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The World Bank
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Report No: PAD2038

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT

IN THE AMOUNT OF SDR 14.8 MILLION
(US\$20 MILLION EQUIVALENT)

TO THE

REPUBLIC OF KIRIBATI

FOR A

PHASE 4 OF THE PACIFIC REGIONAL CONNECTIVITY PROGRAM:

KIRIBATI CONNECTIVITY PROJECT

May 9, 2017

Transport & ICT Global Practice
EAST ASIA AND PACIFIC REGION

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CURRENCY EQUIVALENTS

(Exchange Rate Effective {February 28, 2017})

Currency Unit = AUD

AUD 0.75 = US\$1

US\$ 1.00 = AUD 1.34

US\$ 1.35 = SDR 1.00

US\$1 = SDR 0.74

FISCAL YEAR

January 1 - December 31

Regional Vice President: Victoria Kwakwa

Country Director: Michel Kerf

Senior Global Practice Director: Jose Luis Irigoyen

Practice Manager: Jane Treadwell

Task Team Leader(s): Natasha Beschorner

**ABBREVIATIONS AND ACRONYMS**

ADB	Asian Development Bank
ADSL	Asymmetric Digital Subscriber Line
ATH	Amalgamated Telecom Holdings
ATHKL	Amalgamated Telecommunications Holdings, Kiribati Ltd.
BMH	Beach Manhole
BU	Branching Unit
C&MA	Construction and Maintenance Agreement
CAPEX	Capital Expenditure
CCC	Cable Construction Contractor
CCK	Communications Commission of Kiribati
CPF	Country Partnership Framework
CLS	Cable Landing Station
CRM	Customer Relationship Management
DA	Designated Account
DFAT	Australian Department of Foreign Affairs and Trade
EIRR	Economic Internal Rate of Return
EMC	East Micronesia Cable
EMCPSC	East Micronesia Cable Project Steering Committee
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESSIP	Environmental and Social Safeguard Instrument for the Pacific
FA	Financing Agreement
FNPV	Financial Net Present Value
FM	Financial Management
FSM	Federated States of Micronesia
FSMTC	Federated States of Micronesia Telecommunications Corporation
Gbps	Gigabits per second
GDP	Gross Domestic Product
GNI	Gross National Income
GRS	Grievance Redress System
ICT	Information and communication technologies
IDA	International Development Association
IEE	Initial Environmental Examination
IFR	Interim Financial Reports
IP	Internet Protocol
IRU	Indefeasible Right of Use
ITU	International Telecommunications Union
IXP	Internet Exchange Point
Mbps	Megabits per Second
KAIP	Kiribati Aviation Investment Project
KCC	Kiribati Cable Company Ltd



KFSU	Kiribati Fiduciary Support Unit
KNPF	Kiribati National Provident Fund
LCS	Least Cost Based Selection
MICTD	Ministry of Information, Communications, Transport and Tourism Development
MFED	Ministry of Finance and Economic Development
MoU	Memorandum of Understanding
03B	Other three billion (satellite service provider)
OADM	Optical Add Drop Multiplexer
OPEX	Operating Expense
PCR	Physical Cultural Resources
PMU	Project Management Unit
POM	Project Operations Manual
PPA	Project Preparation Advance
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy Document
PRIF	Pacific Regional Infrastructure Facility
PSC	Project Steering Committee (see also EMCPSC)
RFS	Ready for Service
RIO	Reference Interconnection Offer
QBS	Quality Based Selection
QCBS	Quality and Cost Based Selection
SC	Steering Committee
SCD	Systematic Country Diagnostic
SMS	Voice & Text Messaging
SOE	State Owned Enterprise
SLTE	Submarine Line Terminating Equipment
SMS	Short message service (text messaging)
SORT	Systematic Operations Risk-Rating Tool
SPV	Special Purpose Vehicle
STEP	Systematic Tracking and Exchanges in Procurement
TA	Technical Assistance
TICTDP	Telecommunications and ICT Development Project
TSKL	Telecom Services Kiribati Limited
VAT	Value Added Tax
WB	World Bank

**BASIC INFORMATION**

Is this a regionally tagged project?	Country(ies)	Financing Instrument
Yes	Micronesia, Federated States of, Kiribati, Nauru	Investment Project Financing

☐ Situations of Urgent Need of Assistance or Capacity Constraints

☐ Financial Intermediaries

☒ Series of Projects

Approval Date	Closing Date	Environmental Assessment Category
31-May-2017	30-Nov-2022	B - Partial Assessment

Bank/IFC Collaboration	
No	

Proposed Development Objective(s)

The Project development objective is to reduce the cost and increase the availability of Internet services in Kiribati.

Components

Component Name	Cost (US\$, millions)
1 (a) Submarine Cable System	15,500,000.00
1 (b) (i) Cable Landing Station and Ancillary Equipment	1,500,000.00
1 (b) (ii) Connection of the EMC to the Pohnpei Cable Landing Station	0.00
2 Technical Assistance	2,000,000.00
3 (a) Project Management & Administration: Activities to Strengthen Capacity of the Recipient	800,000.00
3 (b) Project Management & Administration: Program of Activities to Strengthen the Project Implementing Entity's Capacity	200,000.00



Organizations

Borrower : Republic of Kiribati

Implementing Agency : Ministry of Information, Communications, Transport and Tourism Development

Safeguards Deferral

Will the review of safeguards be deferred?

☐ Yes ☐ No

PROJECT FINANCING DATA (IN USD MILLION)

<input type="checkbox"/> Counterpart Funding	<input type="checkbox"/> IBRD	<input type="checkbox"/> IDA Credit <input type="checkbox"/> Crisis Response Window <input type="checkbox"/> Regional Projects Window	<input checked="" type="checkbox"/> IDA Grant <input type="checkbox"/> Crisis Response Window <input checked="" type="checkbox"/> Regional Projects Window	<input type="checkbox"/> Trust Funds	<input type="checkbox"/> Parallel Financing
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Total Project Cost:
20.00

Total Financing:
20.00

Financing Gap:
0.00

Of Which Bank Financing (IBRD/IDA):
20.00

Financing (in US\$, millions)

Financing Source	Amount
IDA Grant	20.00
Total	20.00

Expected Disbursements (in US\$, millions)

Fiscal Year	2017	2018	2019	2020	2021	2022
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Annual	0.00	1.20	2.80	5.49	8.57	1.94
Cumulative	0.00	1.20	4.00	9.49	18.06	20.00

INSTITUTIONAL DATA

Practice Area (Lead)

Transport & ICT

Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

No

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Moderate
2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Low
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Substantial



6. Fiduciary	● Substantial
7. Environment and Social	● Low
8. Stakeholders	● Substantial
9. Other	● Moderate
10. Overall	● Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

☐ Yes ☒ No

Does the project require any waivers of Bank policies?

☐ Yes ☒ No

Safeguard Policies Triggered by the Project

Yes

No

Environmental Assessment OP/BP 4.01

✓

Natural Habitats OP/BP 4.04

✓

Forests OP/BP 4.36

✓

Pest Management OP 4.09

✓

Physical Cultural Resources OP/BP 4.11

✓

Indigenous Peoples OP/BP 4.10

✓

Involuntary Resettlement OP/BP 4.12

✓

Safety of Dams OP/BP 4.37

✓

Projects on International Waterways OP/BP 7.50

✓

Projects in Disputed Areas OP/BP 7.60

✓

Legal Covenants

Sections and Description

Signature by Kiribati, Nauru and FSM of a legally binding Construction and Maintenance Agreement in form and substance acceptable to IDA. Deadline 24 months after Effective Date

Section I.B.2(a) of Schedule 2 to the FA.



Design by Kiribati of its Strategic Asset Management Plan for cable infrastructure assets for this and other projects.
Deadline 24 months after Effective Date.
Section I.B.4(a) of Schedule 2 to the FA.

Establishment of the national cable operator: Deadline 6 months after Effective Date.
Section I.B.1(a) of Schedule 2 to the FA.

Prepare and adopt a Project Operations Manual: Deadline 3 months after Effective Date.
Section I.E of Schedule 2 to the FA.

Carry out a Mid-term review: Deadline 30 months after Effective Date.
Section II.A.2 of Schedule 2 to the FA.

Conditions

Type	Description
Disbursement	<p>Category 1 of the disbursement table (Funds allocated to the construction of the EMC):</p> <ul style="list-style-type: none"> (i) IDA financing of the FSM portion of the EMC ready to disburse (ii) ADB financing of the Nauru portion of the EMC ready to disburse (iii) MOU on the joint arrangement between ADB and IDA as co-financiers of the EMC. (iv) National cable operator in Kiribati established and operational (v) Construction and Maintenance Agreement signed and effective
Effectiveness	There are no project specific conditions of effectiveness.

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Natasha Beschorner	Team Leader(ADM Responsible)	TTL, technical	GTI09
Eric Leonard Blackburn	Procurement Specialist(ADM Responsible)	Procurement	GGO08
Stephen Paul Hartung	Financial Management	Financial Management	GGO20



Specialist			
Andrea Ruiz-Esparza	Team Member	Team Assistant	GTI09
Carlo Maria Rossotto	Peer Reviewer	Lead ICT Specialist	GTI11
David Satola	Counsel	Legal and regulatory	ICOIO
Helene Bertaud	Counsel	Lead Counsel	LEGES
James L. Neumann	Counsel	Legal and transactional	GTI11
John Haydon	Team Member	Regulatory	GTI09
Natasha Caroline Allan	Team Member	Program Assistant	EACNF
Nicholas John Valentine	Safeguards Specialist	Safeguards	GSU02
Penelope Ruth Ferguson	Safeguards Specialist	Safeguards	GENDR
Ross James Butler	Environmental Specialist	Safeguards	GSU02
Timothy John Charles Kelly	Peer Reviewer	ICT Policy	GTI11
Virginia Ann Horscroft	Peer Reviewer	Economics	GMF10
Extended Team			
Name	Title	Organization	Location



KIRIBATI

P4: PACIFIC REGIONAL CONNECTIVITY PROGRAM PHASE 4: KI: CONNECTIVITY PROJECT

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MAP(S) NO. 42881



I. STRATEGIC CONTEXT

A. Country Context

1. Kiribati is one of the most remote and geographically dispersed countries in the world, consisting of 33 coral atolls spread over approximately 3.5 million square kilometers of ocean and up to 3,700 km between the farthest islands. It is located at the Equator and the International Date Line. The population of about 109,693 (2015 census, preliminary results) lives on 22 coral atolls and a single volcanic island. Its population is growing at a long-term rate of 1.5 percent p.a. (1.25 percent over the last five years). The total land area is less than 800 square kilometers, comprising almost half of that is Kiritimati (Christmas) Island, at the eastern extremity of the country (and about 800 km west of Hawaii). The capital, South Tarawa, is the most populated island with approximately 56,000 people (2015 census, preliminary results). The populations of the Outer Islands vary from around 20 (Kanton) to 6,400 (North Tarawa and Kiritimati Islands).
2. The economy of Kiribati is fragile but the Government has enacted and continues to enact reforms that will strengthen the economy. Historically, in one form or another, Kiribati gets a large portion of its income from abroad. Examples include fishing licenses, development assistance, worker remittances, and niche tourism. Given Kiribati's limited domestic production ability, it must import nearly all of its essential foodstuffs and manufactured items (imports were 12 times exports in 2014); Kiribati depends on these external sources of income for financing. In common with other small island atoll states, it faces obstacles posed by remoteness, lack of scale, and vulnerability to external shocks and environmental stress. Internal and external remoteness and weakness in the business climate have kept Kiribati's private sector small. Private sector contributors to the Kiribati National Provident Fund (KNPF), however, indicate a steady increase in private sector operations (private sector KNPF data indicates private sector employment has risen from about 22 percent in 2009 to about 30 percent of total employment in 2015 and probably related to the Government reform program).
3. Kiribati's economy is based largely on natural resources and transfers, remittances from expatriate workers and donor grants, and is dominated by a large public sector. In recent years Kiribati has experienced modest levels of economic growth. GDP growth was 4 percent in 2015, boosted by large, externally-funded infrastructure Projects and is projected at around 2.5 percent for 2016 (IMF, 2016). Fishing license fees and remittances are sensitive to fluctuations, depending on fish migratory patterns and the global economy respectively. Notwithstanding its limited resources, Kiribati has largely had a solid record of financial stability since its independence in 1979. Governments have adopted a cautious approach to domestic spending combined with a deliberate policy of capitalizing its sovereign wealth fund, the Revenue Equalisation Reserve Fund, used to supplement recurrent revenues and smooth volatility in other income sources.
4. The long-term viability of Kiribati hinges on better domestic and, particularly, international economic integration. Like many Pacific island economies, Kiribati lacks economies of scale, faces high transaction costs, and has limited institutional capacity. Improved connectivity with access to the international market and environment based on lower communications costs will



contribute both to national economic development and to regional coordination, and to the Kiribati's integration in the Pacific and internationally. Broadband Internet offers improved connectivity, lowers transaction costs for businesses, government, and households, creates new economic opportunities, and increases options for service delivery.

B. Sectoral and Institutional Context

5. **Sector Overview.** Given its geography and dispersed population, provision of affordable and reliable access to ICT services is challenging in Kiribati. The Government is currently implementing a comprehensive program to increase access to ICT infrastructure and services by liberalizing the ICT sector and enabling the introduction of competition. Key achievements include:

- a. Introduction of a new telecommunications policy, completed in 2012, and new telecommunications legislation, enacted in 2013. The Ministry of Information, Communications, Transport and Tourism Development (MICTTD) has begun a review of the 2012 policy identifying and detailing new policy initiatives for the ICT sector, including e-Government options. Reform of the monopoly incumbent, Telecom Services Kiribati Ltd (TSKL) through a sale of most of its assets, (completed 26 May 2015), and, through a competitive process, licensing of two new mobile operators as well as several other Internet and gateway providers. The purchaser of TSKL's assets, Amalgamated Telecom Holdings Kiribati Ltd (ATHKL), owned by the Amalgamated Telecom Holdings (ATH) group in Fiji, is now well established and growing the local market. ATHKL is expanding coverage of services to some Outer Islands, and proposes further extensions. The second mobile services licensee, Ocean Links, is in the process of establishing its network.
- b. Establishment of a sector regulator, the Communications Commission of Kiribati (CCK), and preparation of a new regulatory framework, including: Operator licensing, Type Approval, Radio communications licensing, Kiribati Radio Frequency Spectrum Plan, Numbering Rules (providing for eight-digit based services and number portability), and Universal Access. MICTTD has recently introduced amendments to the Telecommunications Act to improve its effectiveness, as well as the accountability of the regulator.
- c. Confirmation of commitment to Outer Islands' connectivity as a national high priority. Recognizing the dispersed population and great difficulty in providing ICT services on a commercial basis, the Government is working to address this through a public-private partnership (PPP); services under the PPP are anticipated in 2017.

6. Kiribati has benefited from these developments to date in several ways. The introduction of ATHKL as a larger operator with access to greater finance, technological, and managerial expertise has resulted in a more extensive network able to deliver 3G and 4G services to a greater portion of the population. Its use of O3B Networks satellite services for Internet and its rationalization of geostationary satellite capacity ensures a more resilient network.

7. Cost and quality of services have improved. Voice and text messaging (SMS) service is now much improved and the price of local and international calls has fallen (though call rates now include VAT) and there has been some rebalancing of tariffs reflecting ATHKL's parent market. International



SMS is now available to many countries. Prepaid services and offerings are mirrored from Fiji (text top-up, text marketing etc.) with mobile money to be established in the near future. Mobile Internet is much improved, with user speeds four to five times higher than one year ago. The concern now is that rapidly rising market demand is beginning to outpace service provider capacity. Moreover, now that speeds are higher and more attractive to users, users are concerned about high costs and the associated “bill shock” for high usage of data.

8. **Delays in competition.** While the market has been officially liberalized since the Communications Act in 2012, there have been delays in other entrants becoming effective competitors. Issues affecting effective competition are varied but some are within the purview of the regulator, CCK (interconnection, tower sharing) and the Government (land access, import of equipment and visas for key staff). Delays associated with the CCK are already being addressed through technical/advisory assistance; those related to Government need to be resolved as a high priority in order to achieve the objectives of the sector reforms and also to realize the full benefits of the cable investment.

9. **International Bandwidth needs.** The most significant gap in the Government’s ICT program, and industry need, is for much improved international connectivity that is lower cost and more resilient to circumstances of Kiribati. At present any operator in Kiribati depends on high cost satellite links. As satellite capacity is sold as single direction links while submarine cable and microwave connections are sold as bi-directional links, more satellite capacity is required for equivalence to the submarine cable (or microwave link) capacity. Additionally, satellite capacity available in this sparsely-populated region of the Pacific represents a fundamental constraint on satellite services as a solution for Kiribati.

10. **Outer Islands Connectivity.** The cost of international bandwidth also impacts the availability of funds for investment in improved outer islands connectivity. The majority of the population of Kiribati resides on a few islands around the main island of Tarawa. This group of islands includes North and South Tarawa, Marakei, Abaiang and Maiana and hosts 73,000 persons, representing more than 66 percent of the total population. The significance of this geographic grouping is that a submarine optical fiber service to Tarawa, combined with simple (and in the main, existing) microwave links, could deliver high capacity ICT and broadband services to the majority of Kiribati’s population. The reduction in international bandwidth costs could then also free up service provider funds to reach the more distant outer islands.

11. An Outer Islands connectivity program to address these unmet needs is being financed under the ongoing Kiribati Telecommunications and ICT Development Project (P126324), cofinanced by the World Bank, Australia and New Zealand. This program is being developed in parallel with the proposed Kiribati Connectivity Project. The program design envisages a private public partnership structure to deliver mobile broadband services to the Outer Islands: public funds will support the rollout of infrastructure/networks, with the private sector providing services to unserved outer islands on a contractual basis. In addition, ADB is planning a program of financing to support high-speed connectivity for Kiritimati Island, either cable or satellite.

