfactory to the Association and as agreed with the Recipient, have been completed.

Source of Fund	Name	Type
IDAT	Section 2.01 (n) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The Office of the Regulator has been established (in accordance with the Telecommunications Act) and made operational.

Source of Fund	Name	Type
IDAT	Section 2.01 (o) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The Office of the Regulator Project Agreement has been entered into; and a legal opinion attesting such matter has been received by the Association.

Source of Fund	Name	Type
IDAT	Section 2.01 (p) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The Office of the Regulator Subsidiary Agreement has been entered into; and a legal opinion attesting such matter has been received by the Association.

Source of Fund	Name	Type
IDAT	Section 2.01 (q) of the Agreement for the AF and A&R FA	Effectiveness

Description of Condition

The Regulator has, pursuant to the Telecommunications Act, made: (a) licensing rules for communications networks and services; (b) spectrum licensing rules; and (c) interconnection and access rules, including wholesale prices and pricing principles to guarantee open and nondiscriminatory access to bottleneck facilities and the provision of wholesale services, satisfactory to the Bank.

Risk	
Risk Category	**Rating (H, S, M, L)**
1. Political and Governance	Substantial
2. Macroeconomic	Low
3. Sector Strategies and Policies	High
4. Technical Design of Project or Program	High
5. Institutional Capacity for Implementation and Sustainability	High
6. Fiduciary	High
7. Environment and Social	Low
8. Stakeholders	High
9. Other	
OVERALL	Substantial

Finance

Loan Closing Date - Additional Financing (P2: Palau-FSM Connectivity Project: AF Kosrae Connectivity - P161363)

Source of Funds	Proposed Additional Financing Loan Closing Date
International Development Association (IDA)	30-Nov-2022

Loan Closing Date(s) - Parent (Pacific Regional Connectivity Program 2:Palau-FSM Connectivity Project - P130592)

Explanation:

Closing date extended from 31 January 2020 to 30 November 2022. This change is necessary to ensure that the closing date of this project is coterminous with the closing date of the pipeline Pacific Regional Connectivity Program Phase 4: KI: Connectivity Project (P159632), which will co-finance the EMC system.

Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)
IDA-D0040	Effective	31-Jan-2020	31-Jan-2020	30-Nov-2022	

Change in Disbursement Estimates **(including all sources of Financing)**

Explanation:

The estimated disbursements will increase by SDR12.0 million to reflect the amount of the additional financing.

Expected Disbursements (in SDR Million) (including all Sources of Financing)

Fiscal Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Annual	0.00	4.50	18.50	7.00	11.00	1.00	1.00	1.00	0.10	0.00
Cumulative	0.00	4.50	23.00	30.00	41.00	42.00	43.00	44.00	44.10	0.00

Allocations - Additional Financing (P2: Palau-FSM Connectivity Project: AF Kosrae Connectivity - P161363)

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement %(Type Total)
			Proposed	Proposed
IDAT	USD	(1)(a) Goods, works non-consulting services, and consultants' services for Part 1 of the Project	12.42	100.00
IDAT	USD	(2) Consultants' services and Training for Part 2(a) and (b) of the Project	0.81	100.00
IDAT	USD	(3) Goods, Consultants Services and Training for Part 2(c) of the Project	0.95	100.00
IDAT	USD	(4) Consultants' services, Training, goods and Operating Costs for Part 3 of the Project	2.03	100.00
		Total:	16.21	
IDRT	USD		0.00	0.00
		Total:	0.00	

Reallocation between Disbursement Categories

Explanation:

Delete Category 1(b) of the withdrawal table in Section IV.A.2 of Schedule 2 to the Financing Agreement and reallocate funds in the amount of SDR2,400,000 under such Category, which was never disbursed, to Category 1(a). Financing for Kosrae is no longer subject to category-specific disbursement conditions and accordingly disbursements for Part 1(a) do not need to be divided into separate categories.

Ln/Cr/TF	Currency	Current Category of Expenditure	Allocation		Disbursement %(Type Total)	
			Current	Proposed	Current	Proposed
IDA-D0040	XDR	Go,Wo,NCS,CS, P1(a)&(b)	27,700,000.00	39,300,000.00	100.00	100.00
IDA-D0040		Go,Wo,NCS,CS, P1(c)	2,400,000.00	0.00	100.00	100.00
IDA-D0040		CS & Training, P2(a)&(b)	700,000.00	1,300,000.00	100.00	100.00
IDA-D0040		Go,CS,Training, P2(c)	800,000.00	1,500,000.00	100.00	100.00
IDA-D0040		CS,Go,OC, P3	500,000.00	2,000,000.00	100.00	100.00

IDA-D0040		Designated Account	0.00	0.00	0.00	0.00
		Total:	32,100,000.00	44,100,000.00		

Components

Change to Components and Cost

Explanation:

Component 1C (Kosrae Connectivity) will be amended and revised to increase the financing to cover FSM's share of the East Micronesia Cable System at a total cost of SDR11.6 million. This comprises financing for: (i) FSM to participate in the proposed EMC system that will connect Kiribati (Tarawa), Nauru and Kosrae to the HANTRU-1 cable in Guam via the existing landing point in Pohnpei and/or the procurement of capacity rights to connect Kosrae to the global communications network; and (ii) the cable landing station, beach manhole, ancillary facilities, ducts and other equipment in connection with such new EMC cable system, including acquisition and installation of onshore equipment, carrying out of terrestrial works and upgrading of facilities.

Component 2 (Technical Assistance) will be amended and revised to increase the financing to a total cost of SDR2.8 million to strengthen the capacity of the Recipient to achieve the Project Development Objectives. Activities include technical assistance for: (a) ICT sector development, including: (i) the design of the ownership structure of existing and new connectivity infrastructure; (ii) the construction, ownership and management of the EMC, including the drafting and negotiation of appropriate contractual arrangements thereof; (iii) promotion and introduction of private sector participation in the ICT sector; (iv) mechanisms to expand ICT access throughout the Recipient's territory, including climate change resilience and disaster risk management arrangements thereof, improve domestic connectivity and close the last mile for delivering high-speed data services to people, households, businesses and public institutions throughout FSM, and to reduce the digital divide for remote and vulnerable communities especially on the Outer Islands; and (v) the preparation of policy and legislative instruments to support the development of the ICT sector, including electronic transactions to facilitate citizen access and use of broadband services, cybersecurity, data protection and confidentiality; (b) reform and capacity development of FSMTC and capacity building for the Open Access Entity; and (c) developing and strengthening regulation of the ICT sector over the long term, including regulatory capacity development, consumer survey(s), monitoring and analysis, disaggregated by gender. The total amount of additional financing required for this scale up is SDR1.3 million.

Component 3 (Project Management) will be amended and revised to increase financing at a total cost of SDR2.0 million for technical assistance, goods, and operating costs to strengthen the capacity of the Recipient to implement the EMC system in collaboration with Kiribati and Nauru; incremental implementation and project management, including additional support for: Project management and coordination, financial and contract management, procurement, auditing, general Project reporting, administrative costs associated with Project implementation, communications, outreach, monitoring and evaluation, gender, and environmental and social safeguards management.

Current Component Name	Proposed Component Name	Current Cost ($ million)	Proposed Cost ($ million)	Action
Component 1A Palau-Yap-Guam Cable System	Component 1A Palau-Yap-Guam Cable System	22.5	22.5	No Change
Component 1B Chuuk-	Component 1B Chuuk-	18.5	18.5	No Change

Pohnpei Cable System	Pohnpei Cable System			
Component 1C Kosrae Connectivity	Component 1C East Micronesia Cable System and terrestrial works	3.5	15.66	Revised
Component 2 Technical Assistance	Component 2 Technical Assistance	2.25	3.78	Revised
Component 3 Project Management	Component 3 Project Management	0.75	2.7	Revised
	Total:	47.5	63.14	

Other Change(s)

Implementing Agency Name	Type	Action

Change in Procurement

Explanation:

The AF will fall under the new Procurement Regulations for IPF Borrowers which became effective on July 1, 2016. From the effective date of the AF, procurement activities under Component 1C, Component 2 and Component 3 will apply the new World Bank Procurement Regulations for IPF Borrowers (July 2016). Procurement activities under Component 1A and 1B will continue to be managed under the Procurement and Consultants Guidelines dated January 2011 and revised in July 2014.

Second, the subject procurement and methodology under Component 1C will change. Previously it was contemplated that under Component 1C SDR2.4 million would be used to part-finance the purchase of capacity to provide broadband Internet to Kosrae. O3B was identified as the most cost effective option and sole global supplier of the desired technology (low-latency medium earth orbit satellite connectivity). Given these circumstances, Direct Contracting was expected to be used for the procurement of services from O3B. However, satellite capacity will no longer be procured for Kosrae. Instead, Component 1C will cover FSM's share of the cost of the submarine cable system which will be procured on the basis of World Bank Procurement Regulations for IPF Borrowers (July 2016), Standard Procurement Documents, Request for Bids Plant Design, Supply, and installation (Without Prequalification) July 2016, using a Limited Market approach under one single bidding process. FSM, Nauru and Kiribati are discussing the terms of the arrangements that will govern the procurement process, and which will be included in a C&MA along with how the supply contract will be signed. Agreement on the C&MA (or similar) will be concluded before the bidding process is launched. This procurement will cover the whole EMC subsystem and will be jointly cofinanced by ADB which is providing funding to Nauru. World Bank procurement rules will apply and ADB will seek any necessary waivers.

Change in Implementation Schedule

Explanation:

The period for implementation will be extended from January 31, 2020 to November 30, 2022, reflecting the change to the closing date of the Project.

