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The World Bank

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Report No: PAD1968

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$5.95 MILLION

TO THE

REPUBLIC OF FIJI

FOR A

P4: PACIFIC REGIONAL CONNECTIVITY PROGRAM: PHASE 3B, FIJI CONNECTIVITY PROJECT

November 7, 2016

Transport & ICT Global Practice
EAST ASIA AND PACIFIC REGION

CURRENCY EQUIVALENTS

(Exchange Rate Effective October 28, 2016)

Currency Unit =	FJD
FJD =	US$0.49
US$1 =	FJD 2.04

FISCAL YEAR
August 1 - July 31

Regional Vice President:	Victoria Kwakwa
Country Director:	Michel Kerf
Senior Global Practice Director:	Pierre Guislain
Practice Manager:	Jane Lesley Treadwell
Task Team Leader(s):	Natasha Beschorner

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADSL	Asymmetric Digital Subscriber Line
ATH	Amalgamated Telecom Holdings
BMH	Beach Manhole
BSP	Bank South Pacific
BU	Branching Unit
CAPEX	Capital Expenditure
C&MA	Construction and Maintenance Agreement
CLS	Cable Landing Station
COE	Cable Operating Entity
DA	Designated Account
DFAT	Department of Foreign Affairs and Trade
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESSIP	Environmental and Social Safeguard Instrument for the Pacific
FCC	Fiji Commerce Commission
Fintel	Fiji Telecommunications International
FM	Financial Management
FNPF	Fiji National Provident Fund
Gbps	Gigabits per second
GDP	Gross Domestic Product
GNI	Gross National Income
ICT	Information and Communication Technologies
IBRD	International Bank for Reconstruction and Development
IDF	Institutional Development Grant
IE	Implementing Entity
IP	Internet Protocol
IRU	Indefeasible Right of Use
ISP	Internet Service Provider
ITU	International Telecommunications Union
Mbps	Megabits per second
M&E	Monitoring & Evaluation
MOC	Ministry of Communications
MOE	Ministry of Economy
MOU	Memorandum of Understanding
MSPP	Multi-Service Provisioning Platform
OAG	Office of the Auditor General
O3B	Other Three Billion
OPEX	Operating Expenditure
PMU	Project Management Unit
PPP	Public-private Partnership
PRIF	Pacific Regional Infrastructure Facility
RPF	Resettlement Policy Framework
PSTN	Public Switched Telephone Network

RIO	Reference Interconnection Offer
SCCN	Southern Cross Cable Network
SLTE	Submarine Line Terminating Equipment
SSCC	Samoa Submarine Cable Company
TA	Technical Assistance
TC	Tropical Cyclone
TAF	Telecommunications Authority of Fiji
TFL	Telecom Fiji Ltd

BASIC INFORMATION

Is this a regionally tagged project?	Country (ies)	Lending Instrument
Yes	Fiji, Micronesia, Federated States of, Kiribati, Palau, Tonga, Tuvalu, Samoa	Investment Project Financing

[ ] Situations of Urgent Need or Assistance/or Capacity Constraints

[ ] Financial Intermediaries

[✓] Series of Projects

Approval Date	Closing Date	Environmental Assessment Category
30-Nov-2016	16-Dec-2021	B - Partial Assessment
Bank/IFC Collaboration		
No		

Proposed Development Objective(s)

The objectives of the Project are to reduce the cost and increase the availability of internet services in the Northern Division of the Borrower's territory.