12. **Market structure and regulatory framework.** The Communications Act (2012) that opened the market also established an independent regulator, the CCK. The CCK deals with licensing, technical regulation, spectrum, and consumer matters. It is responsible for monitoring unfair trade practices and introducing price controls when necessary. Responsibility for sector policy lies with the MICTTD. The current market structure, while still developing, comprises five individually



licensed operators and 12-class licensed operators (typically small local and niche services providers that rely on infrastructure of the individually licensed operators). Individually licensed operators are:

- a. ATHKL (part of the Fiji-based ATH Group): a full services operator
- b. Ocean Links (owned by China based Acclinks), a new mobile network operator expected to commence services later in 2017
- c. Tenicom (100 percent owned by the local Moel Trading Group) offering Internet services via a WiFi network
- d. Speedcast (an Australia based satellite equipment and services firm) offering satellite services into Kiribati; and
- e. WISInc (a US-based network design and build firm) licensed to operate a satellite gateway predominantly for broadcast services.

13. **Current international connectivity.** ATHKL International satellite bandwidth in December 2016 comprised 100Mbps (80/20) via O3B Pty Ltd for Internet on Tarawa and nearby islands (providing a medium reliability, medium cost technology) and 19.5 Mbps (15/4.5) C band via Speedcast Pty Ltd (a high reliability/high cost technology) for telephony, private lines and service to outer Islands. Responding to demand for Internet ATHKL has contracted to expand this connectivity with an additional 200 Mbps that will be commissioned in stages so that by Q2 2017 its Internet connectivity will be 300 Mbs delivered via O3B satellite and Asia Broadcast Satellite (ABS). Other international connectivity services providers are:

- a. Tenicom connectivity, via the ABS with a total of 8Mbps (6/2) in service.
- b. Ocean Links: 10 Mbps for its new network.
- c. Speedcast- direct subscriber connections.

14. **Market and services.** Table 1 summarizes current service provision. Basic mobile phone penetration as of end-December 2016 was more than 37 percent of the population spread over eight (of the 22 inhabited) islands. Mobile broadband (3G/4G) coverage is available on six islands representing 77 percent of the population with 2G service installed on two more, taking mobile services coverage to about 80 percent of the population. Demand continues to increase for mobile and particularly mobile Internet services. Mobile customers () total some 50,000 with about two-thirds being 3G and 4G users (March 2017). Fixed broadband is less than 2 percent and ATH proposes to close its copper cable based ADSL and obsolete WiMax services and transfer all high-speed broadband services to its 4G network. The pending entry of Ocean Links, and the Tenicom WiFi service as a complement or alternative both, is expected to lead to further improvements in affordability and quality of ICT services.



Table 1. Kiribati: ICT Access by Island, 2016

Island	Population 2015 (census)	Fixed Lines	Active Mobile subscribers		Fixed Internet (Wimax & ADSL)
			2G	3G	
North and South Tarawa	62,625	2,700	11,000 (est)	26,000	900
Kiritimati	6,356	75	<1300 (est)	nil	nil
Marakai, Abaiang Maiana, Tabiteuea North, Onotoa,	15,696	3-10 per atoll	<1000 (est)	nil	nil
Banaba, Makin, Butaritari, Abemama, Kuria, Aranuka, Nonouti, Tabiteuea South, Beru, Nikunau, Tamana, Arorae	20967	3-10 per atoll	nil	nil	nil
Tabuaeran, Teraina, Kanton	4049	3-10 per atoll	nil	nil	
TOTAL	109,693		13,300	26,000	900

Source: ATHKL

15. **Future needs.** Estimated demand for bandwidth is summarized in Table 2, based on utilization trends and relevant comparators under base, low and high-case economic development scenarios.

Table 2. Data Bandwidth Requirements of Kiribati, Nauru and Kosrae (FSM)

	High scenario	Baseline scenario	Low scenario
Kiribati - 2026	1,365 Mbps	665 Mbps	354 Mbps
Kiribati – 2041	14.1 Gbps	6.7 Gbps	3.5 Gbps
Kosrae - 2026	210 Mbps	122 Mbps	70 Mbps
Kosrae - 2041	1.9 Gbps	1.0 Gbps	0.5 Gbps
Nauru - 2026	376 Mbps	243 Mbps	159 Mbps
Nauru - 2041	3.3 Gbps	2.1 Gbps	1.4 Gbps

16. A submarine optical fibre cable to Kiribati is necessary to meet demand in long-term traffic and to increase resilience and lessen the risk that communications will be interrupted by tropical storms or other severe weather events. Being at the equator, Kiribati rarely encounters cyclones but experiences several tropical storms and storm surges associated with ‘king tides’ (caused by moon and sun alignment) each year. The decision by stakeholders to opt for submarine cable connectivity was based on studies reviewing potential cable solutions but also considering available satellite



technology such as O3B and different routes and connection points for a submarine cable solution. O3B satellite solutions are workable for the near-term and part of the medium-term but cannot support capacity needs into the long-term. Additionally, the tropical location of Kiribati with associated weather events dictates that a more robust solution is required for network resilience and services continuity, especially when disaster management is considered.

17. **Submarine cable routes and options.** All route options require a connection to the Hannon-Armstrong (HANTRU)-1 cable that connects Guam (the optical communications hub of the North Pacific) to the Federated States of Micronesia (FSM) in Pohnpei, and Majuro and Kwajalein in the Marshall Islands. HANTRU-1 became ready for service in 2010. Three main options for connecting to HANTRU-1 have been considered during Project preparation, including potential cost-sharing arrangements with the neighbouring states of FSM (Kosrae State) and Nauru that have a keen interest to improve their international bandwidth options (see Table 3).

Table 3. Submarine Cable Options Considered

	Option 1	Option 2	Option 3 (Selected)
Cable Route	Tarawa-Majuro	Nauru-Tarawa-Majuro	Pohnpei-Kosrae-Nauru-Tarawa
Cable length (km)	699	1,399	2,070
Total Capex (US\$ m) est. excluding cable landing stations ¹	16.9	30.4	42.2
Kiribati's share of Capex	100 %	60 %	33 %
Annual Opex-for the whole system (US\$ m)	0.5	0.9	1.2
Kiribati's share of annual Opex- (US\$ m) est.	0.5	0.54	0.72 (60% of the EMC cable OPEX)²
Kiribati's total operating costs (cable OPEX + interconnection) (US\$ m) est. [3]	12.8	12.9	12.7

¹ Including 10% of safety margin compared to original estimated CAPEX

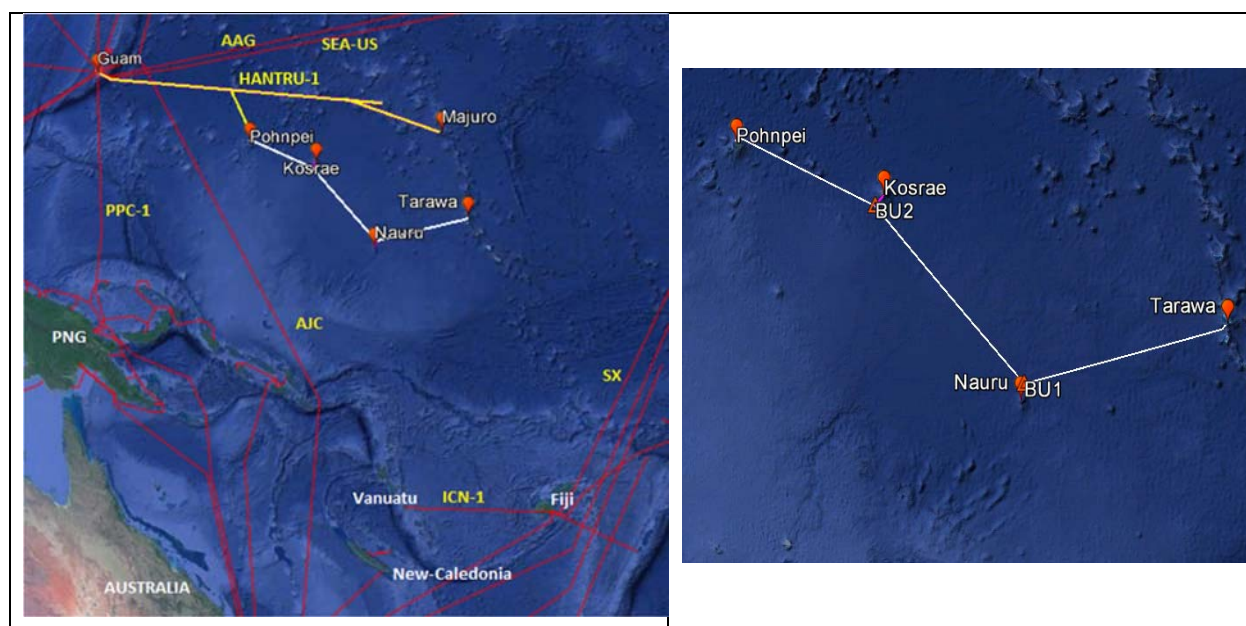
² According to distance-based sharing, using the rationale "Kiribati would pay 100% for 700 kms to Nauru. Nauru and Kiribati would share 50/50 the 800 kms to Kosrae, FSM, Nauru and Kiribati would split the Kosrae-Pohnpei 600 kms 33/33/33". Additionally, a large component of the cable OPEX is the 'insurance' for retaining a cable ship ready to address any fault that may present. Some operators elect to not pay this premium (which in the case of this Project represents about US\$ 0.36 million per year of the Kiribati US\$ 0.72 million total) and accept that if there is a cable fault they will rely on backup capacity until a cable ship can be procured for the repair. The cost of the cable ship completing the repair under this policy is subject to spot market price for both the ship and the work to execute the repair. Notably both FSMTC and MINTA, the owners of both the links that are options for this Project to connect to the HANTRU-1 cable have adopted this position.



18. Option 3 was selected as it represents many advantages: (i) the interconnection price in FSM is much more attractive than the expected interconnection price in Majuro and offsets any differences in cable OPEX cost, especially if the bandwidth demand of Kiribati exceeds expectations; (ii) the CAPEX sharing arrangement results in a CAPEX for Kiribati that is lower than for Options 1 or 2; (iii) it reduces the uncertainty of interconnection in Majuro; and (iv) from a regional point of view it allows the connection of Nauru and FSM at a lower cost that would difficultly be achieved otherwise.

19. After a series of tripartite meetings and stakeholder consultations, the Governments of Kiribati, Nauru and the FSM decided to proceed with Option 3: a jointly financed and implemented regional submarine cable system connecting Tarawa with Nauru, Kosrae (FSM) and Pohnpei (FSM), then on to Guam, US (see Figure 1 below). This will be known as the East Micronesia Cable (EMC). A Kiribati Cable Company (KCC) will be established as a separate legal entity to operate the cable on a commercial basis in Kiribati and once established, become the implementing entity for Component 1 as well as technical assistance and capacity strengthening directed at KCC under Components 2 and 3. For Project implementation, the three participating countries will enter into a contractual arrangement for the financing, ownership contracting arrangements, technical and related matters for the EMC currently referred to as a Construction and Maintenance Agreement (C&MA). KCC will manage all national aspects of provision of service to users of the capacity in Kiribati.

Figure 1. Proposed East Micronesia Cable (EMC) including Sub-Regional View



C. Higher Level Objectives to which the Project Contributes

20. Improving connectivity, including access to ICT, is an important goal of the World Bank's engagement in the Pacific Region, and it has also been identified as a priority area in the recent Systematic Country Diagnostic (SCD) for the smaller economies, including Kiribati. The Project is



consistent with Focus Area 4, Enablers of Growth Opportunities under the World Bank Group's Regional Pacific Framework (regional CPF) (2017-2021) (Report 100997-EAP), which was discussed by the Board of Executive Directors in February 2017. Specifically, the Project will support Objective 4.2: Provision of Connectivity Infrastructure. The Project also builds on the earlier Kiribati Telecommunications and ICT Development Project (P126324) which supported the Government's sector liberalization program, resulting in significantly increased access to basic telecommunication services.

21. **The EMC meets the eligibility criteria for Regional IDA financing.**³ The construction and operation of the EMC have been endorsed by the region's community of ICT stakeholders. Improved connectivity will contribute to regional infrastructure development, institutional cooperation for economic integration, and coordinated interventions to provide regional public goods.

- a. Pacific island countries are characterized by their small size and extreme geographic isolation; this is particularly true for the countries participating in the construction of the proposed EMC. Their distance from markets results in substantial economic disadvantages; previous research points to clear correlation between market access and economic growth.
- b. For Kiribati, FSM and Nauru, overcoming challenges of distance and isolation will hinge on their ability to stimulate domestic growth and on the extent to which they can integrate with each other and with their larger neighbors. Isolation and limited economies of scale also mean that Pacific economies often rely heavily on aid, remittances, natural resource rents, and tourism. In this context, improving connectivity throughout the region has the potential to support national economic growth and to underpin the critical processes of regional coordination and integration. Greater and more affordable connectivity in the Pacific would help lower transaction costs, create new economic opportunities and enhance communication and delivery of services to currently isolated domestic communities. From a regional perspective, improved connectivity has the potential to enhance the efficient use of resources, to facilitate cooperation on a wide range of transnational issues, such as, management and monitoring of natural resources (e.g., fisheries), comprehensive mitigation efforts addressing natural disasters, climate change and adaptation, as well as collaborative service delivery.

³ The split between regional and national IDA is as follows: SDR 0.8m from National IDA & SDR 14m from Regional IDA. This is equivalent to approximately USD 1.08m National IDA & USD 18.92m Regional IDA.



II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

22. The Project development objective is to reduce the cost and increase the availability of Internet services in Kiribati.

B. Project Beneficiaries

23. The direct beneficiaries of the Project will be the people of Kiribati particularly in Tarawa and surrounding islands (including individuals, businesses, Government agencies, and remote communities) who will receive improved access to and quality of Internet, facilitating uptake of value-added services or applications. A component of the Project is the assisted development of government services to be delivered via the Internet. This will encourage citizen familiarity with use of the Internet, improve the accessibility of Government services and encourage the development of commercial Internet services such as web design and other new local technology competencies.
24. The Project will contribute to the World Bank Group's twin goals of ending extreme poverty and boosting shared prosperity. By facilitating more reliable and affordable connectivity for the majority of the country's population, the Project is expected to contribute to improved social welfare, access to information and services as well as potential income-earning opportunities. This will be tracked by the CCK. By making Internet access more affordable and widely available, the Project will contribute to citizen engagement in Kiribati, including via new media.
25. *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.
26. *Participation of women:* The Project is expected to have a positive impact on women's access to affordable Internet services in Kiribati. 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.
27. *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.
28. *Primary producers:* Communications infrastructure facilitates access to information on market prices, weather, agricultural extension services, and e-commerce platforms.
29. *Service industries:* ICT facilitates entrepreneurship—including specific opportunities for women. Telecommunications infrastructure also facilitates the extension of mobile phone and/or Internet-enabled financial services.



30. *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.

31. *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.

C. PDO-Level Results Indicators

32. Achievement of the project's development objectives will be measured against the following indicators (for Tarawa and surrounding islands):

- a. Access to Internet services, (number of subscribers per 100 people);
- b. Wholesale Internet bandwidth price (US\$/Mbps per month);
- c. Retail price of Internet services (US\$/GB);
- d. Available international bandwidth (Mbps);
- e. Direct Project beneficiaries and percent of beneficiaries that are female;
- f. Sub-indicator: Total beneficiaries – female (number); and
- g. Sub-indicator: Total beneficiaries – male (number).

III. PROJECT DESCRIPTION

A. Project Components

Concept

Description

Using IDA national and regional financing of US\$20 million equivalent, the proposed financing will be allocated to the Project to support Kiribati's participation in the EMC system, plus associated technical assistance and Project management support.

Component 1. Submarine Cable System (US\$17.0 million)

33. **Subcomponent 1 (a):** Submarine Cable System. The Project will finance construction of the EMC, a regional submarine cable system connecting Tarawa, in Kiribati, with Nauru as well as Kosrae and Pohnpei (both in the FSM).

34. **Subcomponent 1 (b):** Cable Landing Station (CLS) and Ancillary Equipment (subcomponent 1 (b)(i)). This entails construction of a CLS and ancillary works and facilities on Tarawa, including acquisition and installation of onshore equipment. At the other end of the EMC, the CLS, BMH and



ancillary equipment in Pohnpei, which are required to connect the EMC to the rest of the network and the achievement of the PDO, are already in place (through previous bilateral financing to FSM) and connection works will be funded through another source of IDA financing for FSM. The EMC also provides for the additional cable connections for Kosrae and Nauru (subcomponent 1(b)(ii)).

Component 2. Technical Assistance (TA) (US\$2.0 million)

35. **Subcomponent 2(a):** Provision of legal, financial, technical and transactional assistance in connection with the drafting and negotiation of an arrangement for the construction, ownership and management of the EMC to be entered into, between Kiribati, Nauru and FSM, each acting through its respective national cable operator on the one hand and the constructor and other parties (as the case may be) on the other hand.

36. **Subcomponent 2(b):** Provision of legal advisory assistance for the establishment of a Kiribati national cable service operator, with capacity and resources for the purpose of operating the EMC and managing all national aspects of the provision of services to users of the EMC's capacity in the Recipient's territory.

37. **Subcomponent 2(c):** Provision of TA to the CCK in the areas of licensing, interconnection and access, and landing party agreements, including any implementing or ancillary regulatory instruments ensuring cost-based, non-discriminatory and open access to capacity.

38. **Subcomponent 2(d):** Provision of ICT policy and legal technical assistance in connection with electronic transactions (such as e-government and e-commerce) to facilitate citizens access to and use of broadband services, including for the development of the legal and regulatory framework to support safe electronic transactions, cyber security, data protection and confidentiality.

Component 3. Project Management and Administration (US\$1.0 million)

39. **Component 3:** supports a program of activities designed to strengthen the capacity of the Recipient (Component 3(a)) and related agencies involved in the implementation of the Project, and the Project Implementing Entity (Component 3(b)) once established, to process Project transactions, implementation, and management. Such a programs will include: (a) overall Project coordination; technical coordination; financial and contract management; procurement, communications, outreach; reporting, audit, and monitoring and evaluation; (b) environmental and social safeguards management.

B. Project Cost and Financing

Table 4. Proposed Financing Plan for the EMC System (US\$ million), incorporating the Kiribati Connectivity Project and Related Operations

Component	KIRIBATI	NAURU	FSM	Total
	IDA P159632	ADB 50348-001	IDA-P161363 and P130592	
1. Submarine Cable system (EMC)	17.00	15.00	15.66	47.66
2. Technical Assistance	2.00	0.00	1.76	3.76
3. Project Management& Administration	1.00	0.00	2.03	3.03
Total	20.00	15.00	19.45	54.45



Cofinancing.