Appraisal Summary

Economic and Financial Analysis

Explanation:

The existing Project provides financing for a one-time partial purchase of capacity to secure the redeployment of the existing O3B satellite capacity contract from Chuuk to Kosrae plus a new five-year contract term for satellite connectivity. While this approach was the best solution when the Project was originally prepared, the proposed EMC system, supported by the AF, presents a significant new opportunity to connect Kosrae via fiber optic cable and deliver strongly lower prices for bandwidth. Initial forecasts show a reduction in the cost of international bandwidth of more than 50 percent across Yap, Chuuk and Kosrae (assuming uniform pricing) or 85 percent for Kosrae alone (without cross-subsidization between Yap, Chuuk and Kosrae). These price reductions would substantially improve the financial and economic outcomes of the Project in FSM and increase access to broadband services compared to the base case.

The overall ERR of the original Project for FSM is 8%. No ERR can be calculated under the original Project for Kosrae because economic net cashflow is negative for all years. The net economic impact of the original Project for FSM is $35.9 million and negative $14.2 million for Kosrae. The proposed AF will deliver higher net economic impact and ERR, due to the financial and economic benefits of the EMC system compared to the original O3B based satellite system. The net economic impact (net of all recurrent costs) of the Project with the EMC system for FSM is $51.1 million and $1.0 million for Kosrae (in both cases, an increase of $15.2 million over the original Project). The ERR for FSM remains at 8%, while for Kosrae the ERR increases to 2%. If the EMC system were to last a further 10 years (35 years in total), the net economic impact for Kosrae would be $7.0 million and the economic rate of return would be 4 percent. This analysis is based on a correlation between broadband penetration and GDP growth which assumes a 10 percent increase in broadband penetration (wireless Internet + broadband) correlates with a 1.38 percent increase in GDP in developing countries.

The low economic impact (net economic impact and ERR) results of the EMC and the negative results for the O3B solution for Kosrae are mainly due to the fact that: (a) the economic gain to GDP from increased access to broadband is small due to the small population of Kosrae; and (b) the economic gain to GDP is outweighed by the costs of the solutions (the high initial capital cost for the EMC system or the very high recurrent costs for O3B) which are all external. The EMC solution, however, would result in a positive economic impact in spite of these two economic counterweights. These numerical economic impact figures also do not capture the additional social welfare benefits of improved broadband connectivity via a submarine fiber optic cable, especially the higher quality of connectivity, lower risk of failure and improved resilience, all of which are critical for improved quality of life and for the delivery of essential services e.g., national and international integration, reduced inequality, knowledge development, telemedicine and improved disaster response, among others.

The numerical economic impact analysis also does not capture the contribution of FSM to the technical and commercial feasibility of the wider regional EMC project, which includes the collaboration with Nauru and Kiribati. From a regional perspective, the participation of FSM would also enable Nauru to move from satellite-only connectivity to a fiber optic submarine cable and for Kiribati to take advantage of the lowest capital and operating costs of any of the cable options which were identified and analyzed during project identification. The three-country EMC system would also reach an additional 18,000 beneficiaries compared to a cable project which connected Kiribati alone including 8,000 people in Kosrae.

Technical Analysis

Explanation:

The international connectivity infrastructure financed under Component 1 of the Project provides for new submarine fiber optic cables to link Yap to the SEA-US cable system to Guam and to link Chuuk to the existing Pohnpei Spur which interconnects with the Hannon-Armstrong (HANTRU-1) cable to Guam. The Yap cable subsystem is scheduled to be Ready for Service (RFS) in late 2017. The Chuuk cable sub system is currently undergoing a procurement process and RFS is anticipated in early 2018. The proposed EMC system would link Kiribati, Nauru and Kosrae to the Pohnpei Spur where it would interconnect on

HANTRU-1 to Guam.

The EMC system will comprise a 2,070 km repeatered main trunk cable from Tarawa to the existing Pohnpei Spur on the HANTRU-1 cable at Pohnpei. It will provide spur cables to new landing points in Nauru and Kosrae, which may be repeatered or unrepeatered depending on the final technical design and configuration of the system. Details on number of fiber pair(s), type of BUs, number of wavelengths, as well as wavelength capacity, will be included in the technical specifications for the proposed systems. The onshore infrastructure in Kiribati, Nauru and on Kosrae will include a BMH, cable landing station, ducting and other electronic/communications equipment. The interests of FSM in the HANTRU-1 cable system and the spur to Pohnpei are sufficient to support the combined bandwidth needs of Chuuk, Pohnpei and the EMC system.

Social Analysis

Explanation:

Numerous positive social and economic benefits are anticipated for all participating countries through improved access to communications. The Project will undertake steps to mainstream gender and ICT, specifically ensuring that gender engagement strategies and policies currently under development by Government are coordinated and integrated with ICT sector initiatives. This is important because access to affordable, high-speed Internet is known to be associated with economic and social empowerment by increasing access to services such as employment and education opportunities and health. An added benefit is in the area of disaster risk management, including to address vulnerability to climate change risks, such as: (a) facilitating the deployment of disaster risk monitoring tools and applications that require large volumes of data transmission (including access to regional databases) by improving the quality and reducing the cost of Internet; (b) providing additional options/media for early warning systems and post-disaster communications; and (c) through the enhanced resilience provided by submarine fiber optic cables.

Due diligence during identification and preparation for the AF has identified that there will be no involuntary resettlement in connection with this activity. OP4.12 is therefore not triggered. The preferred locations for the terrestrial assets (BMH, terrestrial cabling, and cable landing station) are all on government owned, leased or private land where the option of voluntary access is possible. The terrestrial cabling will be buried within an existing cable ducting, along a road easement. No other safeguard policies are triggered under the existing project or under this Additional Financing.

Environmental Analysis

Explanation:

The proposed activity does not trigger a change in the Category B environmental rating of the Project and does not trigger any safeguard-related issues that were not originally anticipated at appraisal. Safeguards instruments for the EMC system have been prepared by DTCI, in consultation with the Task Team. Specialist safeguards advisers were procured via the EMC Steering Committee and conducted field visits and consultations in Kiribati, FSM and Nauru from mid-October to mid-November, 2016. The Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) were prepared in accordance with World Bank policies and publicly disclosed in FSM on January 6, 2017. The ESIA and ESMP were disclosed on the World Bank's external website on February 7, 2017.

The Project is providing support for the creation of the OAE and the independent ICT sector regulator. Once established, the OAE will take over as implementing entity for Component 1 and the Regulator will take over as implementing entity for subcomponent 2C which will support sector regulation and regulatory capacity development. Each agency will be responsible for safeguards adherence under their respective components. Technical Assistance activities carried out under Components 2 and 3 will also comply with the safeguards instruments, terms and conditions of financing and the laws of the FSM. The OAE and the

Regulator will be supported by the DTCI safeguards advisor and the Bank.

The original Project triggers OP4.01 Environmental Assessment, OP4.04 Natural Habitats and OP4.11 Physical Cultural Resources.

An ESIA and an ESMP have been prepared which assess the potential impacts on the natural environments for the EMC system including in Kosrae, Kiribati and Nauru, with a particular emphasis on the reef and foreshore environments. Appropriate mitigation measures have been identified. No specific environmental studies are undertaken for submarine cables which lie in deep sea. However, prior to laying cables, a detailed Cable Route Survey is done to ensure that the cable is not located in high risk locations or in geological features (e.g., thermal vents) that often harbor unique faunal assemblages at abyssal depths. The International Cable Protection Committee publishes recommendations on key issues such as cable routing, cable protection and cable recovery and prescribes strict environmental standards. Extensive studies that are undertaken by cable suppliers prior to final cable laying work as effective safeguards against any possible environmental disruption, since in large part they are intended to identify routes for the cable that will avoid seamounts, volcanoes, canyons, vents, seeps, deep water reefs, and dissected terrain, all areas that tend to be associated with higher biological value than the general abyssal plain.

There are no physical cultural resources within or near the proposed Project footprint. However, OP4.11 Physical Cultural Resources has been triggered as a precautionary measure in case any are found during works and the chance find procedure is invoked.

Risk

Explanation:

The risk assessment for the original Project applies to the proposed AF. In particular, technical design, institutional capacity for implementation and fiduciary risks are assessed as High. The Project continues to provide technical assistance for the creation of the OAE as implementing entity for Component 1 and the Regulator as implementing entity for subcomponent 2C, although the risks of delay or opposition to implementing market based reforms are High. Among other conditions, the establishment and operationalization of the OAE in a manner satisfactory to the Bank, including the execution of the Project Agreement between the OAE and the Bank and the Subsidiary Agreement between the Government and the OAE, are disbursement conditions under Component 1 of the Project for the financing of the cable system. The Government is working diligently to satisfy these requirements, although progress finalizing the creation of the OAE and implementing the associated sector restructuring steps has been slow because of concerns from FSMTC regarding the impact of competition on its operations and its ability to meet its obligations to third parties. Prompt implementation by Government of these ICT sector reforms, as provided for under the Telecommunications Act 2014, is essential for the success of the Project. These reforms are also necessary in order to satisfy Withdrawal Conditions and implementation covenants prescribed under the original Project. In carrying out work on these issues, Government is supported by expert international advisers. The Bank is also providing support and enhanced supervision.

To further mitigate the risks of non-disbursement, all conditions of disbursement and key implementation covenants under the original Project, which have not been met, and all other conditions necessary for the successful implementation of EMC components will be included as effectiveness conditions of the AF. These conditions include matters such as the successful establishment and operationalization of the OAE and the Regulator; the execution of the relevant Project Agreements and Subsidiary Agreements; the OAE having obtained all necessary licenses, rights, permits and approvals to implement Component 1; the OAE having entered into agreements necessary to land the cables and to secure adequate capacity for the cables to connect to the global telecommunications network; the OAE having entered into the Construction and Maintenance Agreement required for the implementation of Component 1C(i), and such agreement having become effective; the agreements co-financing the EMC having become effective and all conditions to the

disbursement of funds having been satisfied; the Bank and ADB having entered into a MOU for the joint arrangements implementation of Component 1C(i) of the Project; all other implementation arrangements required for Component 1 of the Project, satisfactory to the Association and as agreed with the Recipient, having been completed; and significant progress having been made by the Regulator on the implementation of the Telecommunications Act, including operator licensing, spectrum licensing and the implementation of wholesale access arrangements to support and promote the introduction of competition.