Components

Component Name	Cost (USD Million)
1. Submarine Cable System	5,200,000.00
2. Regulatory Technical Assistance	200,000.00
3. Project Management and Administration	550,000.00

Organizations

Borrower : Republic of Fiji

Implementing Agency : Ministry of Communications

PROJECT FINANCING DATA (IN USD MILLION)

[✓] Counterpart Funding	[✓] IBRD	[ ] IDA Credit [ ] Crisis Response Window [ ] Regional Projects Window	[ ] IDA Grant [ ] Crisis Response Window [ ] Regional Projects Window	[ ] Trust Funds	[ ] Parallel Financing

Total Project Cost:	Total Financing:	Financing Gap:
6.36	6.36	0.00
	Of Which Bank Financing (IBRD/IDA):	
	5.95	

Financing (in USD Million)

Financing Source	Amount
Borrower	0.41
IBRD-86660	5.95
Total	**6.36**

Expected Disbursements (in USD Million)

Fiscal Year	2017	2018	2019	2020	2021	2022
Annual	2,500,000.00	2,750,000.00	700,000.00	0.00	0.00	0.00
Cumulative	2,500,000.00	5,250,000.00	5,950,000.00	5,950,000.00	5,950,000.00	5,950,000.00

INSTITUTIONAL DATA

Practice Area (Lead)

Transport & ICT

Contributing Practice Areas

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

Yes

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

No

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

No

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

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

Project Management Unit (LA, Schedule 2, Section I.A.1)

The Borrower shall maintain the following implementation arrangement throughout the period of Project implementation, in each case with staff and consultants in adequate number in the views of the Bank, and each with terms of reference, qualifications and experience satisfactory to the Bank.

Institutional Arrangements.

1. Project Management Unit.

(a) The Borrower shall, no later than three (3) months after the Effective Date, establish a Project management unit ("PMU") in MOC, and shall maintain as required for the Project the PMU with attributions, composition and resources at all times satisfactory to the Bank.

(b) Without limitation to the generality of the foregoing provisions in paragraph (a) immediately above, the PMU shall be responsible for technical and administrative Project coordination, supervision, planning, reporting, monitoring and evaluation, communication and outreach.

(c) Without limitation to the generality of the foregoing provisions in paragraph (a) immediately above, the PMU shall include the following competencies: (i) technical project management; (ii) project coordination; (iii) procurement; (iv) financial management / accounting; and (v) safeguard support; or such other equivalent competencies and staff which the Bank has confirmed in writing to the Borrower as reasonable and acceptable under the circumstances.

Sections and Description

Contractual and regulatory framework (LA, Schedule 2, Section I.B.1)

The Borrower shall enter into the contractual arrangement and comply with the regulatory requirements described in this Section I.B, in each case in a manner and with provisions which the Bank has confirmed in writing to the Borrower are fully consistent with the principles of economy and efficiency, as determined by the Bank in its sole discretion.

Contractual and regulatory framework

(a) (i) No later than 3 months after the Effective Date (or such other date which the Bank has confirmed in writing to the Borrower is reasonable and acceptable under the circumstances, as determined by the Bank in its sole discretion), the Borrower shall procure: (A) the submarine cable and ancillary works and equipment described in Component 1(a) and (b) of the Project (the "Savusavu Spur") pursuant to one or several agreement(s), each in form and substance satisfactory to the Bank (the "Savusavu Spur Supply Agreement"); and (B) an indefeasible right to use capacity on the SSCC main submarine cable connecting Suva to Apia and Upolu, Samoa (the "SSCC Cable") for at least twenty-five (25) years or until decommissioning of the SSCC Cable, if earlier, pursuant to one or several agreement(s), each in form and substance satisfactory to the Bank (the "IRU").

(ii) Without limitation to the provision of Paragraph (a)(i) immediately above, the Borrower shall ensure that the Savusavu Spur Supply Agreement and the IRU shall each contain provisions satisfactory to the Bank for the

purpose of: (A) establishing cross conditions and cross defaults and remedies between each other in order to ensure that IRU capacity will be available when the Savusavu Spur is commissioned and that the Savusavu Spur will be ready to be commissioned when IRU capacity is available, making it clear that that the IRU rights and the Savusavu Spur are cross-dependent for the system to work; (B) guaranteeing open access to such infrastructure and services on transparent, cost-based and non-discriminatory basis; (C) permitting an assignment of all rights and obligations of the Borrower under the Legal Agreements, Regulatory Instruments and Permits related to the ownership and operation and maintenance of the Savusavu Spur and the IRU; and (D) ensuring that the Savusavu Spur is installed, financed, owned and operated in accordance with the provisions of the Anti-Corruption Guidelines.