40. Table 4 summarizes total financing requirements for the EMC and related national activities in the four locations involved, and proposed sources. The total investment required is US\$56.78 million. FSM's participation in the submarine cable system will be financed under the ongoing IDA-financed Palau-FSM Connectivity Project (P130592) using unallocated funds plus additional financing for Kosrae (P161363). Nauru's participation will be financed by the Asian Development Bank (ADB) through the proposed Nauru – Improving Internet Connectivity for Micronesia. This proposed ADB Project also includes a component to support connectivity for Kiribati's Kiritimati Island.

C. Lessons Learned and Reflected in the Project Design

41. The Project takes into account the lessons of experience from implementation of ICT sector reform/development Projects, from other regional connectivity Projects, including in the Pacific and also from operations in the Pacific region more broadly. These lessons are reflected in the design of Project components, risk analysis and management, and selection of country readiness/ eligibility criteria.

42. *Complementary infrastructure investment and regulatory reforms.* An important lesson from the reforms in the telecommunications sector in the Pacific, Africa, and around the world is that monopoly control of essential “bottleneck” infrastructure severely restricts the development of the sector. In international telecommunications Projects, the trend is towards a model that mitigates issues associated with a monopoly single seller at the wholesale level—for example by building open-access arrangements into the contractual structure of the PPP and the associated regulatory framework in order to promote direct infrastructure-based competition.

43. *The legal and regulatory environment for ICT in Kiribati* needs to support open access to capacity on international and domestic communications infrastructure, and wholesale pricing needs to be cost-based, non-discriminatory, and transparent; the regulatory institution needs to be empowered to protect the interests of consumers. Some countries in the Pacific region have had access to submarine cables for many years, but until recent liberalization of international gateways, and even more recent regulations on wholesale pricing, these resources were to some extent captured by monopolies and the benefits were not reflected in the internet price and did not accrue to consumers. However, additional regulatory intervention will be needed to ensure that wholesale bandwidth pricing levels are reduced further, stimulate further investment in downstream services and consumer uptake. The Project will therefore provide support to the CCK to enhance its capability for ex post regulatory intervention and supervision to promote competition in downstream markets.

44. Likewise, experience with other Projects facilitating access to broadband Internet capacity has shown that enhancements to the legal framework in the areas, inter alia, of digital authentication, data protection and cybersecurity are necessary to provide a “trust” environment⁴ to address the added risks associated with the nascent digital economy. The Project will therefore

⁴ See, World Development Report 2016 - *Digital Dividends*, discussion beginning at page 222, *et seq.*



support advisory assistance to the MICTTD, CCK and other agencies, as required, on these key areas of e-legislation.

45. *Technology.* Project stakeholders need to anticipate possible changes in technology that might alter the business case for investment in a particular type of communications infrastructure. The cable system to be financed under the Project will support high-speed international data transmission over the life of the cable system. The system design will also include scope for further capacity growth should demand exceed expected system requirements.

46. *Implementation Capacity.* Based on experience with this and other operations elsewhere in the Pacific, Project design needs to account for limited institutional and technical capacity, minimizing the number and complexity of contracts and ensuring that adequate resources are available for technical, transactional and managerial support. It is anticipated that national cable operations will be managed either by a state-owned enterprise or other by another arrangement that will include the private sector following cable completion; among other things, this will significantly reduce the burden on Government capacity for implementation.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

47. This Project is part of a strategic partnership between Kiribati, Nauru and FSM. The countries established a Steering Committee (SC) for the EMC in September 2016 to guide the development of the investments and institutional arrangements around it, on national and regional levels.

48. *National Level.* Kiribati will establish a national cable operator: an open access entity currently referred to as the KCC. At present this is envisaged as a not for profit state-owned enterprise (SOE) under the SOE Act 2013, with a provision for enabling private sector participation in the future. Other organizational structures and business models for KCC will also be considered and evaluated during the early implementation and institutional development phase of the Project. Pending the formation of the KCC, the MICTTD (with its dedicated Project management staff and support from its technical advisors) will be the designated entity responsible for the implementation of the Project and will be responsible for the functions to be performed subsequently by the KCC. Upon its formation, which is planned to be completed in the first six months of Project implementation, if feasible, and subject to and in coordination with the requirements of the EMC, the KCC will assume responsibility for the following:

- a. Construction and management of the CLS, BMH and associated infrastructure; and
- b. Establishment and operation of operator-facing facilities for operator interconnection, preparing a reference interconnect offer (RIO) or other client contracting arrangements.
- c. Provision of wholesale services to the telecommunications operators in Kiribati.

49. In forming the KCC, the Government shall design (or cause to be designed) and submit to the World Bank a plan for the management of the cable capacity (the “Strategic Asset Management Plan”), in form and substance acceptable to the Bank and consistent with Kiribati’s legislation and regulations and in accordance with the provisions of the Financing Agreement.



50. In addition, given the importance of coordination between this Project and the Outer Islands connectivity program, the KCC will be assigned responsibility for the management of the proposed Outer Islands network currently being developed under the Kiribati Telecommunications and ICT Development Project (P126324). This arrangement will:

- a. minimize overall costs to the operators for both the provision of cable access and the provision of infrastructure service to the Outer Islands of Kiribati,
- b. capture synergies relevant to the two infrastructure management functions; and
- c. take into account the shortage of relevant expertise that could otherwise result in limitations on both Projects.

51. Additionally, the KCC will establish its CLS so that, when appropriate, and if the ICT service providers so wish, an Internet Exchange Point (IXP) can be established within the CLS precinct to minimize international connection costs for the benefit of the people of Kiribati.

52. *Regional Level.* FSM and Nauru will establish similar open access cable corporations at the national level. As noted above, to minimize institutional overhead, the three national cable entities will negotiate and enter into a C&MA to govern the financing, ownership, design and installation (including construction milestones corresponding supplier payments) and operations and management of the EMC cable system over its lifetime. In addition, and without limitation, the C&MA will provide, inter alia for EMC member access to (including capacity commitments and pricing) and termination/interconnection on the HANTRU-1 cable at Guam.

53. It is expected that the C&MA will be completed and enter into force during the first 6-12 months of Project implementation. Each party to the C&MA will engage legal, financial, technical and transactional advisors to facilitate the negotiations. Further, the C&MA documentation shall contain provisions satisfactory to the Bank incorporating the Fraud & Corruption Guidelines as well as for the purpose of: guaranteeing open access to such infrastructure and services on transparent, cost-based and non-discriminatory basis. This is in order to protect the interest of the ICT service users and achieve the objectives of the Project. The Government shall obtain the Bank's written agreement prior to assigning, amending, abrogating, or waiving the C&MA, or any of its provisions, or permitting any entity participating in the implementation of the Project to do so. At such time as the C&MA is effective, the SC will be dissolved.

B. Financial Arrangements

54. The World Bank will sign a Financing Agreement (FA) with the Republic of Kiribati represented by its Ministry of Finance & Economic Development (MFED) as the Recipient of Grant Funds. The MFED will be the authorized representative for all Grant-related matters. The Kiribati Fiduciary Support Unit (KFSU) already exists under the auspices of the MFED and is supporting six separate World Bank or ADB-funded Projects in Kiribati. This Project will fund additional KFSU support staff as required to support this Project. The World Bank will sign a Project Agreement with the KCC, once established. MFED will sign a Subsidiary Agreement with the KCC setting out terms and conditions for access to and utilization of Project funds by KCC.

55. The MICTTD has an existing Project Management Unit (PMU) supporting the Kiribati Telecommunications & ICT Development Project - (P126324), and will recruit any additional consultants to support the work of the PMU in relation to this new Project. A Project Operations Manual will be prepared within three months of Project Effectiveness. The MICTTD will interface



with the KFSU as per standard operating procedures for development partner-financed operations in Kiribati.

V. Results Monitoring and Evaluation

56. The MICTTD will be responsible for overall monitoring and evaluation, in conjunction with the CCK. Data gathering and analysis will be undertaken by the CCK based on data provided by telecommunications service providers, KCC, Kiribati Bureau of Statistics and other agencies in accordance with the Results Framework established for the Project. Data on actual Project outputs and outcomes will be gathered and analyzed by the MICTTD and included in semi-annual progress reports to be submitted to the World Bank. The views of direct beneficiaries will be brought into the M&E process, including through periodic consultations/surveys and citizen engagement platforms as appropriate. A consumer survey to assess gender-differentiated Project impacts will also be undertaken by CCK.

57. Implementation support missions will be conducted at least twice a year, supported by the Liaison Office in Tarawa. Project effectiveness is expected by the third quarter of calendar year 2017, and a midterm review will be scheduled in November 2020.

A. Sustainability

58. The Project will support improvements in Internet and telecommunications service coverage and quality in North and South Tarawa and the islands within ready microwave link distance at more competitive prices for international connectivity and for data services. These are expected to sustain increased demand as the Project will create opportunities for increased use and the introduction of applications that require high speed, high-quality Internet bandwidth. The business case for the Project indicates strong potential demand for the cable system in light of the forecast bandwidth demand for Tarawa and the microwave connected islands, as noted in the section on economic and financial analysis below. Sustainability for KCC will be achieved through revenues from sale of bandwidth in line with a full business plan to be developed. The Project will also contribute to capacity building for the CCK to enhance knowledge development during and beyond Project completion.

B. Role of Partners

59. *Coordination with FSM and Nauru.* As noted above, this Project is part of a strategic partnership between Kiribati, Nauru and Federated States of Micronesia (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 this operation, and the Governments of the three states have maintained regular contact during the preparation phase, both independently and via the EMC SC.

60. *Coordination with the ADB.* The World Bank will be financing the participation of FSM (Pohnpei and Kosrae) and Kiribati in the joint cable system, and 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 EMC under Component 1(a) will be procured on the basis of the World Bank Procurement Regulations for Borrowers under Investment Project Financing (July 1, 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). A Project Procurement Strategy Document (PPSD) has been prepared and shared with MICTTD.

VI. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

61. The Project's overall risk is considered Substantial. Some risk ratings are lower, reflecting: (a) a relatively stable political environment; (b) moderate macroeconomic risks, (c) low sector policy risks, (d) moderate technical design risks, and (e) low environmental and social risks. However, institutional capacity is weak, particularly in the areas of technical expertise and fiduciary and safeguards management. Accordingly, the Fiduciary SORT Rating (combined FM and Procurement) for the Project is Substantial.

62. *Regional coordination/stakeholder risks.* Project implementation will entail a significant degree of coordination with other countries/institutions in the region, specifically the Governments of and ICT stakeholders in Nauru and FSM. These countries have developed initial coordination mechanisms and these will require continued reinforcement during preparation and implementation, including through TA to be provided under the Project. It is important to realize that an event adversely impacting the implementation of the obligations of either Kiribati, FSM, or Nauru under (i) the C&MA, (ii) its respective applicable laws and regulations, or (iii) its respective financing agreement (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), the completion of the Project and the achievement of its PDO. The three countries (through their respective cable implementing entities) will need to negotiate and agree commercial arrangements for the construction, maintenance and operation of the cable by the C&MA for its commercial lifetime. FSM already has experience procuring and operating submarine cable system(s). The involvement of private sector operators in Kiribati and Nauru, if possible, will also be important during the design and implementation phases.

63. *Governance and regulation risks.* The success of the Project depends on a sound regulatory environment and strong supervision of the Project by the Government of Kiribati. Robust governance rules will also be needed to ensure that the implementing entity provides access to bandwidth on a nondiscriminatory and open access basis to all current and potential wholesale market participants. Direct private sector participation in the ownership/governance of KCC may improve access terms and reduce the regulatory burden on the CCK. Technical assistance will be given to the CCK to enhance regulatory outcomes. Recognizing the need for a credible and effective regulator at the Ready for Service (RFS) date of the cable, CCK has taken some steps to improve its skills in interconnection and facilities sharing and access. Long-term advisory assistance will also be required (and is provided for) to develop and maintain regulatory capacity and skills. However, this



will not be sufficient. As an initial step MICTTD has introduced to Parliament amendments to the current Telecommunications Act 2012 that among other matters increase the oversight, transparency and expectations on the CCK. However, sustained requirements by Government—and indeed consumers of ICT services— for improved CCK accountability and consistent performance will be essential for the success of the Project.

64. *Institutional Capacity for Implementation and Sustainability risks.* There are several risks associated with the proposed implementation arrangements during the various phases of the Project: (i) KCC will be a new institution with no previous experience in Project implementation. The Project will therefore provide technical assistance for the creation of the KCC as implementing entity, and prospectively to support its operation in the early years; (ii) KCC will need to negotiate with Nauru and FSM over the construction and maintenance of the cable system. The Project provides for legal and transactional advisory services to the Government of Kiribati to manage this risk; (iii) KCC will need to negotiate with the FSM Telecommunications Corporation (FSMTC) for access to the FSM spur cable which connects to the HANTRU-1 cable and capacity on the FSM share of the HANTRU-1 cable to Guam. While provision of Internet termination and telephony interconnection is anticipated to be readily available in Guam, the terms of provision will affect the commercial attractiveness of the service in Kiribati; (iv) There is also some regulatory risk around access terms to the new infrastructure which will be managed by technical assistance to CCK on wholesale access issues; (v) The operating costs of the C&MA and the KCC are also reflected into the charges for broadband capacity in Kiribati. These operating costs will need to be contained to the point where the wholesale price for cable based capacity in Kiribati is less than the competing satellite forms of connectivity; and (vi) finally, the Project will support provision of technical and managerial skills to the KCC.

65. *Fiduciary risks.* Procurement risk is rated Substantial as the complexity of procuring the proposed submarine cable system will be increased by the involvement of three sovereign and two development partners (ADB and World Bank). Financial Management risk is rated Moderate due to the Government's previous experience in managing World Bank-funded operations. Kiribati has experience with World Bank guidelines/policies under the existing Kiribati Telecommunications and ICT Development Project (P126324), as does FSM, under the Palau-FSM Connectivity Project (P130592).

VII. APPRAISAL SUMMARY

A. Economic and Financial Analysis

66. *Economic Analysis.* The potential economic impact of connecting Kiribati via the proposed EMC cable can be assessed by estimating the impact on GDP of these economies over the next 25 years⁵ with the assumption that broadband penetration would increase to 38% in the next 10

⁵ Capacity needs for Kiribati (and the other connection economies of the proposal) as estimated by two methodologies (top down and bottom up) are shown in the table below. These estimates assume that beyond 10 years, penetration rates would reach their ultimate extent and hence remain stable but usage would increase twofold (x2) every 5 years. This aligns with trends in mobile and broadband connection speed as reported/ forecast by Ookla or Cisco. Cisco recently forecast that "Mobile network connection speeds will increase more than twofold by 2019" in comparison with the speed in 2014 (http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-



years. 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.⁶ Economic and financial analysis for Kiribati using the EMC cable is summarized in Table 5.

67. The assumption is that, with the right enabling conditions in place, the net economic impact of the Project is positive for Kiribati, as shown by an EIRR of 9 percent. With regard to microeconomic impacts, the Project is expected to facilitate modest job creation in the ICT sector, enhance the potential for development of ICT-enabled business, services and e-commerce, and reduce business transaction costs in these economies. The Project is expected to (i) contribute towards greater financial inclusion by facilitating the faster rollout of Internet/mobile-based financial services; (ii) to generate significant social benefits related to more efficient delivery of services, such as health, education, and general public information—via the Internet at lower cost; and (iii) to facilitate communication among citizens and enhance social participation. Higher quality and more affordable Internet services will also facilitate communication with overseas-based i-Kiribati citizens/family members.

68. *Rationale for public funding and demand analysis.* Analysis of a possible Kiribati optical fiber submarine cable (performed by the World Bank in early 2016) concluded that the cable investment would not be viable on commercial terms due to the relatively low revenue projections for Kiribati in the short to medium-term in contrast to the relatively high initial investment compared to the size of private actors in Kiribati. 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.

Table 5. EMC Economic and Financial Analysis: Summary

Pohnpei – Kosrae – Nauru- Tarawa (EMC)	Kiribati's Participation ⁷	Total Project
CAPEX (US\$ millions) excluding cable stations	15.5 ⁸	42.2
CAPEX (US\$ millions) including cable stations & ancillaries	17.0	46.6
Annual total OPEX (US\$ millions)	0.72 ⁹	1.20

520862.html). An increase by a factor of 2-3 every 5 years could also be observed by studying data from Ookla which consolidates data on speed tests of Internet users, globally or for separate countries such as France, Thailand (<http://explorer.netindex.com/maps?country=France>).

⁶ 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 islands and this concentration is supposed to improve the level of impact of a submarine cable which is landing directly on the main island.

⁷ Where applicable and unless otherwise stated, a discount rate of 6% is used.

⁸ Assuming Kiribati's participation at one third of the cable system (\$14M) + 10% contingency with respect to the CAPEX sharing ratio. This CAPEX includes all marine segment cable costs, land & marine operations, installation, and technical project management costs. This CAPEX does not include cable station building cost.

⁹ Assuming Kiribati's participation at 60% of the cable system's OPEX.



Total OPEX 24 years (cable O&M and IP transit) (US\$ millions)	12.8 ¹⁰	21.1
Interconnection	Pohnpei-Guam ¹¹	Pohnpei-Guam
FNPV before financing (US\$ millions)	-12.7 ¹²	-26.4
FIRR before financing	-1.7%	0.3%
FNPV after financing (US\$ millions)	4.3	20.5
Net ENPV (US\$ millions)	8.7 ¹³	39.8 ¹⁴
Net EIRR (US\$ millions)	+9%	+8.3%

69. The methodology for estimating bandwidth need is based on bandwidth demand analysis/projection and estimated revenue projections. It also considers which technology can respond most effectively to this demand. Bandwidth demand for Kiribati has been estimated using two approaches:

- Top-down (comparative analysis with countries with similar market conditions which yields a figure for bandwidth demand per capita X total population); and
- Bottom-up analyzing the future penetration rate and bandwidth per user needed for each service (mobile/fixed voice, mobile/fixed broadband, dedicated lines for business and institutions). This yields a detailed figure of bandwidth per service X penetration rate of service X total population.

70. Under a high-case growth scenario, demand for bandwidth in Kiribati is expected to reach at least 1.365 Gbps over the next 10 years and 14.1 Gbps over the next 25 years. Satellite services would be sufficient to meet short-term needs but for the medium to long-term, only cable can deliver sufficient capacity and quality of service. Assuming more modest growth, the 10-year projected demand is 551 Mbps is technically within capacity of high capacity satellite delivery but the satellite service would be subject to other customer demands in the region and hence potentially not available. Quality of service, in particular latency, and vulnerability to climatic conditions is also an issue. The

¹⁰ This operating costs includes cable OPEX, IP transit and interconnection costs.