Procurement and management capabilities of DTCI have been significantly strengthened by their successful completion of the complex arrangements for the supply of the Yap and Chuuk cable systems. However, the OAE and the Regulator will be new entities with no established track record of delivering services or implementing projects of this nature and accordingly is expected to rely heavily on the experience within DTCI and FSMTC. Implementation capacity and technical risk mitigation will be further enhanced following the joint procurement via the EMC Steering Committee of a technical project management firm which will support the design and installation of the EMC system. Technical assistance will also be provided to the OAE and to the Regulator to further support their operations and build capacity. The involvement of private sector operators in Kiribati and Nauru will also be important during the design and implementation phases to manage and mitigate possible technical and commercial risks.

Project implementation will entail a significant degree of coordination with the other two countries (Kiribati and Nauru) and institutions (ADB) collaborating on the EMC project. The three governments of Kiribati, Nauru and FSM will need to negotiate and agree commercial arrangements for the construction, maintenance and operation of the cable for its commercial lifetime. If one of the countries were to decline to participate such a decision could fundamentally change the financial, economic and technical assumptions underpinning the project. It is also important to realize that an event adversely impacting the implementation of the obligations of either of Kiribati, FSM or Nauru under (i) consortium arrangements for the EMC; (ii) respective applicable laws and regulations; or (iii) the respective financing agreements (with IDA or ADB as the case may be) may derail the construction, ownership or management of the EMC in the three countries (even without a breach by the other countries) and the completion of Component 1C(i) of the Project. However, the countries have made good progress already with the signing of the tripartite MOU, the establishment of the EMC Steering Committee, the preparation of the ESIA and coordinating the procurement of a joint technical project manager. The AF will provide additional support to FSM for technical assistance and project management to mitigate risks. Similar support is expected to be provided to Kiribati by the Bank under the Kiribati Connectivity Project and to Nauru by ADB. An effectiveness condition will provide that the AF will not become effective until the C&MA between the three countries have been agreed and all relevant financing has been secured and is effective.

IV. Appraisal Summary

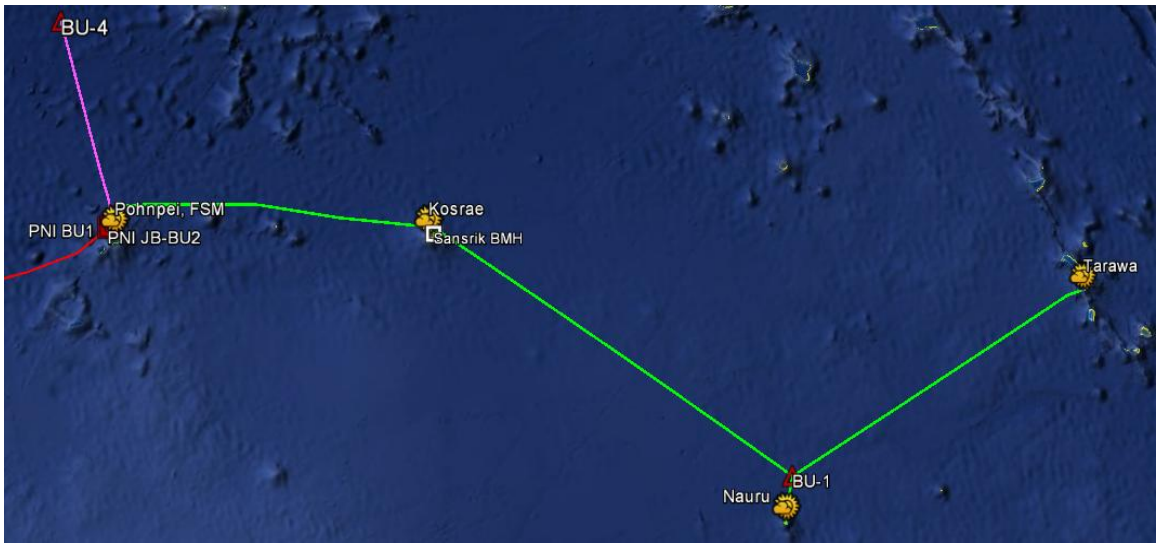
Technical

16. The international connectivity infrastructure financed under Component 1 of the Project provides for new submarine fiber optic cables to link Yap to the SEA-US cable system to Guam and to link Chuuk to the existing Pohnpei Spur which interconnects with the Hannon-Armstrong (HANTRU-1) cable to Guam. The Yap cable subsystem is scheduled to be Ready for Service (RFS) in late 2017. The Chuuk cable sub system is currently undergoing a procurement process and RFS is anticipated in early 2018. The proposed EMC sub system would link Kiribati, Nauru and Kosrae to the Pohnpei Spur where it would interconnect on HANTRU-1 to Guam. The three new connections for Yap, Chuuk, and Kosrae, along with the existing Pohnpei Spur connection to HANTRU-1, are pictured in Figure 1.

Figure 1. Existing and Proposed FSM Cable Systems

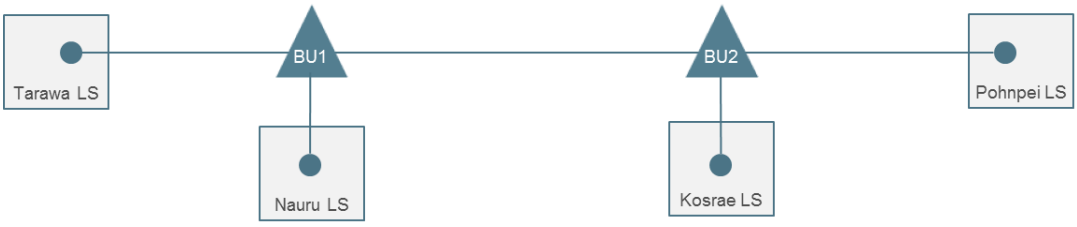
17. The EMC system will comprise a 2,070 km repeatered main trunk cable from Tarawa to the existing Pohnpei Spur on the HANTRU-1 cable at Pohnpei. It will provide spur cables to new landing points in Nauru and Kosrae, which may be repeatered or unrepeatered depending on the final technical design and configuration of the system.

Figure 2. Proposed EMC System



18. Details on number of fiber pair(s), type of BUs, number of wavelengths (design and initial), as well as wavelength capacity, will be included in the technical specifications for the proposed systems. The onshore infrastructure in Kiribati, Nauru, and on Kosrae will include a beach manhole (BMH), cable landing station, ducting and other electronic/communications equipment. The expected configuration of the EMC system is pictured in Figure 3.

Figure 3. Proposed EMC System Configuration



19. In case the intended offshore landing in Pohnpei turns out to be exceedingly expensive or difficult, an alternative configuration has been envisaged which features a main trunk from Tarawa to Kosrae and spurs to Nauru and Pohnpei, the latter connected through the joint-box on the future Chuuk-Pohnpei cable. This configuration represents almost the same cost as the above design cable, although it would lack the redundant power feeding capacity for Kosrae-Pohnpei spur.

20. The HANTRU-1 cable which connects Pohnpei to Guam (and where the EMC system would interconnect) has a 25-year term and has been in service for six years, leaving approximately 19 years before it expires. Although this will be ahead of the end of life of the EMC cable system, the owner of the HANTRU-1 system (the United States Defense Department) can be expected to extend the life of HANTRU-1 as long as it is technically and financially feasible, and to replace the cable when it is no

longer serviceable. FSM has carried out preliminary technical and commercial due diligence which has confirmed that it is feasible to upgrade its indefeasible rights of use on HANTRU-1 to support the additional bandwidth demands of serving Kiribati and Nauru (and in addition to the capacity demands which will arise for serving Chuuk).

21. FSM interests on HANTRU-1 comprise: (a) an owned spur from Pohnpei to a branching unit on the main HANTRU-1 cable; (b) an IRU in 50 percent of the available capacity in one fiber pair on the main HANTRU-1 cable from the branching unit to the landing station in Guam; and (c) rights under a co-location agreement with Tata Communications (Guam) LLC, which owns and operates the landing station in Guam. The Marshall Islands National Telecommunications Authority (MINTA) has an IRU in the other 50 percent of the fiber pair in the main cable used by FSMTC. The intention is for FSMTC to transfer its HANTRU-1 interests to the Open Access Entity, which is being established pursuant to the Telecommunications Act of 2014.

22. The HANTRU-1 spur includes two extra fiber pairs installed from the Pohnpei cable landing station to a joint box about 7 km from shore outside the shallow water lagoon surrounding the landing site. This enables the Chuuk-Pohnpei and EMC cables to use one of the spare fiber pairs in the original HANTRU-1 spur to avoid a second beach landing in Pohnpei. The HANTRU-1 spur (including repeater and OADM BU on the main HANTRU-1 cable) is solely owned and controlled by FSM (i.e. not part of its IRU in the main HANTRU-1 cable) and is powered from Pohnpei. This means that the main HANTRU-1 cable will not be affected when the HANTRU-1 spur is taken out of service to replace the Pohnpei joint box with a new branching unit. It is understood that no approval is required from the owners or other IRU holders in HANTRU-1.

23. FSM's interests in the HANTRU-1 cable system and the spur to Pohnpei are sufficient to support the combined bandwidth needs of Chuuk, Pohnpei and the EMC system. The estimated demand for bandwidth is summarized in Table 4, based on utilization trends and relevant comparators under base, low and high-case economic development scenarios. The bandwidth demand of Pohnpei has been established based on bandwidth demand forecast for Chuuk.

Table 4. Estimated Bandwidth Requirements on HANTRU-1 Kiribati, Nauru and FSM in Year 2041 (Gbps)

	High scenario	Baseline scenario	Low scenario
FSM (Chuuk, Pohnpei)	14.7	5.9	3.0
FSM (Kosrae)	1.8	0.9	0.5
Kiribati	14.1	6.7	3.5
Nauru	3.3	2.1	1.4
Total	**33.9**	**15.6**	**8.4**

24. FSMTC has 80 Gbps of available capacity on the shared main cable (which may be provisioned in increments of 10 Gbps) and has currently provisioned only 10 Gbps of capacity on the shared segment of HANTRU-1. FSM has the ability to provision additional capacity by purchasing additional wavelength activation cards and having them installed in the existing terminal station equipment in the

Guam and Pohnpei cable landing stations. FSMTC may also upgrade its system capacity by replacing the terminal station equipment in Guam and Pohnpei. An upgrade would normally be undertaken in cooperation with the other HANTRU-1 system users, including the United States Department of Defense and MINTA.

25. The term of the IRU is structured as an initial 10-year term, with an automatic ten-year renewal, followed by an automatic five-year renewal unless FSM elects in writing not to renew at the end of the initial term or the first renewal term. It may be possible for FSM to purchase an additional extension of the IRU in HANTRU-1 so that its end of service date is coterminous with the 25-year life of the Chuuk-Pohnpei and EMC cables. In any event, given the reliance of the United States Department of Defense, RMI and FSM on the connectivity provided by HANTRU-1, it can also be expected that the parties will cooperate to procure a replacement cable which can be ready for service ahead of the end of life of HANTRU-1.

26. FSM has obtained a quotation from TE Subcom of $0.25 million to increase the existing capacity from 1 x 10G to 1 x 100G through replacement of terminal station equipment in Gam and Pohnpei. FSM has also initiated discussions with Truestone, which manages the HANTRU-1 cable and which also has direct contact with US Department of Defense, regarding a possible HANTRU-1 upgrade. Truestone has undertaken to assess United States Department of Defense's current capacity usage and growth plans and likelihood of wanting to participate in a system upgrade over the next few years. FSMTC and the Government of FSM are awaiting a response from Truestone on the likely interest of the United States Department of Defense in participating in a system upgrade. It is assumed that the Marshall Islands will not be interested.

Financial and Economic

27. The existing Project provides financing for a one-time partial purchase of capacity to secure the redeployment of the existing O3B satellite capacity contract from Chuuk to Kosrae plus a new five-year contract term for satellite connectivity. While this approach was the best solution when the Project was originally prepared, the proposed EMC system, supported by the AF, presents a significant new opportunity to connect Kosrae via fiber optic cable and deliver strongly lower prices for bandwidth—initial forecasts show a reduction in the cost of international bandwidth of more than 50 percent across Yap, Chuuk and Kosrae (assuming uniform pricing) or 85 percent for Kosrae alone (without cross-subsidization between Yap, Chuuk and Kosrae).

28. These price reductions would substantially improve the financial and economic outcomes of the Project in FSM and increase access to broadband services compared to the base case—as summarized in Table 5. A discount rate of 6 percent has been used for the financial analysis. The discount rate takes into account the financial risks of a cable project and measures the attractiveness of the project to private investors. It is consistent with the discount rate applied for other cable projects in the Pacific region. An analysis of the economic rate of return (ERR) of the EMC compared to O3B is set out in paragraph 30 below.

29. A full business plan will be prepared once the OAE and its partner institutions in Kiribati and Nauru have been established. A preliminary analysis has been prepared for Appraisal. This concludes that the Project is not commercially viable before financing due to high initial investment and modest revenues. Public sector low-cost and long-term financing is needed for the initial capital investment, and

will be used to bridge the gap between the cost of the cable system and the cost of deploying cable capacity at a level that is commercially sustainable and developmentally effective. Private sector financing will be used to cover operations and maintenance costs, and user fees (for telecommunications and Internet services) will support financial sustainability in the longer term.

30. The total cost of the EMC system to the BMH for the three countries, including the costs of the submarine cable, terminal equipment such as power feeding equipment, submarine line terminal equipment, and network operations center, and incorporating project management and contingency costs of $2 million, is estimated at $38.4 million. An additional $3.8 million has been allocated for budgeting purposes for a total estimated cost of $42.2 million for the EMC system. The three countries have indicated their preference to share this CAPEX cost equally, which amounts to approximately US$14.1 each, excluding ancillary costs such as terrestrial works, ancillary facilities and the CLS in each country.

31. It is further assumed that operating (OPEX) costs for the EMC will be shared based on the distance required to connect each member's landing station to the point of interconnection at the Pohnpei Spur. Accordingly, it is assumed that costs will be apportioned as follows 60 percent (Kiribati), 30 percent (Nauru) and 10 percent (FSM). However, the allocation of CAPEX and OPEX costs among consortium member is a matter for commercial agreement and is yet to be negotiated. OPEX costs are subjected to an assumed inflation rate of 3 percent p.a. The costs of IP transit in Guam are included at $15/Mbps/month.

Table 5. Comparison of Financing and Demand Assumptions for Kosrae[1]

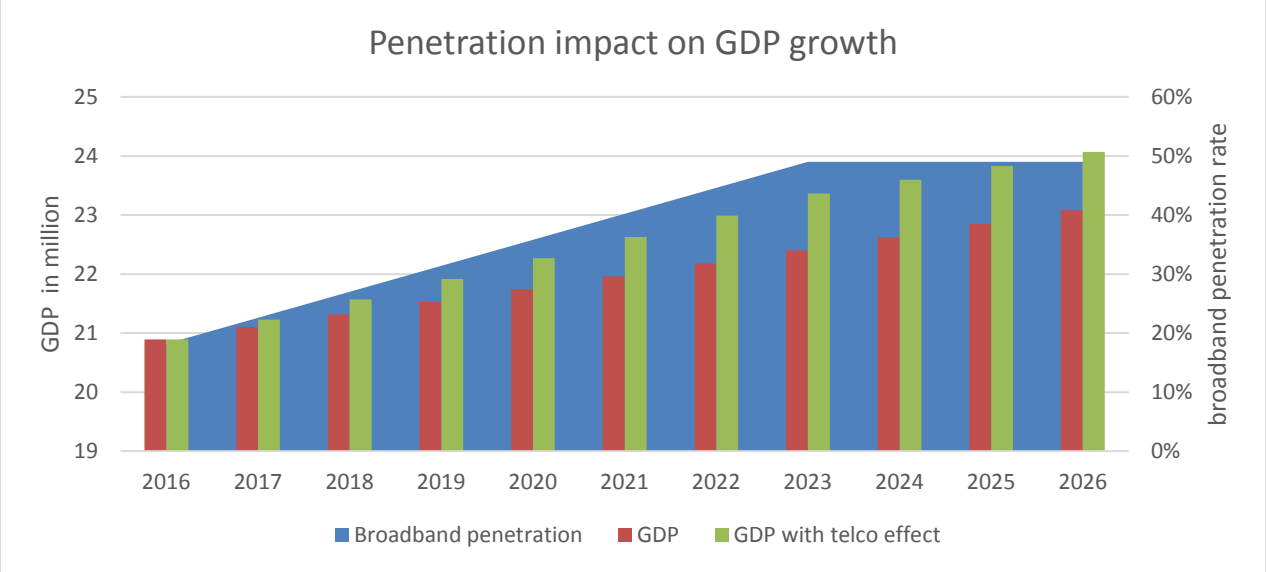
		O3B (Existing)[2]	East Micronesia Cable (AF)
Project characteristics	**CAPEX**	$0.3M	$14.6M
	Cumulated OPEX and interconnection costs	$17.4M[3]	$2.2 M
Three states combined	**State contribution to NPV=0**	-$10.2M	-$0.7M
	Price for bandwidth[4]	$349 Mbps/mth	155 Mbps/mth
	Lowest cumulated cashflow[5]	-$8.9M (Y25)	-$2.0M (Y4)
	Bandwidth increase compared to base case (Y2027)[6]	+145% (total= 2.3 Gbps)	+424% (total= 5.0 Gbps)
Kosrae standalone activity	**NPV (after financing)[7]**	-$5.1M	$6.3M
	Price for bandwidth	$1444 Mbps/mth	$225 Mbps/mth
	Lowest cumulated cashflow	-$15.4M (Y25)	-$0.2M (Y6)
	Bandwidth increase compared to base case (Y2027)	-24% (total=103 Mbps)	+268% (total = 497 Mbps)

32. The net economic impact and ERR of the Project is higher with the EMC system compared to the O3B based satellite system. The economic impact at the state level is highlighted to shed light on the inherent characteristics of the AF on Kosrae. The economic impact is assessed by estimating the impact on GDP of the EMC system for Kosrae over the next 25 years. The cumulated discounted impact on GDP over the next 25 years is $19.1 million (with a 2 percent discount rate),[8] based on the assumption

[1] Bandwidth demand forecast for all states has been revised to take into account new price reduction calculations which assume that price decreases by 4 percent during the first 10 years and by 13 percent thereafter.
[2] It is assumed that Kosrae would enjoy the same bandwidth costs that O3B offered to Yap, which are more advantageous than the ones estimated for Kosrae during Project appraisal. The term of the O3B solution is also now estimated for 25 years in order to present a fair comparison with the EMC solution. However, at 25 years the NPV of the O3B solution is more negative and the price at NPV=0 (in case of pricing Kosrae on a standalone basis) is higher.
[3] OPEX costs for O3B includes the costs of bandwidth. OPEX costs start at $0.3M in 2017 and increase overtime as the demand increases.
[4] Starting price for bandwidth in 2017 where NPV after financing = 0. It is assumed that price decreases by 4 percent percent during the first 10 years and by 13 percent thereafter reflecting the general trend in bandwidth use forecast.
[5] The lowest cumulated cashflow is estimated assuming a price calculated to give NPV=0 at 6 percent discount rate.
[6] The bandwidth increase modeling assumes a price-demand elasticity of 70 percent which is the same ratio used to calculate the bandwidth demand forecast.
[7] NPV is calculated at 6 percent discount rate and at a starting price of $900/Mbps/mo in 2017. It is assumed that price is decreasing by 4 percent during the first 10 years and by 13 percent thereafter reflecting the general trend in bandwidth use forecast.
[8] The discount rate is applied to measure the economic impact of the project on the welfare of the country and thus is strongly related to the forecast for per capita growth of GDP. It is independent from the discount rate applied for the financial analysis. An economic discount rate of 2 percent is in line with the analysis undertaken under Pacific Possible which projects long term growth projections for FSM of a little less than 1 percent (baseline) and 2 percent (opportunity scenario) for per capita income, with a sensitivity analysis of +/- 1 percent.