¹¹ Interconnection cost on Pohnpei-Guam segment is assumed to be free. IP transit at Guam is estimated at \$15/Mbps/mo with annual price reduction of 10%.

¹² Assuming an initial bandwidth price of \$330/Mbps/mo and annual price reduction rate of 4% from Y4-Y10 and 13% onwards to be coherent with a general increase of bandwidth of 2-3 folds every 5 years. In fact, as ATHK targets a bandwidth price of \$250/Mbps/mo half circuit in the near term (simplex), taken into account that a traditional FWD/RTN of 1/0.33 is often observed for satellite bandwidth, and that cable bandwidth are always duplex, a price level of \$330/Mbps/mo on cable is very competitive compared to other technologies (O3B, Speedcast, etc.). It is also assumed that until 2018 ATH-KL still has contracted bandwidth of around 130-150 Mbps (downlink + uplink) with O3B and thus would not purchase much from the cable.

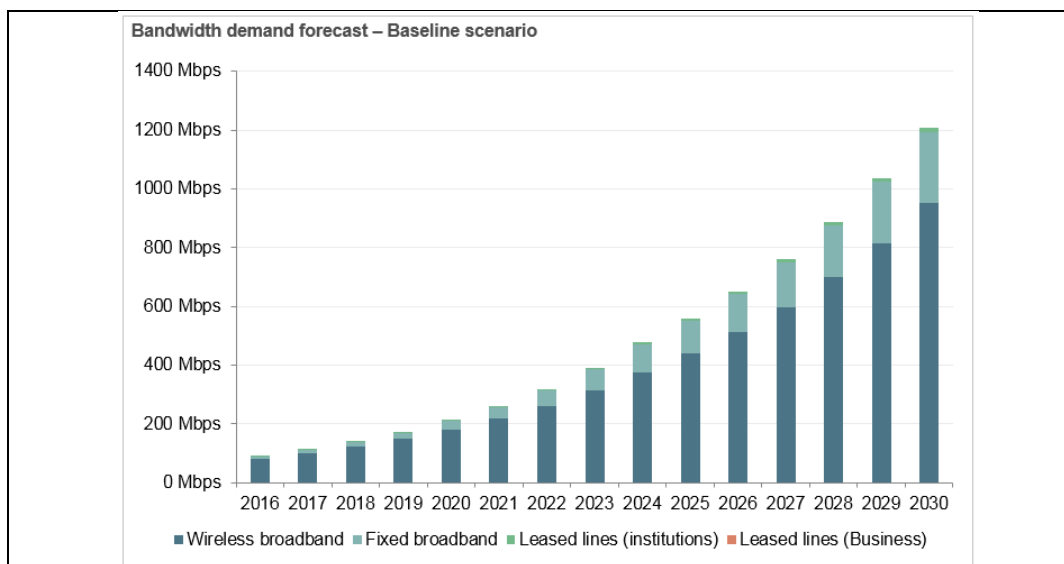
¹³ Economic impact is net of the cable CAPEX and operational cost and includes savings compared to the current solution (O3B). Savings are considered after the final years of existing contracts with other technologies for committed bandwidth. Savings are capped at \$1M (price that Kiribati paid for nearly of 40 Mbps of bandwidth demand on satellite solution until end 2013). 15 Mbps of satellite bandwidth is maintained for back-up even after the complete moving to submarine cable bandwidth. Satellite bandwidth should be in 2-direction. A ratio FWD/RTN=1/0.33 is assumed.

¹⁴ The calculation of economic impact on a country's GDP uses discount rate that are related to GDP growth rate of this specific country. Thus different discount rates are used for Kiribati (discount rate =6%), Kosrae (discount rate = 2%) and Nauru (discount rate = 2%)



baseline Projected demand (median expectation) at the 25-year projected demand is 6.6 Gbps – which is beyond the capability of any technology other than optical fibre. Experience of bandwidth demand Projections, including in the Pacific, has been that actual demand has exceeded expectations.

Figure 2. Tarawa and Nearby Islands: Baseline Projected Bandwidth Demand, 2016-2030



Source: Regulator and operator data and World Bank Projections (2016)

71. *Financial analysis.* A full business plan will be prepared once the KCC and its partner institutions in Nauru and FSM 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 in the short and medium terms at the expected starting price level which is quite low.¹⁵ After the financing of CAPEX, the Financial Net Present Value (FNPV) is positive (US\$ 4 million).

72. The cash flow is expected to be negative during the first four years even after the financing of CAPEX due to the low revenue projection for Kiribati over this period, which has two main reasons: (i) low bandwidth price, and (ii) most of the demand is still suggested to go with other technologies (committed contract). The lowest cumulative cash flow is projected to be around - US\$1.8 million in the third and fourth years. This high level of negative cumulative cash flow suggests: (i) either that the entity in charge of the cable for Kiribati could possess enough cash to face this level of negative cash flow; (ii) or the bandwidth price on cable should be increased compared to the initial expected bandwidth price of US\$330/Mbps/month (IP transit included); (iii) or the operators in Kiribati should commit a certain level of bandwidth on the cable in order to increase the revenues.¹⁶

¹⁵ Assuming an initial bandwidth price of \$330/Mbps/month and annual price reduction rate of 4% from Y4-Y10 and 13% onwards to be coherent with a general increase of bandwidth of 2-3 folds every 5 years.

¹⁶ If the operators are not engaged to commit a certain level of bandwidth on the cable, and assuming that until 2018 ATHK still has contracted bandwidth of around 130-150 Mbps (downlink + uplink) with O3B and thus would not purchase much from the

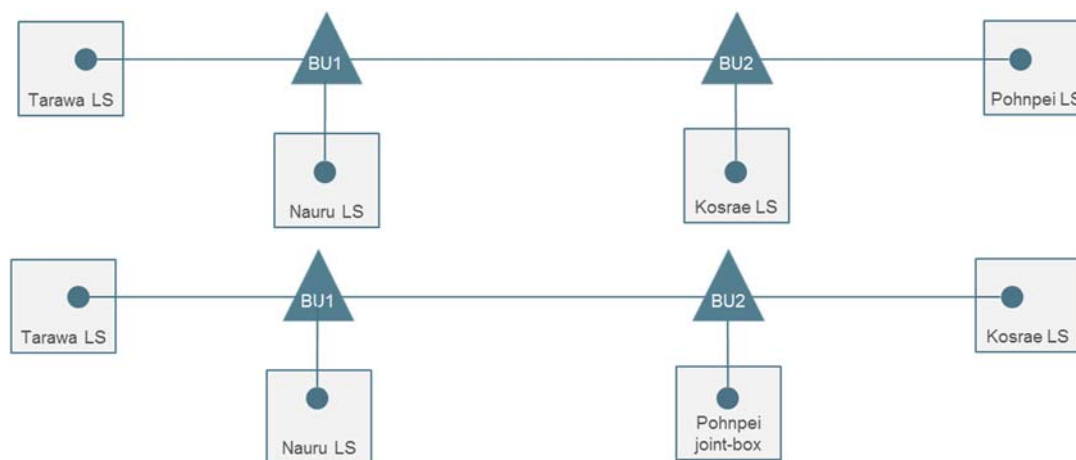


B. Technical

73. The EMC submarine cable system will comprise a 1,909 repeatered main trunk cable from Tarawa to the existing cable landing station (for the HANTRU-1 cable) at Pohnpei, plus unrepeatered spur cables to new landing points in Nauru and Kosrae (of 117 km and 116 km respectively) which are connected to the main trunk through two Branching Units (BU). The EMC will need to be physically connected to the Pohnpei CLS. The cable is likely to be one or two fiber pair, with optical add-drop multiplexer (OADM) BUs. Details on number of fiber pair, type of BUs, number of wavelength (design & initial) as well as wavelength capacity would be included in the technical specifications for the proposed systems. The onshore infrastructure in Tarawa will include a BMH, a CLS, ducting and other electronic/communications equipment.

74. Alternatively, if the landing in Pohnpei turns out to be technically difficult or financially much more expensive than estimated, the other configuration of EMC could comprise a 1,455 km repeatered main trunk cable from Tarawa to Kosrae, plus an unrepeatered spur cable to Nauru (of 52 km) and a repeatered/unrepeatered¹⁷ spur cable (of about 530 km) to the joint box outside the lagoon in Pohnpei.¹⁸ The cost of such system is estimated to be of around US\$42.2 million (without landing stations).¹⁹ A high level design summary is provided in Figure 3 below.

Figure 3. High Level Design Summary of Recommended (above) and Alternative (below) Systems



cable, even after an increase of bandwidth price to \$400/Mbps/month, the lowest cumulative cash flow is still quite negative (around USD -1M). On the other hand, if the total committed bandwidth on the cable during the first 3 years is of 150 Mbps, the lowest cumulative cash flow would only be of -USD 0.5M even with the initial bandwidth price of USD 330/Mbps/mo.

¹⁷ Typically, a spur of more than 500 Km would require repeatered cable. However, new technologies might allow the use of unrepeatered cable for such distance.

¹⁸ A joint-box exists on HANTRU-1 cable near Pohnpei in order for new cables from Chuuk and Kosrae to connect to, if these systems would be constructed. With the future construction of Chuuk-Pohnpei cable, this joint-box will be replaced with a new one on Chuuk-Pohnpei cable.

¹⁹ Including 10% of safety margin.



C. Financial Management

75. The financial management (FM) assessment was carried out in accordance with the *"Principles Based Financial Management Practice Manual"* issued by the Board on March 1, 2010. Under the Bank's OP/BP 10.00 with respect to Projects financed by the Bank, the borrower and implementing agency are required to maintain financial management systems – including accounting, financial reporting, and auditing systems - adequately to ensure that they can provide the Bank with accurate and timely information regarding the Project resources and expenditures.

76. The FM arrangements are expected to satisfy the FM requirement as stipulated in OP/BP 10.00 subject to implementation of the recommended FM mitigating measures. The main risks are: i) potential insufficient resources in the Kiribati Financial Service Unit (KFSU) to manage the FM functions of the project, and ii) the KCC which will manage Component 1 has not yet been established and its FM capacity is therefore unknown. To mitigate the risks, a part time Finance Officer will be employed, if required in KFSU, and a fiduciary assessment of KCC will be undertaken before IDA enters into a Project Agreement with KCC.

D. Procurement

77. The IDA grant will finance, for Kiribati, the cost of a submarine cable, containerized landing station, related civil works as well as individual consultants and firms for technical assistance and implementation support. Procurement for the Project will be carried out under the New Procurement Framework in accordance with the World Bank Procurement Regulations for Borrowers under Investment Project Financing (July 1, 2016).

78. A number of challenges during implementation are envisaged including the following: this will be the first World Bank financed Project in Kiribati to be implemented under the New Procurement Framework; there is thin capacity and limited resourcing in Kiribati; the Project requires coordination, cooperation and alignment between three Pacific island countries; there are three (3) separate Projects and two (2) development partners; and the KCC and regulatory arrangements in Kiribati are not yet in place. The implementation arrangements detailed in Annex 2 address these challenges.

79. The procurement of the submarine cable will cover the whole EMC system which will connect Kiribati, Nauru, Kosrae to Guam via Pohnpei (three (3) standalone Projects). The EMC will be jointly co-financed by ADB which is providing funding to Nauru. World Bank procurement rules will apply. Each country's implementing entity will sign the submarine cable system contract. Through the proposed C&MA, the three cable operating entities will be jointly responsible for contract management.

E. Social (including Safeguards)

80. The Project is expected to result in numerous positive social and economic benefits for Kiribati through improved access to internet communications. Kiribati has a large diaspora, hence there is strong support from the community for improved communications and this was expressed during community consultation. An involuntary resettlement due diligence report was prepared for



four potential cable landing sites on Tarawa. Each site (including the preferred location) was situated on Government-leased land and had no residential occupation or other assets. Virtually all land on Tarawa is customarily-owned however the Kiribati Land Planning Act allows for land use planning in the public interest. While the customary landowner retains a right of veto over sublease of Government-leased land, this is considered a low risk given the benefits associated with the Project and the limited land area required for infrastructure. Given these circumstances, OP4.12 is not triggered. The beach manhole and the cable landing station will be located on land leased by the Broadcasting and Publications Authority (a SOE), and the terrestrial cabling will be installed in an existing cable duct along the main road easement.

81. OP4.10 Indigenous Peoples has not been triggered. An assessment undertaken by OPCS and documented in the Environmental and Social Safeguard Instrument for the Pacific (ESSIP) determined that Kiribati does not meet all of the Bank's defining criteria to trigger the policy. Although culturally distinct subgroups may be present in outlying islands, two of the defining criteria - an indigenous language different from the official language, and customary cultural, economic, social or political institutions separate from the dominant society and culture - are not present.

F. Environment (including Safeguards)

82. OP4.01 Environmental Assessment is triggered for the project. The works will involve cable laying across the sea bed and reef platform, minor earthworks for the beach manhole infrastructure, and the construction of a building for the cable landing station. The Environmental and Social Impact Assessment (ESIA) concluded that environmental impacts associated with this infrastructure will have minimal (mainly marine-based) impacts which are limited in scale and extent and can be readily mitigated. Mitigation measures include a detailed bathymetric and ecological survey prior to cable laying, to avoid sensitive deep sea environments and placement of cable in the sub-tidal zone to avoid coral assemblages. The final design (including routing) and associated Contractors ESMP will be submitted for Bank approval prior to commencement of works.

83. OP4.04 Natural Habitats is triggered for the project. The intertidal zone adjacent to the proposed BMH site (approximately 400 meters in width) is dominated by algal communities and no sensitive mangrove or seagrass communities are present. In the intertidal zone the cable will be buried using a trenching machine or hydro-jetting. These techniques will both involve destruction of intertidal habitat along a narrow corridor; however, the marine vegetation will readily recolonize once the cable is laid. Coral assemblages in the sub-tidal zone will be avoided by diver-assisted placement of the cable on the sea floor.

84. Kiribati experienced active combat and military occupation during World War II (1939-1945). While no Physical Cultural Resources (PCR) were identified within or adjacent to the infrastructure footprint OP4.11 PCR has been triggered as a precautionary measure in case any PCR are found during works. A chance finds procedure has been developed for this purpose.

85. The ESIA was disclosed in-country and on the MFED's website on January 12, 2017 and on January 1, 2017 on the World Bank's website.



G. Other Safeguard Policies (if applicable)

86. No other safeguard policies are triggered.

H. World Bank Grievance Redress

87. 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 non-compliance 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/en/Projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY : Kiribati

P4: Pacific Regional Connectivity Program Phase 4: KI: Connectivity Project

Project Development Objectives

The Project development objective is to reduce the cost and increase the availability of Internet services in Kiribati.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Direct project beneficiaries		Number	15000.00	45000.00	Annual	Operator provided data	MICCTD and CCK
Female beneficiaries		Percentage	5000.00	25000.00			
<p>Description: Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.</p>							
Name: Access to Internet Services (number of		Number	15000.00	45000.00	Semester	CCK Data collected from operators	CCK



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
subscribers per 100 people)							
<p>Description: It measures the number of people who pay for access to the Internet per 100 people in a given country. Guidance: Access to the internet includes: dial-up, leased line, and fixed broadband. It also includes the so-called "free Internet" used by those who pay via the cost of their telephone call, those who pay in advance for a given amount of time (prepaid), and those who pay for a subscription (either flat-rate or volume-per usage based). It should include wireless Internet users that have a specific subscription covering Internet access (e.g., WiMAX users, or 3G data card subscribers). The number of people who pay for access to the internet (i.e. subscribers) is different from the number of users which is always larger than the number of subscribers. If breakdown data is available, the TTL can opt to include data (using optional breakdowns in the ISR system) by access modes (dial-up, leased line or fixed broadband), rural or urban areas (as per the government's definition), public/shared or household access, or female/male subscribers. This indicator is applicable for projects targeted at the national level. With baseline data, this indicator shows the additional number of people who subscribe to Internet in a country as a result of the Bank's technical assistance or investment. Because this indicator is applicable to projects targeted to the whole country, it is a good proxy for the contribution of the project to improvements in access. Data is readily available from telecommunications operators, regulators and ITU.</p>							
Name: Wholesale internet bandwidth price (Mbps/Month)		Amount(USD)	700.00	250.00	Annual	CCK	CCK
<p>Description:</p>							
Name: Retail Price of Internet Services (per Mbit/s per Month, in US\$)		Amount(USD)	10.00	2.00	Semester	Operators	CCK
<p>Description: This measures the price for access to the Internet at an equivalent rate of 1 Mbit/s per month in a given country. Guidance: The rate would include monthly line rental, line usage charge plus any tax that may be levied. Rates could be compared at the start and end of the period. It is assumed that improvements in the supply of international bandwidth (e.g., as a result of a new submarine cable facility) or improvements arising from a more competitive marketplace (e.g., new market entry or liberalization of the international gateway facility) would be passed on to consumers in the form of lower prices, improved quality of service and greater choice. This requires conversion of the advertised speed to the standardized unit (e.g., a 256 kbit/s connection would be multiplied by 4 whereas a 4 Mbit/s connection would be divided by four). This measures the retail price available to consumers rather than the wholesale price (e.g., price of an E1 leased line). It can be applied equally to fixed or mobile connections and is expressed in US\$ for cross-country comparisons. This indicator is applicable for projects targeted at the national level. With baseline data, the indicator shows the reduction in the unit price of connectivity (for instance as a result of greater market competition, or an increase in the supply of bandwidth), in a</p>							



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
country as a result of the Bank's technical assistance or investment. Since this indicator is applicable to projects targeted to the whole country, it is a good proxy for the contribution of the project to reductions in the unit price. Data is available from ITU (for cross-country comparisons), from OECD (for trends over time) and locally from operators.							
Name: Available International Bandwidth (Mbps)		Number	150.00	1000.00	Semester	Operators	CCK
Description:							
Name: Beneficiaries that feel project investments reflected their needs (percentage)		Number	0.00	22500.00			
Beneficiaries that feel project inv. reflected their needs - female (number)		Number	0.00	12500.00	Annual	Ministry/CCK Survey.	MICTTD/CCK
Total beneficiaries - female (number)		Number	0.00	25000.00			
Total beneficiaries - male (number)		Number	0.00	20000.00			
Beneficiaries that feel project inv. reflected their needs - male (number)		Number	0.00	10000.00			



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: This will measure the extent to which decisions about the project reflected community preferences in a consistent manner.							