that broadband penetration would increase to 49 percent within the next 10 years.[9] Therefore, considering that the initial investment is $14.6 million, the net economic impact (net of all recurrent costs) of the project with the EMC system is $1.0 million (versus negative $14.2M for the O3B solution). The economic rate of return is 2 percent (no ERR can be calculated for O3B because economic net cashflow is negative for all years). If the EMC system were to last a further 10 years (35 years in total), the net economic impact would be $7.0 million and the economic rate of return would be 4 percent. This analysis is based on the correlation between broadband penetration and GDP growth which assumes a 10 percent increase in broadband penetration (wireless Internet + broadband) correlates with a 1.38 percent increase in GDP in developing countries, which is illustrated in Figure 4.[10]

Figure 4. Penetration Impact on GDP Growth in Kosrae



33. While the net economic impact and ERR of the EMC system is already positive at the FSM level, as demonstrated in Table 6 below, it is also possible to expect that the improved financial characteristics of the EMC system (the price for broadband across the Project area is expected to fall from $349Mbps/month to $155Mbps/month under the EMC system compared to the O3B solution) will deliver even stronger economic outcomes overall than is reflected in the existing economic modeling. The expectation is that if high quality broadband becomes more accessible (better coverage, lower price), *bandwidth consumption* and the *penetration rate* of broadband could increase compared to initial forecasts due to typically observed price-demand elasticities, which in turn could generate a higher economic impact on GDP. However, the economic analysis does not account for this possibility due to a lack of available studies to support the economic modeling needed to quantify such effects.

[9] Economic impact is net of the cable operational cost.

[10] This conclusion has been drawn by a World Bank study "Economic impact of Broadband" from Christine Zhen-Wei Qiang and Carlo M. Rossotto with Kaoru Kimura dated on 2009. This ratio is quite conservative especially for Pacific Islands as populations are usually concentrated in the main cities and this concentration is supposed to improve the level of impact of a submarine cable which is landing directly in the main city.

Table 6. Economic Impact Before and After the Revised Arrangements[11]

	O3B (Existing)		East Micronesia Cable (AF)	
	Net Economic Impact	**ERR (%)**	**Net Economic Impact**	**ERR (%)**
Kosrae	-$14.2M	—[12]	$1.0M	2
FSM	$35.9M	8	$51.1M	8

34. Table 6 shows that the ERR forecasts at the FSM level are both measured as 8 percent, while the net economic impact forecasts are quite different ($35.9M for O3B versus $51.1M for EMC). However, the closeness of these ERR forecasts for FSM is a coincidence. Net economic impact and ERR are two different measurements. The net economic impact measures: the incremental increase of GDP due to broadband development; minus all external costs, namely the capital and operating expenses attributable to the infrastructure investment in broadband.

35. The *ERR* is the internal rate of return of the net economic impacts over the 25-year period and is calculated as the discount rate at which the NPV = 0. The economic *net present value* (NPV) is determined by calculating the net economic impact for each year of an investment (25 years) and the present value of each period is achieved by discounting its future value at a periodic rate of return (discount rate). The NPV is the sum of all the discounted future cash flows of these 25 year periods.

36. The characteristics of the O3B solution and EMC system are quite different due to the timing of the cashflows which impacts the NPV. Specifically, the EMC system requires a high initial capital investment, but results in a higher net economic impact due to lower recurrent costs that remain stable over the lifetime of the cable; whereas, the O3B solution requires little initial investment, but results in a lower net economic impact due to higher recurrent costs that increase significantly year by year (as demand increases). It is not unusual to see conflicts between ERR and NPV when comparing two exclusive projects. In this case, however, it is a coincidence to see both scenarios deliver an ERR that is almost the same when calculated at the FSM level.

37. The NPV of EMC system for FSM is substantially higher by almost $16 million whereas the ERR of the two projects for FSM are almost the same. This is largely because the initial capital investment required for the EMC option ($14.6 million) is higher than for the O3B solution ($0.3 million). If two projects have the same ERR, the one with higher initial investment would generate higher NPV at a discount rate that is smaller than the ERR. It is also important to recognize that, unlike the calculation at the national level, the ERR of the two scenarios for Kosrae is not the same. Indeed, for Kosrae no ERR is able to be calculated for the O3B scenario as the economic net cashflow is negative for all years due to

[11] Today's broadband penetration rate in Kosrae has been revised according to The Final Report – Federated States of Micronesia – Telecommunication Sector Restructuring, conducted by MacMillan Keck, edited on December 13, 2016, which suggests that as for today the broadband penetration rate is lower than previously estimated. Revised accordingly, this information improves the forecast net economic impact for the project overall.

[12] The ERR was not calculated under this scenario as the economic net cashflow is negative for all years due to the "capacity lease" model used by O3B which sees costs increase as demand (and revenues) increase.

the "capacity lease" model which sees costs increase as demand (and revenues) increase. The ERR for the EMC option for Kosrae is negative 4 percent (as summarized in paragraph 9 above).

38. Figures 5 and 6 show the flow of net economic impact calculated across the three states (Yap, Chuuk and Kosrae) combined and for Kosrae on a standalone basis.

Figure 5. Flow of Net Economic Impact (Kosrae Alone)

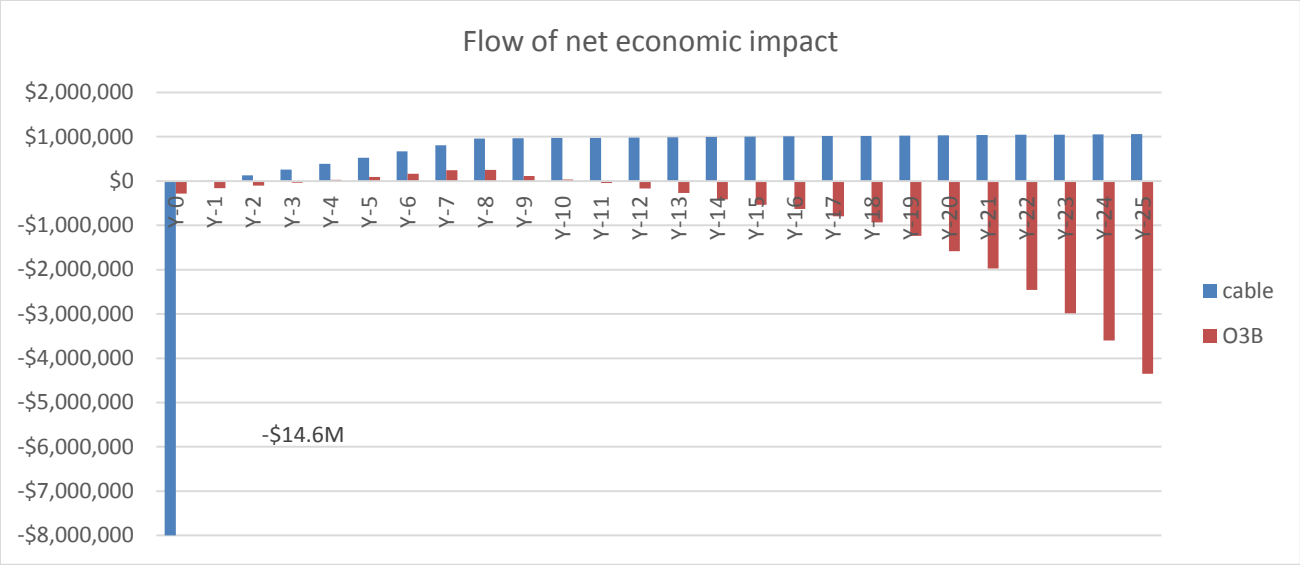
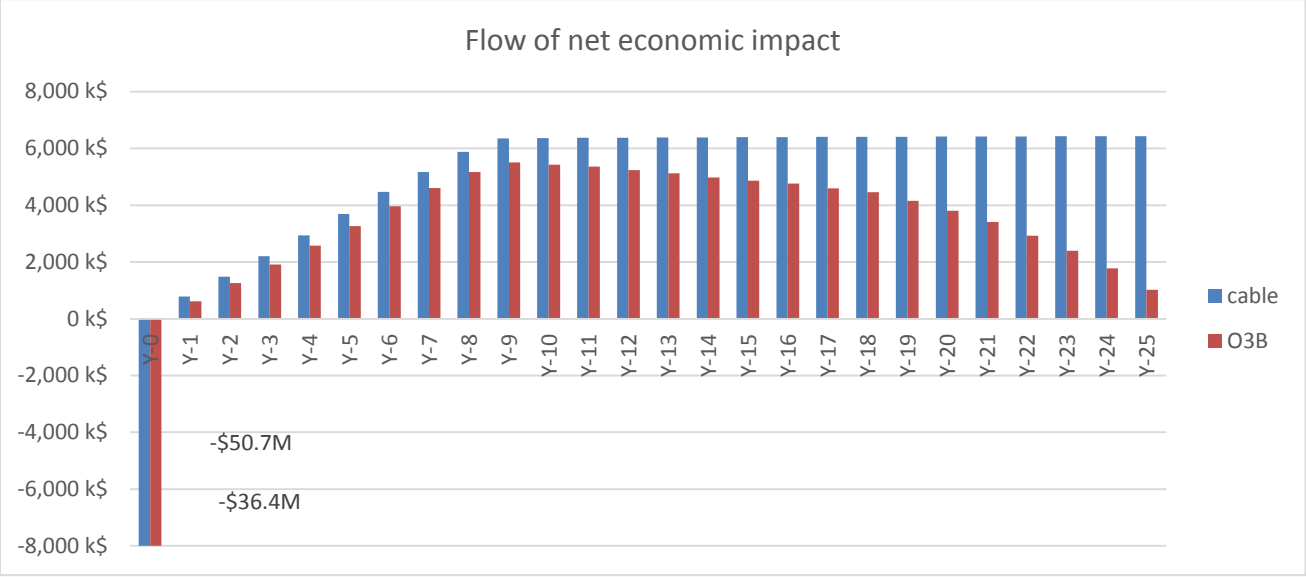


Figure 6. Flow of Net Economic Impact (Three States Combined)



39. The weak or negative economic impact (net economic impact and ERR) results of respectively the EMC and O3B solutions for Kosrae are mainly due to the fact that: (a) the economic gain to GDP from

increased access to broadband is small due to the small population of Kosrae; and (b) the economic gain to GDP is outweighed by the costs of the solutions (the high initial capital cost for the EMC system or the very high recurrent costs for O3B) which are all external. The EMC solution, however, would result in a positive economic impact in spite of these two economic counterweights. These numerical economic impact figures do not capture the additional social welfare benefits of improved broadband connectivity via a submarine fiber optic cable, including:

- *Improved resilience*: higher quality of connectivity, lower risk of failure and improved resilience, all of which are critical for improved quality of life and for the delivery of essential services e.g., national and international integration, reduced inequality, knowledge development, telemedicine and improved disaster response, among others.
- *Disaster preparedness/management:* More robust and resilient communications infrastructure can strengthen future disaster preparedness. More broadly, ICT tools can support governments as they plan and monitor climate change and natural disaster risks to which the region is particularly vulnerable.
- *Participation of women:* The Project is expected to have a positive impact on women's access to affordable Internet services in Kosrae, and indirectly throughout FSM, due to lower prices and improved service quality and availability. This is important because access to affordable, high-speed Internet is associated with economic and social empowerment, by increasing users' access to services such as employment and education opportunities and health information.
- *Development of small- and medium-enterprises*: Lower communications costs reduce overall business transaction costs. Communications infrastructure facilitates domestic and cross-border transactions, opens new marketing and distribution channels, and improves access to information about markets, prices, and consumers; it is particularly significant for tourism development.
- *Health and education sectors*: In the health sector, reliable, affordable broadband can facilitate, *inter alia*, remote diagnostics and laboratory testing, remote consultations with specialists, and access to international medical networks and resources. In the education sector, access to high-speed Internet provides teaching and learning materials, and skills enhancement opportunities, among other benefits.
- *Government agencies*: Faster, cheaper, and more reliable connectivity improves communications and information management between government agencies. Governments can be better-positioned to deploy online services, permitting increased transparency and accountability of government and improvements in service delivery.
- *Strong linkage to the National Development Goals of the FSM*: the EMC system is strongly aligned to the National Development Goals for FSM which provides for submarine fiber connectivity for all four states, providing high quality connection between them.

40. The numerical economic impact analysis also does not capture the contribution of FSM to the technical and commercial feasibility of the wider regional EMC project, which includes the collaboration with Nauru and Kiribati. From a regional perspective, FSM's participation would also enable Nauru to move from satellite-only connectivity to a fiber optic submarine cable and for Kiribati to take advantage

of the lowest capital and operating costs of any of the cable options which were identified and analyzed during project identification. The three-country EMC system would also reach an additional 18,000 beneficiaries compared to a cable project which connected Kiribati alone (including 8,000 people in Kosrae).

Institutional and Implementation Arrangements

41. The lead implementing agency for the Project is the Division of Communications within DTCI. Provided Congressional approval is obtained, currently expected in late March or early April 2017, work will begin to establish the TRA and the OAE. The establishment of these entities, as well as the signing of Project Agreements between these two entities and the World Bank and the signing of the Subsidiary Agreements between these two entities and the Government, are, among others, conditions of effectiveness for the AF. Once established with fiduciary assessments satisfactory to the Bank and the Project Agreements and Subsidiary Agreements signed, the OAE will take over as implementing entity for Component 1 and the TRA will take over as implementing entity for subcomponent 2C which will support sector regulation and regulatory capacity development. The AF does not propose to make any changes to these existing implementation arrangements. Additional institutional arrangements with respect to the activities to be financed under the proposed Additional Financing are provided below.

Coordination with Kiribati and Nauru

42. Component 1C of the Project on the EMC system is a strategic partnership between Kiribati, Nauru and FSM. Accordingly, collaboration between all parties, including governments, industry, and development partners is extremely important. The World Bank and ADB are already working closely on all aspects of the EMC activity and the Governments of the three countries have maintained regular contact during the preparation phase.

43. The option of building the EMC system was approved by Kiribati, FSM and Nauru (the Bank's newest member country) on July 4, 2016. A Memorandum of Understanding (MOU) formally establishing a joint Steering Committee and confirming each country's commitment to the development of the EMC system has been prepared and signed by all three countries. An initial technical and financial assessment has been carried out, although detailed engineering designs and technical specifications have not yet commenced and will be completed during the early stages of project implementation. The ADB has undertaken to hire a firm which will prepare the technical design and specifications for the EMC subsystem, lead technical project management and report to the EMC Steering Committee. Each country will be responsible for establishing its own project management and implementation arrangements at the national level.

44. The Kiribati Connectivity Project and this Additional Financing are being prepared in parallel due to the interrelatedness of these two activities which will finance the same cable system. Nauru's participation in the EMC system will be financed by ADB and is on a similar time track, including possibly an additional connection for Kiribati (Christmas Island) also financed by ADB. The ADB Task Team have confirmed their intention to seek ADB Board approval in June 2017.

45. DTCI is undertaking the preparatory activities proposed in the AF, until such time as the OAE is established and can take over responsibility for implementing Component 1. DTCI has been satisfactorily conducting preparatory tasks for AF project implementation, including initial work for the

preparation of revised safeguards documents. DTCI has also led the preparation of the MOU and formation of the East Micronesia Cable Steering Committee which has been established to represent Kiribati, Nauru and FSM in relation to the construction and maintenance of the EMC system.

46. For Project implementation, the three participating countries will enter into a contractual arrangement(s) for the financing, ownership, contracting arrangements, technical design (including marine survey and construction milestones and corresponding supplier payments), operations and management of the EMC cable system over its lifetime and related matters, known as a Construction and Maintenance Agreement (C&MA). Each participating country will establish its own national cable company (the OAE in the case of FSM) for national and client facing issues, including procurement of terrestrial infrastructure and negotiation of capacity sales to retail service providers, and for coordinated procurement of the EMC cable. These national entities will be the parties to the C&MA. At such time as the C&MA enters into force, the Steering Committee will be dissolved and any project governance functions performed by it will be assumed by the governance bodies created under the C&MA.

47. In addition, the C&MA will provide, among other matters, for EMC member access to (including capacity commitments and pricing) and termination/interconnection on the HANTRU-1 cable at Guam. It is expected that the C&MA will be completed and enter into force during the first 6 to 12 months of AF implementation. Each party to the C&MA will engage legal, financial, technical and transactional advisors to facilitate the negotiations.

48. It is expected that the AF will be implemented over a three-year period from the time of approval, including 1 year to complete the negotiation of the legal agreement(s) which will govern the terms of the collaboration between the three countries, 1 year to complete the design, specification and procurement of the cable system and all related civil works, and 1 year for the installation and commissioning of the infrastructure. An extension of the closing date of the existing Project is also being sought as part of the AF operation to extend the Project to coincide with the anticipated closing date of the Kiribati Connectivity Project.

Coordination with the ADB.

49. The World Bank will be financing the costs to FSM (Kosrae) and Kiribati (Tarawa) of the supply and installation of the EMC. The ADB will be financing the participation of Nauru. The World Bank and ADB will agree on a Memorandum of Understanding (MoU) that sets out arrangements for procurement, safeguards and monitoring and evaluation. The submarine cable system under Component 1C will be procured on the basis of the World Bank Procurement Regulations for IPF Borrowers (July 2016), the Standard Procurement Documents, Request for Bids Plant Design, Supply, and installation (Without Prequalification) July 2016, using a Limited Market approach. This follows similar practice for the Tonga-Fiji Connectivity Project (P113184) and the Samoa Connectivity Project (P128904).

Procurement

50. Components 1A and 1B which contain only original Project funds will continue to be managed under the Procurement and Consultant's Guidelines dated January 2011 (revised July 2014). Components 1C, 2 and 3 are proposed to be governed by the new Procurement Regulations for IPF Borrowers which became effective on July 1, 2016. Accordingly, procurement activities which commence from the date of effectiveness of the AF under Components 1C, 2 and 3 will be managed

under the new Regulations. The Government has prepared the PPSD and revised procurement plan which will apply for procurements under Component 1C, Component 2 and Component 3. The OAE and TRA will be responsible for procurement activities under Component 1 and 2C, respectively, and Government will consider the desirability of transferring some or all of the current project implementation team (provided performance is satisfactory) to the OAE and TRA, as appropriate, to ensure continuation of procurement management under the Project. If necessary, additional staff or consultants may also be recruited. The World Bank will conduct fiduciary assessments on the OAE and TRA before entering into Project Agreements with these entities, which will include an assessment of their capacity to manage procurement activities.