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Length of Fiber Optic Network Built (km)		Kilometers	0.00	2144.00	Once	Cable supplier	MICTTD (then national cable operator to be established)

Description: It measures the number of kilometers of fiber-optic network built under the project (i.e. with project funds). **Guidance:** Fiber optic network refers to the network constructed with fiber optic cables. The definition of "built" means the condition that the fiber optic cables are physically laid regardless lit or in use. The measure would be in terms of "route kilometers" not in actual length of fiber (i.e. the number of individual fibers carried in a duct, or their transmission capacity, would not be factored into the indicator). This would allow for the fact that many of the fibers will be initially "dark" but will be illuminated as they are needed, and also that the transmission capacity may rise due to technological change. Thus, measuring route kilometers of fiber is a more neutral measure than counting individual fibers or their transmission capacity. As backbone projects will be built primarily through PPP, project funds will therefore typically not finance 100% of the project. It is expected that the baseline value for this indicator will be zero. The data will be available from the operators under the project.

Name: Construction & Maintenance Agreement Signed between Kiribati, Nauru and FSM		Yes/No	N	Y		Annual reports of Kiribati Cable Co.	
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Description:



Target Values

Project Development Objective Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Direct project beneficiaries	15000.00	15000.00	15000.00	20000.00	30000.00	40000.00	45000.00
Female beneficiaries	5000.00	7500.00	7500.00	10000.00	15000.00	20000.00	25000.00
Access to Internet Services (number of subscribers per 100 people)	15000.00	15.00	20.00	30.00	40.00	45.00	45000.00
Wholesale internet bandwidth price (Mbps/Month)	700.00	700.00	700.00	300.00	250.00	250.00	250.00
Retail Price of Internet Services (per Mbit/s per Month, in US\$)	10.00	10.00	10.00	6.00	2.00	2.00	2.00
Available International Bandwidth (Mbps)	150.00	300.00	300.00	1000.00	1000.00	1000.00	1000.00
Beneficiaries that feel project investments reflected their needs (percentage)	0.00	0.00	0.00	10000.00	15000.00	22500.00	22500.00
Beneficiaries that feel project inv. reflected their needs - female (number)	0.00	0.00	0.00	10000.00	12500.00	12500.00	12500.00
Total beneficiaries - female (number)	0.00	0.00	0.00	15000.00	20000.00	25000.00	25000.00
Total beneficiaries - male (number)	0.00	0.00	0.00	10000.00	20000.00	20000.00	20000.00
Beneficiaries that feel project inv. reflected their needs - male (number)	0.00	0.00	0.00	5000.00	10000.00	10000.00	10000.00



Intermediate Results Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Length of Fiber Optic Network Built (km)	0.00	0.00	0.00	2144.00	2144.00	2144.00	2144.00
Construction & Maintenance Agreement Signed between Kiribati, Nauru and FSM	N	N	Y	Y	Y	Y	Y





ANNEX 1: DETAILED PROJECT DESCRIPTION

COUNTRY: Kiribati

P4: Pacific Regional Connectivity Program Phase 4: KI: Connectivity Project

A. Project Context and Rationale

1. The proposed Project seeks to address two of Kiribati's main development challenges by financing higher capacity and lower cost Internet: its remote location and the high cost of connectivity that impacts Kiribati's broader economic and social development. The Project builds on the momentum generated by ongoing reforms in the telecommunications/ICT sector that have significantly improved access to basic telephony and data services over the last year. The proposed Project will finance the deployment of an optical fibre submarine cable to connect Kiribati (Tarawa and nearby islands) to the HANTRU-1 submarine cable system that connects on to Guam, United States, and onto global telecommunications networks.
2. Projections of current prospective future demand show that this will dramatically reduce the cost of international Internet bandwidth and bring affordable broadband Internet and its associated applications and services capability to the majority of Kiribati's population. The Government of Kiribati is aware of trends in ICT at the global level, and in the Pacific region, and recognizes that improved connectivity and access to information can help to improve development prospects on many fronts through realization of "digital dividends." This Project constitutes the fourth phase in the Pacific Regional Connectivity Program Series of Projects (P113184), approved by the Board in August 2011.
3. The Government of Kiribati is aware of ICT development trends globally as well as in the South Pacific region, and recognizes that improved connectivity and access to information can help to address development challenges in its country. Therefore, the Government has sought World Bank assistance in this area and has embarked on a comprehensive ICT sector reform program described below.
4. The majority of the population is resident on a small number of relatively close islands near the capital Tarawa. This group of islands includes North and South Tarawa, Marakei, Abaiang and Maiana and hosts 73,000 persons, more than 66% of the total population. The significance of this geographic grouping is that this cable Project is, with simple (and in the main, existing) microwave links able to deliver high capacity ICT and broadband services to this large fraction of the total population of Kiribati.
5. New private sector-led investment is needed to improve access to ICT services in Kiribati. This in turn depends on public funding for international connectivity with advantageous terms to ensure the capital investment for this segment serves the national need. Today, mobile penetration in Kiribati's major population centres of South Tarawa and nearby atolls plus Kiritimati Island is about 45 percent, and nationally about 30 percent lower than comparable countries in the Pacific at a similar stage of development. Access to Internet is also very limited. The distribution of ICT services is very unequal across Kiribati and is especially so outside of South Tarawa and Kiritimati islands. International highly reliable connectivity presently depends on C band and Ka band satellite links, which are expensive and offer limited capacity. While there has been a



reduction in recent times, satellite bandwidth costs are typically in the range of US\$900-1,500/Mbps/month for each direction of communication. Accordingly, Internet access, particularly broadband, is largely unavailable outside of the South Tarawa group and Kiritimati. Table A1.1 exhibits the distribution of services across the Kiribati as of December 31, 2016.

Table A1.1 Kiribati: ICT Services Availability, by Island 2016

Island	Population 2015 (census)	Fixed Lines	Active Mobile subscribers		Fixed Internet (Wimax & ADSL)
			2G	3G	
North and South Tarawa	62,625	2,700	11,000 (est)	26,000	900
Kiritimati	6,356	75	<1300 (est)	nil	nil
Marakai, Abaiang Maiana, Tabiteuea North, Onotoa,	15,696	3-10 per atoll	<1000 (est)	nil	nil
Banaba, Makin, Butaritari, Abemama, Kuria, Aranuka, Nonouti, Tabiteuea South, Beru, Nikunau, Tamana, Arorae	20967	3-10 per atoll	nil	nil	nil
Tabuaeran, Teraina, Kanton	4049	3-10 per atoll	nil	nil	
TOTAL	109,693		13,300	26,000	900

Source: ATHKL

6. The World Bank, in partnership with bilateral financing from the Governments of Australia and New Zealand, is presently supporting the Kiribati Telecommunications & ICT Development Project (P126324) which is designed to improve the availability of services across the Outer Islands by means of a public-private partnership (PPP). This PPP is being designed and developed concurrently with (but separate from) this cable Project, but the institutional arrangements will be coordinated.

7. The main challenge facing Kiribati is how to overcome its international remoteness and geographic distance between national islands. The Government proposes to do this by developing the basic infrastructure – particularly telecommunications and Internet - which it needs to connect its people domestically and particularly, internationally. The Government views ICT as a key enabler of more equitable growth and access to services and especially as an underpinning enabler for other society critical services such as education, health, disaster management and national security.



B. Project Description

Overview

8. Access for this geographic region to the international optical fibre network and through this to the Internet and the Global telecommunications network under this Project will be through the regional cable HANTRU-1²⁰ connecting to Guam, a major IP Transit hub in the Pacific. There are two potential interconnection points: (i) Pohnpei (FSM) and (ii) Majuro (Republic of Marshall Islands). Conditions of interconnection appear to be uncertain and more expensive in Majuro. From these two possibilities, three options for provision of an optical fibre service to Kiribati were considered and analysed. These are:

- a. **Option 1** - Tarawa – Majuro (direct route, least capital, operating cost 100% to Kiribati, and tied to uncertainties in Majuro)
- b. **Option 2** - Nauru – Tarawa – Majuro (intermediate capital and operating cost (with high bandwidth cost and tied to uncertainties in Majuro)
- c. **Option 3** - Pohnpei – Kosrae – Tarawa (Highest total capital cost but Kiribati portion nearly the same as option 1 and Kiribati share of operating cost is lowest of the three).

9. Financial analysis results for these three options are shown in Table A1.2. Option 3 was selected by the stakeholders.

²⁰ This cable comprises two fibre pairs, one dedicated to the needs of Kwajalein (US Department of Defense), and a second pair for services to Majuro (Marshall Islands) and Pohnpei (FSM). This second fibre has an ultimate overall capacity of 160,000 Mbps (16 wavelengths of 10Gbps each). The HANTRU-1 cable is equipped with Optical Add / Drop Multiplexers (OADM) in two branching units (BU) which provide for up to eight wavelengths to be delivered to each of Pohnpei and Majuro. At present one wavelength is activated for each of these sites, providing 10,000 Mbps bidirectional capacity between Guam and each of Majuro and Pohnpei. Current capacity needs of each of Majuro and Pohnpei are less than 100 Mbps. Accordingly, considerable capacity is immediately available at each location for other use. Should local or other future needs require additional capacity, the existing cable can support an additional 70,000 Mbps at each location making a total of 80,000 Mbps at each location). Should capacity beyond this be required, the end equipment at Guam, Pohnpei and Majuro can be replaced with higher capacity equipment (e.g. equipment to support 100 Gbps per wavelength), however this would require coordination and cooperation of the FSMTC.



Table A1.2 Overall Financial Analysis of options – EMC Cable²¹

	Option 1 Tarawa - Majuro	Option 2 Nauru – Tarawa – Majuro (spur)	Option 3 Pohnpei – Kosrae – Nauru – Tarawa (PREFERRED)
Overall			
CAPEX (US\$ Millions) excluding cable landing stations ²²	16.9	30.4	42.2
CAPEX (US\$ Millions) including cable landing stations ²³	18.4	33.4	47.0
Annual cable OPEX (US\$ Millions)	0.5	0.85	1.2
Total OPEX (on 25 years, incl. cable O&M and IP transit) (US\$ Millions)	12.8	20.2	21.0
Interconnection (US\$ Millions)	Majuro-Guam	Majuro-Guam	Pohnpei-Guam
FNPV before financing (US\$ Millions) ²⁴	-14.1	-19.9	-26.4
FIRR %	-2.4%	-0.1%	0.3
Net ENPV (US\$ Millions) ²⁵	7.2	34.8	39.8
Net EIRR %	8.6%	9.6%	8.3%

The proposed EMC cable was selected because it:

- will connect Kiribati to a broader sub-region with Nauru and FSM (Kosrae and Pohnpei);
- has nearly the same capital cost (for Kiribati) as the direct (lowest capital cost) route to Majuro;
- has the lowest operating cost (for Kiribati) of all available options (operating cost is the primary determinant of cost of broadband to operators and hence to end users); and
- avoids the uncertainties of interconnection at Majuro.

²¹ Where applicable and unless otherwise stated, a discount rate of 6% is taken into account.

²² Including 10% for safety margin compared to original estimated cost

²³ Assuming a conservative estimation of \$1.5M per station for building and ancillaries and spares

²⁴ Assuming an annual price reduction rate of 4% from Y4-Y10 and 13% onwards to be coherent with a general increase of bandwidth of 2-3 folds every 5 years and initial bandwidth price of \$330/Mbps/mo in Kibibati, \$900/Mbps/mo in Kosrae and Nauru.

²⁵ Economic impact is net of the cable CAPEX and operational cost and includes savings compared to the current solution (O3B). Savings are considered after the final years of existing contracts with other technologies for committed bandwidth. Savings are capped at \$1M (price that Kiribati paid for nearly of 40 Mbps of bandwidth demand on satellite solution until end 2013). 15 Mbps of satellite bandwidth is maintained for back-up even after the complete moving to submarine cable bandwidth. Satellite bandwidth should be in 2-direction. A ratio FWD/RTN=1/0.33 is assumed.

The calculation of economic impact on a country's GDP uses discount rate that are related to GDP growth rate of this specific country. Thus different discount rates are used for Kiribati (discount rate =6%), Kosrae (discount rate = 2%) and Nauru (discount rate = 2%)



10. The proposed approach is based on a main trunk line from Kiribati to the existing cable landing station at Pohnpei with spur lines that do not include repeaters to the landing points at Nauru and Kosrae. To execute this proposal works required at each connection point are:

- a. Tarawa: New cable landing station with shore terminal equipment;
- b. Nauru: New cable landing station with shore terminal equipment;
- c. Kosrae: New cable landing station with shore terminal equipment; and

Pohnpei: Addition of shore terminal equipment to terminate and forward traffic from Kiribati, Nauru, and Kosrae within the existing Pohnpei Cable Landing Station.

Figure A1.1 Proposed EMC
(Kiribati-Nauru –Kosrae-Pohnpei) Sub-Regional Cable System

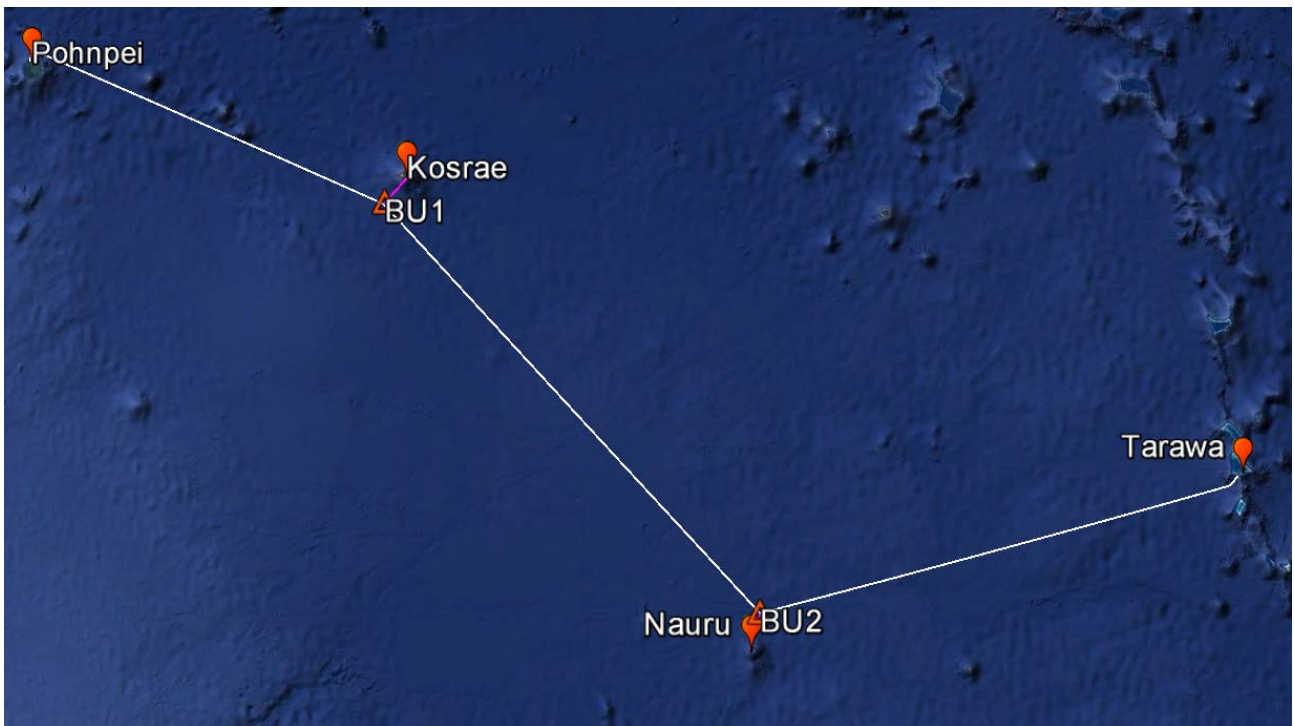
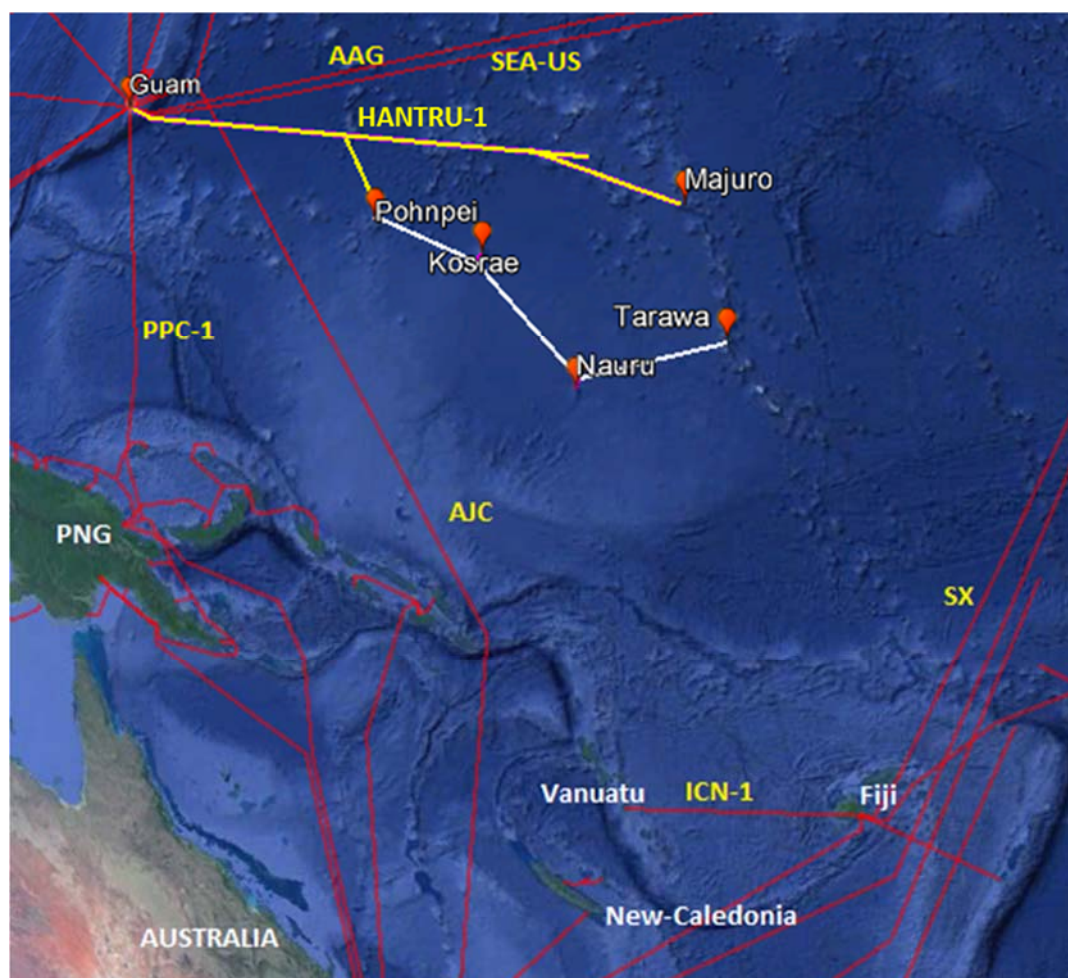




Figure A1.2 EMC Cable System in Regional Context

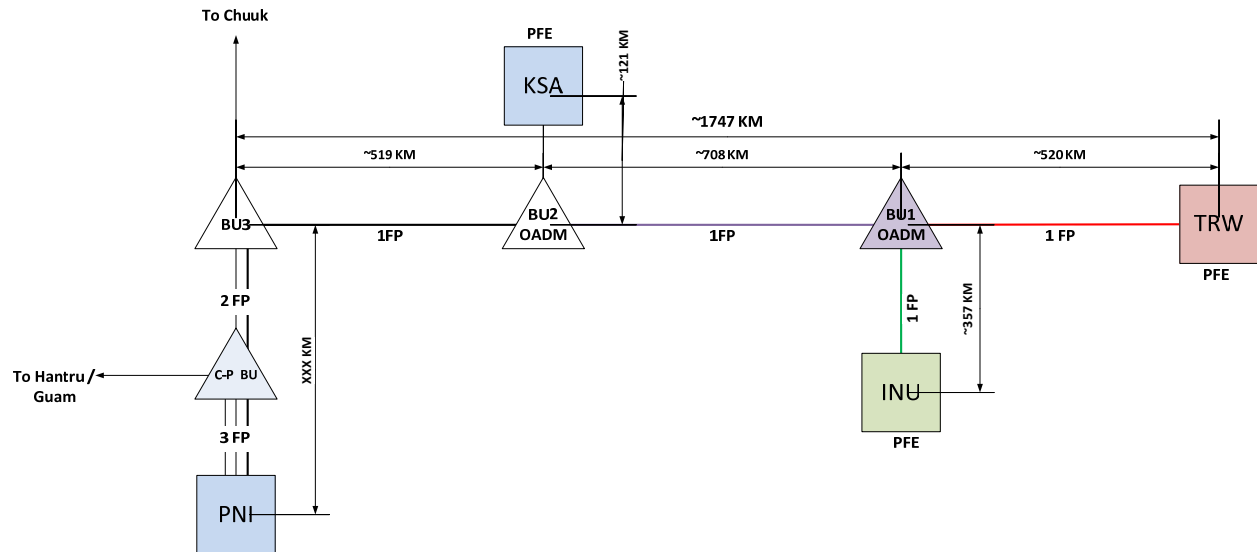


Details

11. Development of the final arrangements for the regional cable will be a matter for discussion and negotiation with bidders. Submarine cable technology is rapidly changing and there are likely to be options at the time bids are called that were not available at the time of recent past Projects that have informed conceptual approaches to this Project.
12. A key factor is the current Cable Landing Station (CLS) in Pohnpei. In this CLS the location is particularly challenging and potentially very expensive for landing a new cable. At the time that the HANTRU-1 cable system was installed the designers had the foresight to install a multi-pair cable from the Pohnpei CLS to an accessible point offshore. This accessible point is being used in the construction of the separate Pohnpei to Chuuk cable as a means of avoiding landing of a new cable to the Pohnpei CLS for the Chuuk cable system. It is likely that the same approach will be used for this cable system to Kiribati, however this brings with it some system compromises. A system diagram of how the Chuuk cable is connected and how the Kiribati cable might be connected is in Figure A1.3.



Figure A1.3 Least Cost System Diagram of the EMC showing arrangements at Pohnpei.



13. Under this arrangement, the high cost of landing a new cable at the Pohnpei CLS is avoided but the arrangement cannot provide redundant power for repeaters in the cable between BU3 and BU2 on the route to Kiribati. Fortuitously, the distance from the Pohnpei CLS to Kosrae may be within the range of newly developed repeater-less systems and it is likely workable to establish the Pohnpei to Kosrae system as a 100Gbps repeater-less system. With such a system, the power for repeaters on the cable to Kiribati will be provided from Kosrae and also from Tarawa which will provide redundant power to all repeaters in that segment, ensuring reliability and resilience in that segment.

14. Should it not be workable to establish the link from Pohnpei to Kosrae as a repeater-less system, that link could be powered from Kosrae but as a single end power arrangement will not be as resilient as a dual end power system. Various configurations of this approach concerning the placement of BU2 are possible to decrease the length of cable exposed to risks associated with single end power. If system reliability design requires, a new cable could be landed at Pohnpei - at increased project costs which are incorporated into the current pricing estimates. If a new cable is included into the design, C-P BU and BU3 are eliminated and redundant power is available to repeaters between Pohnpei and Kosrae from Pohnpei. This then simplifies and offsets costs for the connection and installation at Kosrae.

15. The choice of route from Pohnpei to Kosrae and from Kosrae to Nauru will determine if Nauru needs to be a power source for any repeaters that may be required for the Nauru spur. Kiribati as one end of the cable system will necessarily be a power source for the repeaters on the cable. To avoid repeaters in the spur routes the spurs would need to be shorter than about 55Kms for an optimised transmission. Such considerations will be part of the discussions with potential providers at the time of system specification.

16. The HANTRU-1 system which lands at Pohnpei was commissioned in 2007 (ready for service in 2010) and hence is built with equipment of that era. The system comprises two fibre pairs, one dedicated to the needs of Kwajalein, and a second shared pair for services to Majuro (Marshall Islands) and Pohnpei (FSM). This second fibre was installed with an ultimate overall capacity of 160,000 Mbps (16 wavelengths of 10Gbps each). The HANTRU-1 cable is equipped with Optical Add / Drop



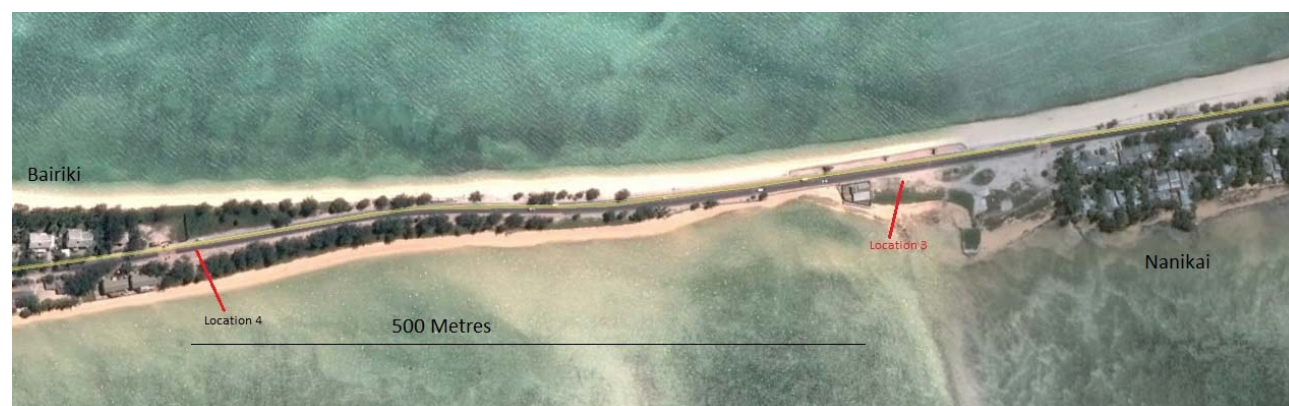
Multiplexers (OADM) in two branching units (BU) which provide for up to eight wavelengths to be delivered to each of Pohnpei and Majuro.

17. At present one wavelength is activated for each of these sites, providing up to 10,000 Mbps bidirectional capacity between Guam and each of Majuro and Pohnpei. Current capacity needs of each of Majuro and Pohnpei are less than 100 Mbps. This means that more than 9,000 Mbps is immediately available at each location for other use. Should local or other future needs require additional capacity, the existing cable can support an additional 70,000 Mbps at each location making a total of 80,000 Mbps at each location). If at a future time the capacity of this cable needs to be increased beyond this level, it can be done by changing the end electronic systems at Guam and Pohnpei without impact on Majuro. Such changes will require coordination with and cooperation of FSMTC and the owner of the HANTRU-1 cable entity.

18. Typical current model submarine cable systems have an entry level capacity of 100,000 Mbps per wavelength with the possibility of 32 or more wavelengths. Noting that the projected bandwidth needs of Kiribati are about 14,000 Mbps by 2041 and those of Nauru and Kosrae some one tenth of that, a single wavelength on this new cable will be completely adequate for envisaged future needs and will include considerable spare capacity on the first wavelength. An additional 30 or more wavelengths would remain dormant but available for activation.

19. Four sites for the CLS at Tarawa have been considered and two (locations 3 and 4) are most suitable with one (location 3) being especially so. The most suitable site has land area for the CLS to include the corporate offices of the KCC – which is envisaged to have a working staff of about 5 to 7 persons (not including Board members). This site has available electrical power and easy access to a duct that extends the entire length of South Tarawa permitting easy connection of operator sites to the submarine cable capacity. With the available land area, it is possible to install a tower to support microwave links to more remote locations if necessary. An image of the locations is seen in Figure A1.4 below.

Figure A1.4 Preferred locations for Cable Landing Station, Kiribati



C. Project Financing

20. Using IDA national and regional financing of US\$20 million equivalent the Project will finance the following components to support Kiribati's participation in a sub-regional submarine cable system, plus associated technical and Project management support, as summarized in Table A1.3.



Table A1.3 Proposed Financing and Sources: all Projects supporting the EMC (US\$ million)

Component	KIRIBATI	NAURU	FSM	Total
	IDA P159632	ADB 50348-001	IDA-P161363 and P130592	
1. Submarine Cable system including cable station and ancillaries	17.00	15.00	15.66	47.66
2. Technical Assistance	2.00	0.00	1.76	3.76
3. Project Management & Administration	1.00	0.00	2.03	3.03
Total	20.00	15.00	19.45	54.45

Co-financing.

21. The total investment required for this Project is US\$54.45 million. FSM's participation in the submarine cable system will be financed under the ongoing IDA-financed Palau-FSM Connectivity Project (P130592) using unallocated funds plus additional financing for Kosrae (P161363). Nauru's participation will be financed by the Asian Development Bank (ADB)'s proposed Micronesia Internet Connectivity Project. Separately, as part of its Micronesia Connectivity Project, ADB has also indicated its interest to finance an additional connectivity component for Kiritimati Island in the amount of around US\$15.0 million but this has not been incorporated into Table A 1.3 as it would constitute a separate network/connectivity arrangement.

D. Project Cost by Component

22. As indicated in Table A1.3 the Project has three major components which are described and costed below. This discussion relates the Kiribati contributions to the total Project.

Component 1. Submarine Cable System (US\$17.0 million)

23. Component 1 comprises two key subcomponents, regional submarine cable and on shore (national) works as follows.

Subcomponent 1 (a): Submarine Cable System. The Project will finance construction of the EMC, a regional submarine cable system connecting Tarawa, in Kiribati, with Nauru as well as Kosrae and Pohnpei (both in the FSM). This subcomponent will finance Kiribati's contribution to the EMC on a cost-sharing basis.



Subcomponent 1 (b): Cable Landing Station (CLS) and Ancillary Equipment (subcomponent 1 (b)(i)). This entails construction of a CLS and ancillary works and facilities on Tarawa, including acquisition and installation of onshore equipment. At the other end of the EMC, the cable landing station (CLS), beach manhole (BMH) and ancillary equipment in Pohnpei, which are required to connect the EMC to the rest of the network and the achievement of the PDO, are already in place (through previous bilateral financing to FSM) and connection works will be funded through another source of IDA financing for FSM. The EMC also provides for the additional cable connections for Kosrae and Nauru (subcomponent 1(b)(ii)).

Component 2. Technical assistance (US\$2.0 million).

24. Component 2 includes the following subcomponents:

Subcomponent 2(a): Provision of legal, financial, technical and transactional assistance in connecting with the drafting and negotiation of an arrangement for the construction, ownership and management of the EMC to be entered into, between Kiribati, Nauru and FSM, each acting through its respective national cable operator on the one hand and the constructor and other parties (as the case may be) on the other hand.

Subcomponent 2(b): Provision of legal advisory assistance for the establishment of a Kiribati national cable service operator, with capacity and resources for the purpose of operating the EMC and managing all national aspects of the provision of services to users of the EMC's capacity in the Recipient's territory.

Subcomponent 2(c): Provision of TA to the CCK in the areas of licensing, interconnection and access, and landing party agreements, including any implementing or ancillary regulatory instruments ensuring cost-based, non-discriminatory and open access to capacity.

Subcomponent 2(d): Provision of ICT policy and legal technical assistance in connection with electronic transactions (such as e-government and e-commerce) to facilitate citizens access to and use of broadband services, including for the development of the legal and regulatory framework to support safe electronic transactions, cyber security, data protection and confidentiality.

Component 3. Project Management and Administration (US\$1.0 million)

25. Component 3 supports a program of activities designed to strengthen the capacity of the Recipient to process Project transactions, implementation, and management. Such a program will include: (a) overall Project coordination; technical coordination; financial and contract management; procurement, communications, outreach; reporting, audit, and monitoring and evaluation; (b) environmental and social safeguards management.



ANNEX 2: IMPLEMENTATION ARRANGEMENTS

COUNTRY: Kiribati

P4: Pacific Regional Connectivity Program Phase 4: KI: Connectivity Project

A. Project Institutional and Implementation Arrangements

Institutional Arrangements

1. This Project is a part of a larger regional program that is a strategic partnership between FSM, Nauru and Kiribati. The overall program is partitioned into:
 - a) National contributions to the:
 - a. Construction of the East Micronesia Cable (EMC) cable that connects Kiribati, Nauru and Kosrae to the existing cable station at Pohnpei. The national connection point (and point of demarcation between the regional system and national systems) is the BMH on each national coastline although the EMC construction will include some on-shore equipment (SLTE, PFE) located within the Cable Landing Station;
 - b. Establishment and ongoing costs of a regional C&MA to manage the construction, operation and maintenance of the regional cable system including negotiating interconnections at Guam and at each national connection point, dealings with the marine maintenance contractor and to be a forum for planning and discussion of matters of each country participant.
 - b) National infrastructure, works and institutional development to:
 - a. establish a cable station (for each country's connection) in concert with the timing and system design requirements of the regional cable system;
 - b. establish an organization to manage the national facilities, represent the national interests in the regional C&MA and establish and manage interconnection with and provision of services to the telecommunications operators of each nation. This entity in Kiribati is tentatively cited as the KCC;
 - c. expand the capabilities of the national regulator to ensure that access is equitable, non-discriminatory and at prices that reflect costs;
 - d. provide Technical Assistance (TA) toward developing local Internet competencies and encouraging citizen take up of broadband services by assisting Government introduction of e-Government based structures and services.
 - e. establish and operate national management (Project Management Unit (PMU), Environmental and Social issues, and technical support).
2. *Preparation phase.* Kiribati, Nauru and FSM established a Steering Committee (SC) for the EMC in September 2016 to guide the development of the Project and institutional arrangements



around it for the lifetime of the cable. Each country designated a sector ministry to manage Project preparation: in the case of Kiribati, this is the Ministry of Information, Communication, Transport and Tourism Development (MICTTD). MICTTD has also established a Project Management Unit, and will prepare the Project Operational Manual.

3. *Implementation phase.* Each participating country will establish its own national cable company 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 then negotiate and sign an EMC Construction and Maintenance Agreement (C&MA). At such time as the C&MA enters into force, the SC will be dissolved and any Project governance functions performed by it will be assumed by the governance bodies created under the C&MA. Details are provided below, and an outline of a possible C&MA is summarized in Figure A2.1.

4. *National Cable Company.* Kiribati will establish an open access entity, the Kiribati Cable Company (KCC). This is currently envisaged as a 'Not for Profit' State Owned Enterprise (SOE) under the SOE Act 2013, enabling the KCC to include private sector participation in the future. Other organizational structures and business models may also be considered and evaluated. Pending the formation of KCC, the MICTTD (as the entity responsible for Project implementation) will perform the functions to be performed by KCC. Upon its formation, which is planned to be in the first six months of Project implementation, and subject to and in coordination with the requirements of the EMC, KCC will assume its designated functions as follows:

- Construction and management of the CLS, BMH and associated infrastructure; and
- Establishment and operation of operator-facing facilities for operator interconnection, preparing a Reference Interconnect Offer (RIO) or other client contracting arrangements;
- Provision of wholesale services to the telecommunications operators in Kiribati.

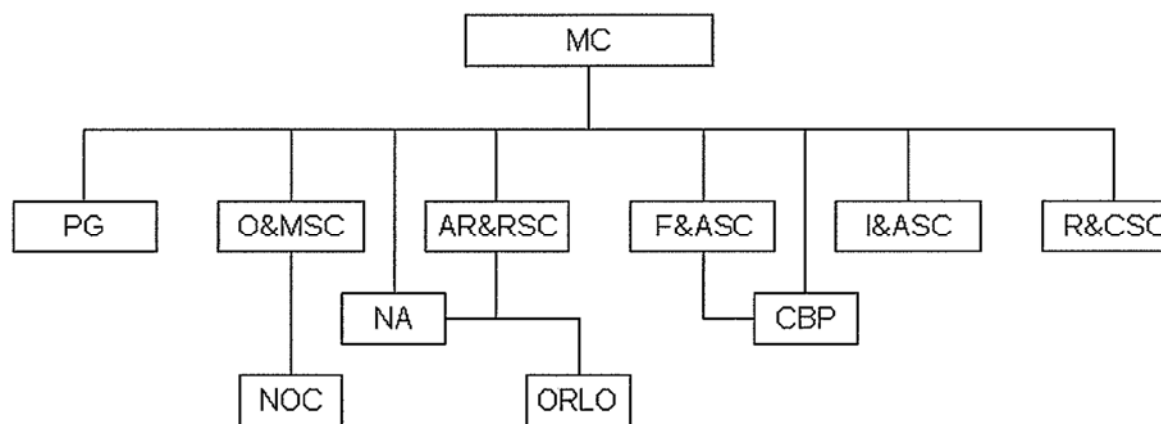
5. In forming the KCC, the Government shall design (or cause to be designed) and submit to the World Bank a plan for the management of the cable capacity (the "Strategic Asset Management Plan"), in form and substance acceptable to the World Bank and consistent with Kiribati's laws and regulations and in accordance with the provisions of the Financing Agreement.