51. With the revised activities under Component 1C, the subject procurement and methodology under Component 1C will change. Previously it was contemplated that under Component 1C $3.5 million would be used to part-finance the purchase of capacity to provide broadband Internet to Kosrae. O3B was identified as the most cost effective option and sole global supplier of the desired technology (low-latency medium earth orbit satellite connectivity). Given these circumstances, Direct Contracting was expected to be used for the procurement of services from O3B. However, satellite capacity will no longer be procured for Kosrae. Instead, Component 1C will cover FSM's share of the cost of the submarine cable system which will be procured on the basis of World Bank Procurement Regulations for IPF Borrowers (July 2016), Standard Procurement Documents, Request for Bids Plant Design, Supply, and installation (Without Prequalification) July 2016, using a Limited Market approach under one single bidding process. The three countries are discussing the terms of the arrangements that will govern the procurement process, and which will be included in a C&MA along with how the supply contract will be signed. Agreement on the C&MA (or similar) will be concluded before the bidding process is launched.

52. This procurement will cover the whole EMC subsystem and will be jointly cofinanced by ADB which is providing funding to Nauru. World Bank procurement rules will apply and ADB will seek any necessary waivers.

Financial Management

53. No changes to the existing Financial Management arrangements are envisaged for the additional financing. The project accounts will continue to be maintained by DOFA using Finance Officer Consultants funded by World Bank financed project in FSM. Two Finance Officer positions are funded through the current portfolio of projects and it is not expected that the additional work generated from this additional financing will require the funding of an additional position. However, it is recommended that provision continue to be made in the project budget for part funding of a position until it is determined what contribution, if any, will be required. Project expenditure will be recorded and paid through the government accounting financial management system (Fund Ware) and swept from the Designated Account (DA). An exception to audit requirements has been approved by RMFM which permits submission of audited financial statements to the World Bank no later than 9 months after the end of the reporting period, in line with the standard practices of Government under FSM law.

54. All payments from Component 1 will be by direct payment and will be consolidated into project IFR prepared by DOFA. The annual entity audit of the OAE will be required to be submitted to the Bank within 9 months of the end of their reporting period. The payments and financial management of the contracts for the consultants employed to meet the technical requirements of Component 2C will remain

with DOFA. The TRA will be required to submit a copy of its annual audit to the Bank within 9 months of the end of its reporting period.

55. The activities of the AF will need to be identified separately in the Interim Unaudited Financial Reports, however one Interim Financial Report will cover all the project financial activity. Reporting will continue to be on a quarterly basis and due to be received by the Bank 45 days after the end of each reporting period. Project audit arrangements and project activity will continue to be disclosed in the National Government Accounts. The current DA can be used for advance funds and the ceiling can be increased when the current and additional funding are being implemented concurrently. However, as the majority of disbursement will be through Direct Payment, no increase in the DA ceiling would be required.

Environmental and Social

56. The proposed activities under the Additional Financing do not trigger a change in the Project's environmental category as Category B and do not trigger any new safeguard policies. OP4.01 Environmental Assessment, OP4.04 Natural Habitats and OP4.11 Physical Cultural Resources, triggered under the original project, have also been triggered under the Additional Financing. The technical assistance work to be carried out under Components 2 and 3 will also comply with the safeguards instruments, terms and conditions of financing from the Association and the laws of the FSM. A part time safeguards advisor was engaged in August 2016 to oversee the implementation of the ESMP for the remainder of the project, including the works to be carried out under the AF. This safeguards advisor will also support the safeguards aspects (if any) of the TA components implemented by the OAE and TRA.

57. Implementation of safeguards to date has been satisfactory. No civil works have been carried out to date, but a number of safeguards tasks have been completed in preparation of the cable laying and ancillary infrastructure. An Initial Environmental Examination (IEE), Land Due Diligence Assessment and ESMP were prepared for project appraisal in 2014. The IEE and ESMP were updated in March 2016 to reflect a new proposed landing site in Yap. Consultations occurred with land owners and the communities near the landing sites at this time. In addition to updating the IEE, DTCI project manager has undertaken several key tasks since project effectiveness: ensured the ESMP was included in the Cable laying contracts and civil works bid documents, obtained access to land for the beach manhole, through voluntary negotiations, for the Yap landing (with a voluntary land donation form signed), and continued to consult with the land owners at the proposed Chuuk beach manhole site.

58. Safeguards instruments for the EMC system have been prepared by DTCI, in consultation with the Bank Task Team. Specialist safeguards advisers were procured via the EMC Steering Committee and conducted field visits and consultations in Kiribati, FSM and Nauru from mid-October to mid-November, 2016. The ESIA and ESMP were prepared in accordance with World Bank policies and publicly disclosed in FSM on January 6, 2017. The ESIA and ESMP were disclosed on the World Bank's external website on February 7, 2017. No significant environmental impacts are anticipated and the Project remains Category B.

59. The environmental and social studies focused on the reef and lagoon environments and the locations for terrestrial infrastructure on Kosrae, Kiribati and Nauru. No specific environmental studies are undertaken for submarine cables which lie in deep sea. However, prior to laying cables, a detailed

Cable Route Survey is done to ensure that the cable is not located in high risk locations or in geological features (e.g., thermal vents) that often harbor unique faunal assemblages at abyssal depths. The International Cable Protection Committee publishes recommendations on key issues such as cable routing, cable protection and cable recovery and prescribes strict environmental standards. Extensive studies that are undertaken by cable suppliers prior to final cable laying work are effective safeguards against any possible environmental disruption, since in large part they are intended to identify routes for the cable that will avoid seamounts, volcanoes, canyons, vents, seeps, deep water reefs, and dissected terrain—all areas that tend to be associated with higher biological value than the general abyssal plain. The ESIA identifies that the risk of such vulnerable habitats being present is very low along the cable route to the BMH in Kiribati, Nauru, Kosrae and Pohnpei. The key mitigation measure as stated in the ESMP and explained above, is to avoid those habitats.

60. At the shoreward end, the cable will cross the intertidal zone, between the subtidal zone and a 'beach manhole (BMH) structure'. At this location the cable will be covered with lightweight protection consisting of standard articulated piping and, depending on the conditions, may be bolted to the substrate, trenched, or buried. A BMH landing facility will likely comprise a small concrete manhole approximately 2m x 2m x 2m.

61. In Kosrae a number of potential landing sites were investigated and analyzed. The evaluation of the eight options indicated the most favorable locations for the landing and siting the BMH at either Kosrae Airport at Okat or Sanskrit Elementary School on the southern side of Lelu Harbour. Given the uncertainty around of the subsea cable route from Pohnpei, these two options (i.e., Kosrae Airport in the north-east, Lelu Harbour in the east) allow flexibility for the cable laying contractor to make a final decision regarding the most favorable BMH site based on other installation considerations. The existing FSMTC earth station premises in Tofol have been identified as the preferred location for the cable landing station. The clear preference of the Government is for all terrestrial cables to be buried within the road easement currently used for existing telecommunications infrastructure. No material impacts are anticipated in relation to the terrestrial works.

62. With respect to potential impacts in the near shore, the ESIA shows that there are no critical habitats in the existing reef and inshore areas at each of the preferred landing sites. The cable laying process will be guided by ecologically-qualified divers who will ensure that the cable will avoid any significant coral assemblages and other sensitive ecological sites as well as ship wrecks and other sensitive or historic sites. OP4.11 Physical Cultural Resources has been triggered as a precautionary measure in case any are uncovered during works and the chance find procedure is invoked.

63. Due diligence during identification and preparation for the Additional Financing has identified that there will be no involuntary resettlement in connection with this activity. OP4.12 is therefore not triggered. The preferred locations for the terrestrial assets (BMH, terrestrial cabling, and the cable landing station) are all on government owned, leased or private land where the option of voluntary access is possible. The terrestrial cabling will be buried within an existing cable ducting, along a road easement.

Gender, Climate Change and Resilience

64. Affordable, high-speed Internet is known to be associated with economic and social empowerment by increasing users' access to services such as employment and education opportunities and health. However, analysis also shows that while DTCI has been engaging on gender issues within

the ICT sector, initiatives are not well coordinated with other agencies engaged on gender issues, especially the Department of Health, or integrated with the gender engagement strategies and policies currently under development by Government.[13] This presents a risk if the potential benefits of increased availability of ICT services are not shared equally among men and women. In the case of women's unequal access to participate in governance or leadership or engage in productive sectors, unequal access to ICT could lead to increased gender inequalities in economic opportunities and further diminish women's voice and influence in society.

65. The project will provide technical assistance to help close these gaps and support gender mainstreaming which takes advantage of ICT. Specific actions under the Project will be undertaken to deepen the quality of underlying information, carrying out further analysis and support better decision making around ICT and gender. These actions include carrying out gender disaggregated study of access to affordable services and consumer survey(s) to provide a baseline for M&E and to guide further engagement. Engagement with focus groups and targeted surveys will also help Government to measure and promote mechanisms to mainstream improved ICT services in ways that facilitate new social and economic livelihood opportunities on a gender informed basis. The Government also intends to carry out information campaigns to promote opportunities supported by improved ICT services on a gender informed-basis linked to identified gender gaps. This engagement will be aligned with the focus areas identified by gender policy strategy currently under preparation by Government—which in turn is expected to align with the FSM National Strategic Development Plan—which include (a) better representation of women in decision-making; (b) elimination of gender-based violence; (c) better access to education and transition to work for both girls and boys; (d) addressing barriers facing women in the workforce; (e) women controlling their fertility and space their children; and (f) gender mainstreaming.

66. The Project will also undertake specific actions in the area of disaster risk management such as: (a) facilitating the deployment of disaster risk monitoring tools and applications that require large volumes of data transmission (including access to regional databases) by improving the quality and reducing the cost of Internet; (b) providing additional options/media for early warning systems and post-disaster communications. Analysis indicates that ICT sector policies and disaster risk management strategies are not well integrated. However, DTCI and the Office of Emergency and Environmental Management (OEEM) have identified specific opportunities to link improved ICT services and fiber optic infrastructure expansion in the Project areas to enhance disaster management actions, specifically (a) improved resilience of undersea fiber optic cable connectivity compared to satellite, particularly during poor or extreme weather conditions when communication is most critical; (b) improved speed of communication allowing quicker response time to address emerging crises; and (c) improved capacity to identify and relay scope of disaster in order to obtain appropriate assistance. With the effects of climate change, FSM expects that the need for improved disaster response will only increase.