6. Additionally, the KCC will be established to manage both Component 1 of the Project and the Outer Islands Connectivity infrastructure. This arrangement will minimize overall costs to the operators for both the provision of cable access and the provision of infrastructure service to the Outer Islands of Kiribati; capture synergies relevant to the two infrastructure management functions; and recognize the shortage of relevant expertise that could result in limitations on both Projects without this merger.

7. Further, the KCC will establish its CLS so that, when appropriate and if the ICT service provides so wish, an Internet Exchange Point (IXP) can be established within the CLS precinct to minimize international connection costs for the benefit of the people of Kiribati.



Figure A2.1 Indicative Governance Structure of a C&MA



MC: Management Committee

PG: Procurement Group

O&MSC: Operation and Maintenance Subcommittee

AR&RSC: Assignment, Routing and Restoration Subcommittee

F&ASC: Financial and Administrative Subcommittee

I&ASC: Investment and Agreement Subcommittee

R&CSC: Regulatory and Communication Subcommittee

CBP: Central Billing Party

NA: Network Administrator

NOC: Network Operation Center

ORLO: Overall Restoration Liaison Officer

8. **Regional Coordination.** FSM and Nauru will establish similar open access cable entities at the national level. The proposed C&MA will govern the financing, ownership, design and installation (including construction milestones corresponding supplier payments) and operations and management of the EMC cable system over its lifetime. In addition, and without limitation, the C&MA will provide, *inter alia*, 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 6-12 months of Project implementation. Each party to the C&MA will engage legal, financial, technical and transactional advisors to facilitate the negotiations. Further, the C&MA shall contain provisions satisfactory to the Bank incorporating the Fraud & Corruption Guidelines as well as for the purpose of: guaranteeing open access to such infrastructure and services on transparent, cost-based and non-discriminatory basis. This is in order to protect the interest of the ICT service users and achieve the objectives of the Project. The Government shall obtain the Bank's written agreement prior to assigning, amending, abrogating, or waiving the C&MA, or any provision thereof, or permitting any entity participating in the implementation of the Project to do so.

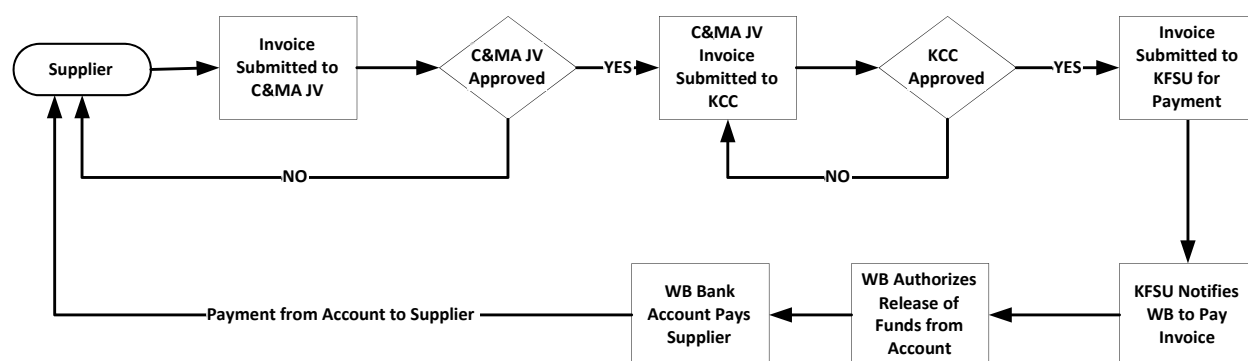


Project administration mechanisms

9. *Project administration.* The World Bank will sign a Financing Agreement (FA) with the Recipient of the IDA funding: the Ministry of Finance & Economic Development (MFED) which currently assumes responsibility for finance. The MFED will be the authorized representative for all Grant-related matters. The Ministry of Information, Communications, Transport and Tourism Development (MICTTD) has been designated by the Government as the entity responsible for the preparation of the Project.

10. *Payments.* For Component 1a (EMC submarine cable system construction) the Procurement Subcommittee of the C&MA will certify that relevant milestones have been achieved and that payments to the Cable Construction Contractor (CCC) are required. This C&MA certification will be validated by KCC which will pass the request for payment to the KFSU for lodgment with the Bank. Payments to the CCC will be coordinated by the WB and ADB across the three participants and Kiribati's component payment will be made by the Bank directly to the CCC. A process flow chart depicting the works certification and payment arrangements is in Figure A2.2.

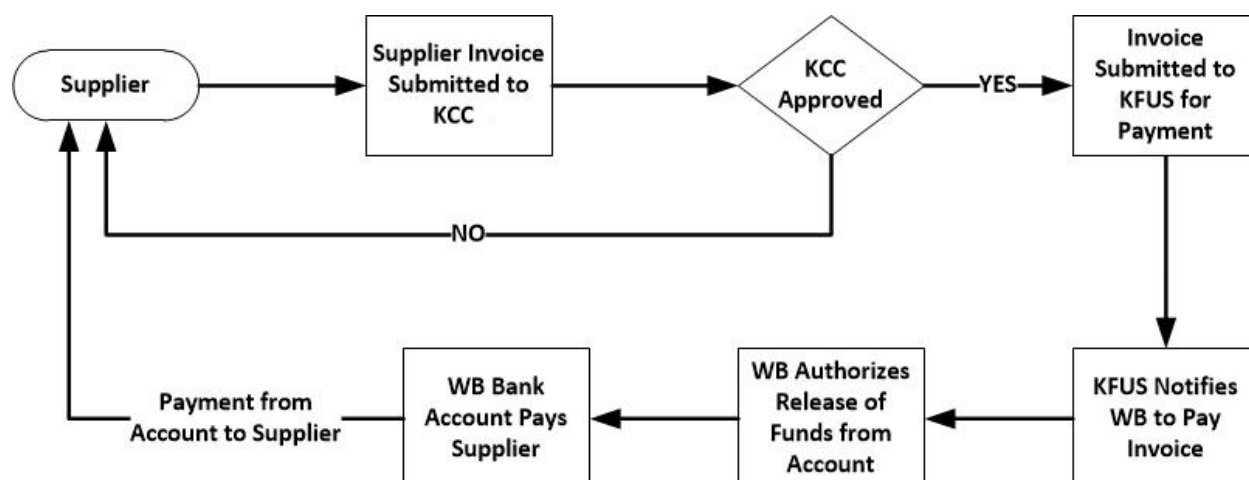
Figure A2.2 Process Flow for EMC Disbursement (Component 1a)



11. For all other payments including works within Kiribati's territory, MFED will provide the funds to the KCC on terms and conditions acceptable to the World Bank. Payments for consultants and national works and construction will be made by the KCC to the contractor. A flow chart depicting the arrangements is in Figure A2.3.



Figure A2.3 Process Flow for Other Components



12. *Implementing entity.* The entity responsible for the implementation of all Project components will be MICTTD. However, once the KCC has been established, it will assume responsibility for Component 1. The World Bank will then negotiate and sign a Project Agreement with KCC. MFED will negotiate and sign a Subsidiary Agreement with KCC.

13. The Project will be overseen by the Secretary of MICTTD, and managed by the Ministry's Director for ICT. For day-to-day administration of the entire Project MICTTD will recruit consultants, reporting to the Director of ICT, to assist with overall Project coordination, procurement and technical matters, and communications/ public awareness. MICTTD will coordinate with the Kiribati Fiduciary Support Unit (KFSU) established in MFED for assistance with financial management, monitoring and evaluation, and audit functions, as is the practice for other World Bank-funded Projects.

14. These arrangements will require the following legal documents: (a) a Financing Agreement between IDA and the Recipient; (b) a Project Agreement between IDA and the KCC, once established; (c) a Subsidiary Agreement between the Recipient and KCC; and (d) a MoU between IDA/WB and ADB concerning co-financing management arrangements. The Project Agreement with KCC will be negotiated and executed once it has been established, operationalized and assessed by IDA for fiduciary responsibilities (FM and Procurement).

Results Monitoring

15. The MICTTD will be responsible for overall monitoring and evaluation, in conjunction with the CCK. Data gathering and analysis will be undertaken by the CCK based on data provided by telecommunications service providers, Kiribati Bureau of Statistics and other agencies in accordance with the Results Framework established for the Project. Data on actual Project outputs and outcomes will be gathered and analyzed by the MICTTD and included in semi-annual progress reports to be submitted to the World Bank. The views of direct beneficiaries will be brought into the M&E process, including through periodic consultations/surveys and citizen engagement platforms as appropriate.



16. Implementation support missions will be conducted at least twice a year, supported by the Liaison Office in Tarawa. Given expected effectiveness by the third quarter of 2017, a midterm review will be scheduled in November 2020.

Coordination with FSM and Nauru

17. Collaboration between all parties, including governments, industry, and development partners is important. The World Bank and ADB, are already working closely on all aspects of this cable, and the Governments of the three states maintain regular contact during the preparation phase, both independently and via the established SC. Key issues for coordination include the following marine components, among others:

- a. Sharing of information for the route design in Kiribati's territorial waters relevant to the connection;
- b. Land acquisition for, and design, specification, construction and fit out of the cable landing station (for installation of Submarine Line Terminating Equipment (SLTE) and associated system testing);
- c. Contractual arrangements for the proposed cable components;
- d. Arrangements for storage and access to spares to support the system over its life;
- e. Coordinated Project management arrangements for the marine segment and the separate land segments.

Financial Management

18. The Kiribati Fiduciary Support Unit (KFSU) will maintain the Project accounts. This is consistent with other World Bank financed Projects in Kiribati. Once KCC is established and the Subsidiary Agreement and Project Agreement are in place, KCC will be responsible for the financial management of Component 1, however the Project reporting responsibilities to the World Bank will remain with the KFSU.

Country Issues

19. There are weaknesses across the range of public financial management functions within Kiribati due mainly to the limited opportunities for residents to gain the appropriate qualifications and experience in public financial management due to their isolation. The most recently published Audit Report of the National Accounts for 2014 highlighted issues including unauthorized expenditures, unreconciled bank balances and poor compliance with legislation and regulation requirements. Donor support, particularly from ADB and DFAT, to address these weaknesses over the last few years has led to improvements in some areas, but the risk remains substantial. This risk has been partially mitigated by the formation of the KFSU which maintain the accounts for all World Bank and ADB financed Projects.

Budgeting Arrangements

20. The Project budget will be on a cash basis, formulated from the agreed work plans to cover the life of the Project, broken down into each financial year which spans from January to December. The budget will be an aggregate of the activities whose costs will be estimated at the start of the Project and updated annually. MICTTD will liaise with the KFSU in the annual budget review and the KFSU will monitor actual expenditure against the budget. While budget capacity



within the KFSU is limited the expertise should be sufficient to meet the requirements in this Project.

Accounting/Staff Arrangement

21. The Project will support the services of a Finance Officer. Depending on the capacity of the KFSU to absorb additional FM at the time when implementation commences, this may take the form of employing an additional Finance Officer part time or part funding an existing position. Under the present structure, there may be fewer than 10 contracts and limited other expenditures and the formal staffing arrangement will be discussed with KFSU closer to the commencement of implementation. While there is always a risk of NOT being able to appoint FM staff with sufficient qualifications and experience the KFSU currently has three experienced FM staff and they can provide support to the new Finance Officer if this position is required.

22. The responsible Finance Officer will prepare the accounting documentation for each transaction which will be authorized by MICTTD. Quick Books software is used to record the financial transactions through a separate company for this Project and accounts will be maintained on a cash basis. When KCC is operationalized a fiduciary assessment will be undertaken before the World Bank enters into a Project Agreement with KCC.

Internal Controls

23. The Government of Kiribati accounting processes ensure authorization and payment processes are clearly segregated however there had been poor compliance with internal control procedures. Generally, KFSU follows Government of Kiribati policies and procedures and the KFSU also has prepared a Financial Management Manual which outlines additional FM requirements for World Bank financed Projects.

Flow of Funds

24. While an Australian-dollar denominated segregated Designated Account (DA) will be opened at the ANZ Bank in Kiribati it is envisaged that the majority of the payments for Components 1 & 2 will be Direct Payments. The authorized signatories for Withdrawal Applications are expected to be the same MFED staff who are signatories for the other World Bank financed Projects and the applications will be prepared by the Finance Officer. Now that both KFSU and MFED staff have experience in preparing and submitting Withdrawal Applications there are very few issues arising from delays in funds flow.

25. Component 1(a) (the EMC cable) payments will be made in accordance with the terms of the contract for the Submarine Cable System and will be by Direct Payment. Invoices consistent with delivery milestones will be provided to the Loans Department to enable both the disbursement and documentation of these funds. As there are three national parties to this Project, the separate authorizations from each of Kiribati, Nauru and FSM will be aggregated within the WB administration and in accordance with the previously established MOU with ADB, payments matching the agreed costs sharing will be made by the WB and ADB directly to the CCC.

Financial Reporting

26. The Project will be required to prepare semester interim financial reports (IFRs) in a format agreed upon with the Bank. The IFRs will be required to be submitted not later than 45 days after the end of the reporting period. The IFRs will be prepared by the Finance Officer in consultation with MFED.



External Audit

27. The Kiribati National Audit Office will conduct an annual audit of the Project accounts and these will be received by the Bank within six months of the end of each of the reporting periods. The Kiribati National Audit Office has extensive experience in auditing government departments and World Bank Funded Projects and is an auditor acceptable to the World Bank. For both 2014 and 2015 all World Bank financed Project audits were received by the due date under the Financing Agreement.

B. Disbursements

28. The Project will be able to use four Disbursement Methods: Advance, Reimbursement, Direct Payment and Special Commitment.

29. In order to facilitate the incremental operating costs and payments for local consultants means of payment for the majority of day-to-day expenses, a DA in Australian dollars will be opened at the ANZ Bank, the only banking facility available in Kiribati. The documentation required for the replenishment of the advance will be by Statement of Expenditure and required statements and documents as specified in the disbursement letter; the Project will be expected to retain documentation for substantiation by the auditors when conducting the annual Project audit and for review by World Bank staff. The Finance Officer will prepare all Withdrawal Applications which will be reviewed and signed by the authorizing officers at MFED prior to submission to the World Bank.

30. The Project will be financed by the Bank at 100%, inclusive of taxes, and have the following disbursement categories as outlined in Table A2.1.

Table A2.1 Disbursement Categories

Category	Amount of the Financing Allocated (expressed in USD)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, and consulting services for sub-components 1(a) and 3(b) of the Project including Incremental Operating Costs and Training	US\$ 15.5M	100%
(2) Goods, works, non-consulting services, and consulting services for sub-component 1(b)(i), Component 2 and sub-component 3(a) of the Project, including Incremental Operating Costs and Training	US\$ 3.9M	100%
(3) Refund of Preparation Advance	US\$ 600,000	Amount payable pursuant to Section 2.07 of the General Conditions



TOTAL AMOUNT	US\$ 20M	
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Disbursement Conditions:

31. No withdrawals shall be made for payments made prior to the date of the Financing Agreement except:
- (a) under Category 1, until such date when:
 - (i) the legal agreements for the provision of the FSM IDA Financing shall have become effective and all conditions to the disbursement of the funds allocated to the construction of the EMC under such legal agreements shall have been satisfied (except for the condition in Section IV.B.1. (a) of Schedule 2 if it is condition a condition of effectiveness or disbursement in the Financing Agreement for the FSM IDA Financing);
 - (ii) the Co-Financing Agreement shall have become effective and all conditions to the disbursement of the funds allocated to the construction of the EMC under the Co-Financing Agreement shall have been satisfied (except for the condition in Section IV.B.1. (a) of Schedule 2 if it is condition a condition of effectiveness or disbursement in the Co-Financing Agreement); and
 - (iii) the Association and the ADB have entered into a memorandum of understanding setting forth the joint arrangements implementation of Component 1(a) of the Project;
 - (iv) the National Cable Operator (A) has been established; (B) has entered into the Project Agreement, the Subsidiary Agreement, and the Construction and Maintenance Agreement and such Construction and Maintenance Agreement has become effective except for the condition that the funds of Category 1 be available for disbursement if this is a condition of effectiveness of the Construction and Maintenance Agreement; and
 - (v) the Association has received a legal opinion or opinions confirming that KCC has been established in accordance with the Kiribati laws, and that the Project Agreement, Subsidiary Agreement and C&MA are valid, binding and enforceable under the laws of Kiribati.

Procurement

32. The procurement capacity assessments of the Ministry of Information, Communications, Transport and Tourism Development (MICTTD) concluded that the overall procurement risk of the Project is Substantial, and identified the following potential procurement risks: (i) potentially long lead times for key Project procurement activities particularly those involving multiple stakeholders; and (ii) potentially long lead times for Project implementation due to high demand for limited procurement capacity and resources. Key mitigation measures include: (i) implementing entities and key stakeholders to be briefed on project timelines and key milestones and to develop Key Performance Indicators (KPI's) to monitor procurement activities and timelines; and (ii) additional resources for procurement to be included within the implementing unit to be established.
33. The following measures that have been recommended are summarized in Table A2.2.



Table A2.2 Risks and Mitigation Measures

Key risks	Mitigation Actions
Long lead time for the procurement of key Project procurement activities.	<ul style="list-style-type: none"> i. MICTTD to adopt a procurement management database (such as the Bank's STEP) and develop KPIs to monitor the planning and progress of procurement activities. ii. MICTTD to consider engaging additional specialist procurement resources if needed to assist with the management of key Project procurement activities (local/international/agent).
Transparency of bidding process	<ul style="list-style-type: none"> i. Use the eProcurement system that was used for the Samoa Submarine Cable procurement process to manage distribution of bidding documents, issue addenda, handle clarifications, receive bid submissions (Tenderlink)
Lack of ownership of the process to procure the submarine cable system by one or a number of the participating countries	<ul style="list-style-type: none"> i. Each country designated representative will sign the contract with the successful contractor to construct and maintain the submarine cable system.
Need to develop experience in application of the New Procurement Framework	<ul style="list-style-type: none"> i. Consider hiring additional specialist procurement resources (could include remote/offshore advisory service) to ensure that all procurement activities are carried out in accordance with World Bank requirements under the New Procurement Regulations for Borrowers under Investment Project Financing. In addition, ensure that procurement capacity building forms an integral part of Project implementation.
Familiarity with the application of the World Bank's New Procurement Framework	<ul style="list-style-type: none"> i. Training will be provided by the Bank through online courses, face to face training carried out during Implementation Support Missions, regional training events
Extended Project implementation period.	<ul style="list-style-type: none"> i. Project Management Unit to include dedicated procurement resources (local/international/agent).
Lack of public oversight of project procurement activities.	<ul style="list-style-type: none"> i. MICTTD to implement "open contracting" practices. i.e. to disclose procurement plans, procurement notices, contract awards and contract progress.
Challenges with coordination, cooperation and alignment between the three (3) Pacific island countries	<ul style="list-style-type: none"> i. Establishment and regular meetings of the regional committee charged with overseeing all aspects of the East Micronesia Cable (EMC) with regards to cooperation and collaboration. ii. Agreed EMC work plan, regularly tracked by all participating countries

34. **Procurement of Works:** There is only one large works procurement under the Project with a cost estimate of US\$15,500,000. This will be procured through Request for Bids (limited market



approach). Small value works less than US\$1,000,000 may be procured through Request for Quotations. Procurement to be carried out by MICTTD will primarily entail the submarine cable, landing station(s) and related civil works.

35. **Procurement of Goods and Non-consulting services:** Most goods relate to off-the-shelf goods or containerized landing station(s). These are all of small value of less than US\$500,000 and may be procured through Request for Quotation. Direct Selection may be used, but only in exceptional circumstances as stated in paragraphs 6.8-6.10 of the Borrower Regulations.

36. **Procurement of Consulting Services:** Consulting Services under the Project are related to establishing national and regional cable operations entities (establish operation arrangement for access to regional cable and termination); and the regulatory development for open and non-discriminatory access to cable capacity. In addition, consultants will be hired to assist the Government with the Project management and implementation arrangements for the Project.

37. Consulting services expected to cost more than US\$500,000 equivalent per contract would use the Quality and Cost Based Selection (QCBS) or Quality Based Selection (QBS) in conformity with the Borrower Regulations. Consulting services estimated under US\$500,000 equivalent per contract may follow the Selection Based on Consultants Qualifications (CQS). Least Cost Based Selection (LCS) would be used for simple assignments such as audit services. Under the circumstances described in paragraphs 7.13-7.15 of the Borrower Regulations, consulting services may be selected and awarded on the basis of Direct Selection, subject to the Bank's prior review and approval. Individual consultants will be selected and contracts awarded in accordance with the provisions of paragraphs 7.34-7.39 of the Borrower Regulations. Under the circumstances described in paragraph 7.39 of the Borrower Regulations, individual consultants may be selected and awarded on the basis of Direct Selection, subject to the Bank's prior review and approval.

38. **Procurement Prior Review Thresholds.** At Appraisal the "Original Project Procurement Risk Rating" is Substantial. Procurement Decisions subject to Prior Review by the Bank are outlined in the table below.

**Table A2.3 Procurement Review Thresholds**

Procurement Methods	Procurement Prior Review Thresholds	Comments
I. Goods:		
	>US\$500,000	
II. Works and Non Consulting Services:		
	>US\$2,000,000	
III. Selection of Consultants:		
Selection Methods	Procurement Prior Review Thresholds	Comments
Firms	>US\$500,000	
Individual Consultants	>US\$300,000	

39. **Procurement Plan.** The overall procurement plan for the Project was prepared covering the first 18 months of the Project (dated February 27, 2017). It will also be available on the Bank's external website. The procurement plan will be updated in agreement with the Bank at least annually, or as required, by including contracts previously awarded and to be procured in the next period to be covered by the updated procurement plan (refer to paragraphs 4.4 and 4.5 of the Borrower Regulations). The summary procurement plan is at Table A2.4 below.



Table A2.4 Procurement Plan

Procurement Plan as per format from STEP system

<u>Description</u>	<u>Reference No.</u>	<u>Procurement</u>	<u>Procurement</u>	<u>Estimated Amount</u>	<u>Bank Financed %</u>	<u>Review Type</u>	<u>Planned Start Date</u>
(Value cannot exceed 250 Characters)	(Value cannot exceed 40 Characters)	<u>Category</u>	<u>Method</u>	(Must be greater than zero, and a positive number; no points or commas)	(Cannot be greater than 100%)		(Must be in YYYY/MM/DD format)
Design, Supply & Install Submarine Cable System	KCC-W-1	CW	Limited, International, RFB	15000000	100	Prior	2017/06/01
Containerized cable landing station (platform, utilities connections)	KCC-W-2	CW	Limited, International, RFQ	800000	100	Post	2018/06/01
National civil works related to cable landing station, connection, man hole, other related infrastructure	KCC-W-3	CW	Open, National, RFQ	900000	100	Post	2017/06/01
Cable station ancillary equipment	KCC -G-1	GO	Open, National, RFQ	300000	100	Post	2018/12/01
Consultant TA: legal and transactional support, formation of C&MA	MICTTD-C-1	CS	Direct Selection	500000	100	Prior	2017/02/01
Implementation TA: legal and transactional support, formation of KCC	MICTTD-C-2	CS	Open, International, CQS	500000	100	Prior	2017/02/01
TA: ICT Regulatory Development	MICTTD-C-3	CS	Open, International, QCBS	500000	100	Prior	2018/06/01



TA: ICT Policy and E-Transactions/E-Govt.	MICTTD-C-4	CS	Open, International, QCBS	500000	100	Prior	2017/07/01
Kiribati Technical Project Manager	MICTTD-C-5	CS	Open, INDV	250000	100	Prior	2016/11/01
Contractors KFSU: new staff for Project oversight	MICTTD-C-6	CS	Open, INDV	200000	100	Post	2017/06/01
Contract staff PMU: Project Management, Procurement, Financial Management	MICTTD-C-7	CS	Open, INDV	300000	100	Post	2017/06/01
ESIA Specialist (part time)	MICTTD-C-8	CS	Open, International, CQS	150000	100	Post	2018/01/01
Project Audit Services	MICTTD-C-9	CS	Open, International, LCS	100000	100	Post	2017/11/01



40. In accordance with paragraph 5.9 of the “World Bank Procurement Regulations for Borrowers under Investment Project Financing” (July 1, 2016) (“Procurement Regulations”) the Bank’s Systematic Tracking and Exchanges in Procurement (STEP) system will be used to prepare, clear and update Procurement Plans and conduct all procurement transactions for the Project.

41. This textual part along with the Procurement Plan tables in STEP constitute the Procurement Plan for the Project. The following conditions apply to all procurement activities in the Procurement Plan. The other elements of the Procurement Plan as required under paragraph 4.4 of the Procurement Regulations are set forth in STEP.

- a. **The Bank’s Standard Procurement Documents:** shall be used for all contracts subject to international competitive procurement and those contracts as specified in the Procurement Plan tables in STEP.
- b. **National Procurement Arrangements:** In accordance with paragraph 5.3 of the Procurement Regulations, when approaching the national market (as specified in the Procurement Plan tables in STEP), the country’s own procurement procedures may be used.
- c. When the Borrower uses its own national open competitive procurement arrangements as set forth in the *Republic of Kiribati Procurement Act 2002*, such arrangements shall be subject to paragraph 5.4 of the Procurement Regulations.
- d. When other national procurement arrangements other than national open competitive procurement arrangements are applied by the Borrower, such arrangements shall be subject to paragraph 5.5 of the Procurement Regulations.
- e. **Leased Assets** as specified under paragraph 5.10 of the Procurement Regulations: is Not Applicable
- f. **Procurement of Second Hand Goods** as specified under paragraph 5.11 of the Procurement Regulations – is Not Applicable
- g. **Domestic preference** as specified under paragraph 5.51 of the Procurement Regulations (**Goods and Works**).
- h. **Goods:** is Not Applicable for those contracts identified in the Procurement Plan tables.
- i. **Works:** is Not Applicable for those contracts identified in the Procurement Plan tables.

42. *Frequency of procurement supervision.* In addition to the prior review to be carried out by the World Bank, procurement supervision missions will be undertaken at least once per year. One in five procurement packages not subject to World Bank prior review will be examined ex post on an annual basis.

Other Relevant Procurement Information

43. For the preparation of this Project a Project Preparation Advance (PPA) No. Vo34-KI has been approved and signed (October 2016). The amount of the PPA is not to exceed US\$600,000. Key activities to be financed under the PPA include the Technical Project Manager (MICTTD-C-2) as well as Legal Advisory Assistance (preparatory for participation in the cable system) (MICTTD-C-3).



C. Environmental and Social (including safeguards)

Environment

44. MICTTD is responsible for implementing the Environmental and Social Management Plan (ESMP) developed under the ESIA and otherwise ensuring compliance with World Bank safeguard policies. This will include securing land access, procuring contractors and supervising the land-based works, public and stakeholder consultations and managing complaints and grievances. MICTTD has some institutional experience with implementing World Bank safeguard policies as the counterpart for the Kiribati Aviation Investment Project (KAIP), however its experience with submarine cable placement is limited. Hence a safeguards specialist (with marine ecology experience) will be engaged during implementation to assist with applying for local consents and overseeing implementation of ESMP prescriptions by the cable and terrestrial infrastructure contractors.

45. Specific tasks for the safeguards specialist will include:

- ensuring land acquisition is carried out in accordance with World Bank policy and documentation is obtained before construction starts;
- managing consultation and disclosure of information and providing feedback to MICTTD;
- receiving and recording grievances and complaints and managing their resolution;
- reviewing and commenting on detailed design, detailed marine surveys and other technical outputs;
- obtaining local permits or environmental approvals, including preparing any documentation and communications with MELAD staff;
- ensuring safeguards clauses are incorporated in bid documents;
- reviewing and clearing Contractor's EMPs; and
- supervising the terrestrial works contractor and cable laying contractor (particularly when the cable is being laid in the nearshore / foreshore environments) to ensure compliance with CEMP requirements.

Social

46. The impacts of the cable will be the social and economic benefits to the community from the increased access to internet services. This is overwhelmingly beneficial, relating to enhancing the potential for development of ICT-enabled business and e-commerce, and reduce business transaction costs on Tarawa. For individuals and households, it will mean greater access to educational and leisure activities, and assist with personal communications and household management. Potential social impacts from improved access, that require long term commitments from the industry to manage, include anti-social online behaviour (scamming, bullying, addictions, etc.).



47. There will be minor maintenance requirements on the cables and a 'no anchor' zone along the inshore length of the cable. There are only small water craft that use the area and this is unlikely to have an impact on their activities.

48. The land upon which the BMH, the route to the cable landing station, and the landing station itself are located are owned by the Government of Kiribati. In relation to social (and environmental) impacts during construction, potential impacts such as those created by construction noise, dust, machinery handling and safety etc. will be managed via a contractors Environmental and Social Management Plan to be prepared by the contractor and cleared by both the Government and the World Bank.

Institutional

49. The development and implementation of the joint components of the EMC Project are administered through the East Micronesia Cable Steering Committee (EMC SC). A joint technical Project manager reporting to the EMC SC will be responsible for finalizing the system specifications and conducting the tender for the undersea components of the EMC. MICTTD will be responsible for letting the contracts for the associated terrestrial works at landing site.

Disclosure

50. The ESIA was disclosed in-country and on the MFED's website on January 12, 2017 on and on January 1, 2017 on the World Bank's website.

D. Monitoring and Evaluation

51. Monitoring and evaluation will be undertaken by the MCITTD, with core data collection and analysis undertaken by the CCK in accordance with the Results Framework established for the Project, with data to be provided by KCC and the telecommunications service providers. Data on actual Project outputs and outcomes will be gathered and analyzed by the CCK and included in semi-annual progress reports to be submitted to the World Bank by MCITTD.

E. Role of Partners

52. The ADB will finance Nauru's participation in the EMC cable. Component 1(a) of the Kiribati Connectivity Project will be implemented using the World Bank's policies in relation to, inter alia, procurement, safeguards, fraud and corruption, financial management, communication, etc. Within these limits, issues that have arisen so far as a result of the different policy regimes of ADB and the World Bank have been dealt with pragmatically, and have been addressed through consultations and the sharing of documents. In particular:

53. *Joint safeguards requirements and monitoring.* ADB and the World Bank recognize the importance of environmental and social safeguards under the Project and agree to cooperate in implementation and monitoring safeguards under Component 1(a).

54. *Consultation and coordination.* To ensure smooth operation and efficient implementation and monitoring of Project implementation, a cofinanciers' coordination committee composed of ADB and World Bank representatives will be put in place.

55. *Joint procurement arrangements.* These are described in Section V B of the PAD.



ANNEX 3: IMPLEMENTATION SUPPORT PLAN

COUNTRY: Kiribati

P4: Pacific Regional Connectivity Program Phase 4: KI: Connectivity Project

A. Strategy and Approach for Implementation Support

1. The Implementation Support Plan focuses on mitigating the risks identified in the SORT, and aims at making implementation support to the client more flexible and efficient. It seeks to provide the technical advice necessary to facilitate achievement of the PDO (linked to results/outcomes identified in the result framework), as well as identify the minimum requirements to meet the World Bank's fiduciary obligations.
2. *Procurement.* Implementation support will include: (a) providing training to implementation agency staff on procurement; (b) supporting the Procurement specialists hired under the Project; (c) reviewing procurement documents and providing timely feedback to the implementing agency; (d) providing detailed guidance on the World Bank's Procurement Regulation for IPF Borrowers of the World Bank to the Government; (e) monitoring procurement progress against the detailed Procurement Plan; and (f) providing just-in-time training and support at key moments in the procurement cycle;
3. *Financial management.* Implementation support will include: (a) reviewing of the country's financial management system, including but not limited to, accounting, reporting and internal controls; (b) leveraging the financial management specialists hired to support the Project; (c) hiring additional staff and providing training as needed to the implementing agency; and (d) reviewing submitted reports and providing timely feedback to the EMC Steering Committee, MICTTD, and CCK.
4. *Other issues.* Sector level risks will be addressed through policy dialogue with the Government's departments and agencies.

B. Implementation Support Plan and Resource Requirements

5. Kiribati has recent experience in implementing World Bank financed Projects, however, given the relative complexity of structuring and implementing the Project, this operation will require fairly intensive supervision, especially during the first two years of implementation. The World Bank team is based primarily in country offices, and will be available to provide timely, efficient and effective implementation support to the clients. Formal implementation reviews and field visits will be carried out at least four times annually in the first two years, with two to three annual visits in later years of the Project. These will be complemented with bi-monthly audio-conferences to discuss Project progress. In addition, an Infrastructure Specialist or Implementation Support Specialist will be deployed on an extended mission basis to provide advice and support as needed to the Project implementing entities. Detailed inputs from the World Bank team are outlined below:
6. *Legal specialist inputs.* Legal and regulatory related inputs will be required to assist in the institutional, financial and governance arrangements for the design of the KCC, deployment of the



submarine cable system. Other legal and regulatory capacity building will focus on supporting the enabling environment and promoting competition particularly in wholesale markets. Legal support is needed to review these subcomponents.

7. *Technical inputs.* The task team will include technical specialists to ensure sound technical specifications and assessments, and confirmation that activities are in line with Government ICT and growth strategies and international best practice.

8. *Fiduciary requirements and inputs.* Training will be provided by the World Bank's financial management and procurement specialists as needed. The World Bank team will help identify capacity building needs to strengthen financial management capacity and to improve procurement management efficiency. Financial management and the procurement specialists are based in the region to provide timely support. Formal supervision of financial management will be carried out semi-annually or annually, while procurement supervision will be carried out on a timely basis as required by client needs.

9. *Safeguards.* Inputs from gender, environment and social specialists will be provided as needed.

10. *Operations.* The Task Team will provide day-to-day review of all operational aspects, as well as coordination with the clients, partners (ADB) and among World Bank team members. Relevant specialists will be identified as needed.

11. The World Bank will conduct a minimum of two review missions per year during Project implementation. This will be undertaken jointly with the ADB, and the particular modalities of cooperation will be agreed. A midterm review will be conducted after 2 years, which will encompass: (a) a thorough review of the execution of the Project and the achievement of Project objectives to date; and (b) agreement between the World Bank and the Government on recommended measures to ensure efficient execution of each component and successful achievement of the Project objectives in the period after the review, all in accordance with agreed performance indicators. The Government will provide the World Bank a Project Completion Report six months prior to Project closing and inputs to the Implementation Completion and Results Report to be prepared by the World Bank. The World Bank will support public dissemination of Project information.



C. Resources and Skills

Time	Focus	Skills Needed	Resource Estimate (Weeks)	Partner Role
First twelve months	Technical review of submarine cable system implementation, TA documents and outputs	Technical and Legal Specialists	16	
	Environmental Monitoring	Environ. Specialist	3	
	Social Monitoring	Social Specialist	1	
	Review of financial management & training	FM Specialist	8	
	Review of procurement & training	Procurement Specialist	6	
	Implementation Support	Infrastructure Specialist	10	
	Implementation Support	Program Assistant	6	
	Team Leadership	Task Team Leader	8	
12-48 months	Technical Reviews of TA Outputs & Reform Progress	Technical & Legal Specialists	12	
Other				

Skills Mix Required			
Skills Needed	Number of Staff Weeks	Number of Trips	Comments
TTL	26	8	Country office based
Program Assistant	12	0	Country office based
Technical Specialist	36	12	Globally sourced
Legal Specialist	25	8	Globally sourced
Environmental Specialist	6	2	Country office based
Social Specialist	6	1	Country office based
Financial Management Specialist	16	6	Country office based
Procurement Specialist	12	6	Country office based
Infrastructure Specialist	34	12	Country office based
Country Counsel	8	1	For negotiations and review of Condition compliance.
Communications	8	2	Country office based



D. Partners

Name	Institution/Country	Role
Emma Veve	Asian Development Bank	Director, Urban, Social Development, and Public Management Division, Pacific Department
Sibesh Bhattacharya	Asian Development Bank	Senior Infrastructure Specialist, Pacific Department