[13] FSM supports United Nations Sustainable Development Goal number 5 which is focused on achieving gender equality and empower all women and girls. Aligned to this the International Telecommunications Union (ITU) is promoting gender equality in programs such as: (a) International Girls in ICT, an initiative backed by ITU Member States in Plenipotentiary Resolution 70, creating global environment that empowers and encourages girls and young women to consider studies and careers in the growing field of ICT; (b) ITU/UN Women GEM-TECH Awards; and (c) World Telecom Standardization Assembly(WTSA), thru subregional institution such as Asia Pacific Telecommunity (APT). FSM has also been supporting gender equality thru the Preliminary APT Common Proposals (PACP).

67. Current practice by the OEEM is to send photographers out to crisis areas, take photos, and then hand deliver them on flash drives to officials and agencies to review in order to formulate and advocate for an appropriate response. Initial responses to crises are frequently slow due to reliance on satellites outside of Pohnpei which offer very limited communication capacity and are especially vulnerable to extreme weather events compared to fiber. As a result, Government often struggles to correctly identify the scope of impact and coordinate support from NGOs and donors, who in some instances express skepticism of FSM requests for emergency assistance until video and photographs of destroyed schools, medical dispensaries, residential homes and other facilities becomes available online or through social media. The resulting delays slow the ability of government and partners to mobilize to address the crisis. The time required to identify the scope of crises and to mobilize responses will be greatly shortened by developing the capacity to provide real time video updates as crises emerge. The potential for live streaming would also shorten response times, allow for faster identification of the magnitude of an emerging crisis, better direct support and help triage crisis areas most in need. It would also improve capacity and allow for real time reporting to the international community to support and substantiate requests for assistance.

68. Women are disproportionately vulnerable to the effects of natural disasters and climate change in the Pacific and face greater barriers than men to participate in disaster risk reduction, recovery, and climate change mitigation and adaptation efforts. Government is currently working on policies currently to integrate gender and disaster risk management efforts and sector strategies. The Project will investigate opportunities to support and strengthen this engagement linking as part of ICT mainstreaming in gender and DRM.

Key Risks

69. The risk assessment for the original Project applies to the proposed AF. In particular, technical design, institutional capacity for implementation and fiduciary risks are assessed as High. The Project continues to provide technical assistance for the creation of the OAE and the TRA as implementing entities for Component 1 and subcomponent 2C, respectively, although the risks of delay or opposition to implementing market based reforms are substantial. The establishment and operationalization of the OAE in a manner satisfactory to the Bank is a disbursement condition under Component 1 of the Project for the financing of the cable system and one of the effectiveness conditions of the AF. The creation of the TRA in a manner satisfactory to the Bank is a disbursement condition under subcomponent 2C and an effectiveness conditions of the AF. The Government is working diligently to satisfy these requirements, although progress has been slow. There has been a delay in finalizing the creation of the OAE and implementing the associated sector restructuring steps because of concerns from FSMTC regarding the impact of competition on its operations and its ability to meet its obligations to third parties. During the first quarter of 2017, Government completed further consultations with stakeholders and confirmed its intention to seek an appropriation from Congress to meet the initial capital requirements needed for the establishment of the OAE. Work has also progressed to finalize the approach for establishing the TRA, including the commencement of the recruitment process for an international adviser to assist with setting up this new agency. These reforms are necessary in order to satisfy Withdrawal Conditions and implementation covenants prescribed under the original Project. Prompt implementation by Government of these ICT sector reforms, as provided for under the Telecommunications Act 2014, is essential for the success of the Project.

70. Government has signed contracts for the supply of connectivity for Yap, amounting to approximately $13.5 million, and a contract amendment for the supply of the submarine fiber optic cable for Chuuk at a cost of approximately $19.5 million. Initial payments under these contracts is facilitated by a lifting of the disbursement conditions which was provided by the Bank in March 2016, permitting payments from Project funds up to a total of $9.4 million. Government is aware that it is responsible for all payments under these contracts and that Project funds may not be used until the disbursement conditions have been satisfied, totaling $23.6 million for both Yap and Chuuk. However, the continuing delays establishing the OAE are placing increasing pressure on Government. Taking into account the $4,200,000 which is available for payments under Category 1(a) for Part 1(b), commitments and billing schedules under these contracts indicate Government faces payment obligations by June 30, 2017, totaling approximately $17.4 million which will need to be paid from sources other than the Project, unless the disbursement conditions imposed for the original Project are met. Ongoing implementation activities for Yap, and prospectively for the Chuuk submarine cable systems, also depend on cooperation from FSMTC (e.g., for colocation agreements, interconnection arrangements, land and facilities access), which remains uncertain in light of the January 2017 Congressional Session.

71. Procurement and management capabilities of DTCI have been significantly strengthened by their successful completion of the complex arrangements for the supply of the Yap cable system and the negotiation of the contract for the supply of the Chuuk cable system. However, the OAE and the TRA will be new entities with no established track record of delivering services or implementing projects of this nature. Accordingly, the OAE is expected to rely heavily on the experience within DOFA, DTCI and FSMTC, while the TRA will rely on DOFA and DTCI for financial management and procurement support. Implementation capacity and technical risk mitigation will be further enhanced following the joint procurement via the EMC Steering Committee of a technical project management firm which will support the design and installation of the EMC system. The involvement of private sector operators in Kiribati and Nauru will also be important during the design and implementation phases to manage and mitigate possible technical and commercial risks.

72. Project implementation will entail a significant degree of coordination with the other two countries (Kiribati and Nauru) and institutions (ADB) collaborating on the EMC project. The three countries (and/or the respective cable implementing entities) of Kiribati, Nauru and FSM will need to negotiate and agree commercial arrangements for the construction, maintenance and operation of the cable for its commercial lifetime. If one of the countries were to decline to participate such a decision could fundamentally change the financial, economic and technical assumptions underpinning the project. It is also important to realize that an event adversely impacting the implementation of the obligations of either of Kiribati, FSM or Nauru under (i) consortium arrangements for the EMC; (ii) respective applicable laws and regulations; or (iii) the respective financing agreements (with IDA or ADB as the case may be) may derail the construction, ownership or management of the EMC in the three countries (even without a breach by the other countries) and the completion of Component 1C of the Project. However, the countries have made good progress already with the signing of the tripartite MOU, the establishment of the EMC Steering Committee, the preparation of the ESIA and the procurement and anticipated coordination of a joint technical project manager. The AF will provide additional support to FSM for technical assistance and project management to mitigate risks. Similar support is expected to be provided to Kiribati by the Bank under the Kiribati Connectivity Project and to Nauru by ADB to retain expert advisers and consultants to support these transactional steps and help mitigate risk. An effectiveness condition will also provide that the additional financing will not become effective until the

consortium agreements between the three countries have been agreed and all relevant financing has been secured and is effective.

V. WORLD BANK GRIEVANCE REDRESS

73. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB noncompliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

ANNEX 1: REVISED RESULTS FRAMEWORK AND MONITORING INDICATORS

Project Name:	P2: Palau-FSM Connectivity Project: AF Kosrae Connectivity (P161363)			Project Stage: Additional Financing	Status: DRAFT
Team Leader(s):	James L. Neumann	Requesting Unit:	EACNF	Created by:	Andrea Ruiz-Esparza on 11-Aug-2016
Product Line:	IBRD/IDA	Responsible Unit:	GTI09	Modified by:	James L. Neumann on 28-Mar-2017
Country:	Micronesia, Fed	Approval FY:	2017		
Region:	EAST ASIA AND PACIFIC	Lending Instrument:	Investment Project Financing		
Parent Project ID:	P130592	Parent Project Name:	Pacific Regional Connectivity Program 2: Palau-FSM Connectivity Project (P130592)		

Project Development Objectives

Original Project Development Objective - Parent:

The development objective of the Project is to reduce the cost and increase the availability of information and communication technology services needed to support social and economic development in the Recipient's territory.

Proposed Project Development Objective - Additional Financing (AF):

The development objective of the Project is to reduce the cost and increase the availability of information and communication technology services in the Recipient's territory.

Results

Core sector indicators are considered: Yes

Results reporting level: Project Level

Project Development Objective Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Access to telephone services	☐	Number	Value	30.00	30.00	80.00

	(mobile phones per 100 people)			Date	25-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			
Revised	Access to Internet Services (number of subscribers per 100 people)	☒	Number	Value	2.00	2.00	40.00
				Date	25-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			
Revised	Wholesale Internet bandwidth price (US$ per Mbps/month)	☐	Number	Value	1800.00	1800.00	700.00
				Date	25-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			
Revised	Direct project beneficiaries	☒	Number	Value	0.00	0.00	42000.00
				Date	25-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			
No Change	Female beneficiaries	☒	Percentage Sub Type Supplemental	Value	50.00	50.00	50.00
Revised	Internet bandwidth available (Mbps)	☐	Number	Value	38.00	38.00	20150.00
				Date	25-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			
Revised	Impact on Telecom sector of World Bank Technical Assistance (composite score: 1-low impact to 5-high impact)	☒	Number	Value	2.00	2.00	5.00
				Date	25-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			
Revised	Retail Price of Internet Services (per Mbit/s per Month, in US$)	☒	Amount(USD)	Value	65.00	65.00	20.00
				Date	30-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			
Intermediate Results Indicators							

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Length of fiber optic cable access (km)	☐	Kilometers	Value	0.00	0.00	2500.00
				Date	25-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			
New	EMC establishment	☐	Yes/No	Value	No	No	Yes
				Date	20-Mar-2017	30-Nov-2016	30-Aug-2019
				Comment			
Revised	Regulatory capacity strengthened	☐	Yes/No	Value	No	No	Yes
				Date	25-Sep-2014	30-Nov-2016	30-Nov-2022
				Comment			