(iii) The Borrower shall comply with all its obligations and exercise its rights under each of the Savusavu Spur Supply Agreement and the IRU so as to best protect the interest of the ICT service users in its territory including in the Northern Division and achieve the objectives of the Project.

(iv) The Borrower shall obtain from the Bank written agreement prior to assigning, amending, abrogating, or waiving the Savusavu Spur Supply Agreement or the IRU, or any provision thereof, or permitting any entity participating in the implementation of the Project to do so.

(b) (i) No later than three (3) months prior to the estimated Ready for Commercial Service Date (or such other date which the Bank has confirmed in writing to the Borrower is reasonable and acceptable under the circumstances, as determined by the Bank in its sole discretion), the Borrower shall enter into a landing party agreement ("Savusavu Landing Party Agreement") with FINTEL for the purpose of governing the rights and obligations of the Borrower with respect to the landing station at Savusavu (or equivalent contractual arrangement) and obtain all Permits pertaining thereto, all in form and substance satisfactory to the Bank.

(ii) Without limitation to the provision of Paragraph (b)(i) immediately above, (A) the Savusavu Landing Party Agreement and Permits shall contain provisions satisfactory to the Bank for the purpose of guaranteeing open access to such infrastructure and services on transparent, cost-based and non-discriminatory basis and ensuring that the rights and obligations under the Savusavu Landing Party Agreement and Permits are obtained and thereafter carried out in accordance with the Anti-Corruption Guidelines; and (B) the Savusavu Landing Party Agreement and Permits shall contain provisions satisfactory to the Bank for the purpose of permitting an assignment of all rights and obligations under such Savusavu Landing Party Agreement and Permits.

(iii) The Borrower shall comply with all its obligations and exercise its rights under the Savusavu Landing Party Agreement and Permits so as to best protect the interest of the ICT service users in its territory and achieve the objectives of the Project.

(iv) The Borrower shall obtain from the Bank written agreement prior to assigning, amending, abrogating, or waiving the Savusavu Landing Party Agreement and Permits, or any provision thereof, or permitting any entity

participating in the implementation of the Project to do so.

(c) (i) As soon as practicable, but no later than the Ready for Commercial Service Date (or such other date which the Bank has confirmed in writing to the Borrower is reasonable and acceptable under the circumstances, as determined by the Bank), the Borrower shall enter into one or more legal agreements with an eligible cable operating entity meeting the requirements listed in the Project Operations Manual, including those in paragraph (ii) immediately below (the "Cable Operating Entity"), selected in a manner acceptable to the Bank for the transfer of the commercial operation and management of the fiber pair in the SSCC Cable, the branching unit for the connection of the Savusavu Spur to the SSCC Cable, the Savusavu Spur and the Savusavu landing station, in form and substance satisfactory to the Bank (the "CO&M Agreement").

(ii) Without limitation to the provision of Paragraph (c)(i) immediately above, the Cable Operating Entity shall meet the following requirements:

(A) demonstrated previous experience in operating optical fiber submarine cable systems;

(B) demonstrated previous experience in operating a wholesale telecommunications service; and

(C) compliance with appropriate corporate financial ratios, which the Bank has confirmed in writing to the Borrower is reasonable and acceptable under the circumstances.

(iii) Without limitation to the provision of Paragraph (c)(i) immediately above, the CO&M Agreement shall contain provisions satisfactory to the Bank for the purpose of: guaranteeing open access to such infrastructure and services on transparent, cost-based and non-discriminatory basis and ensuring that the rights and obligations under the CO&M Agreement are obtained and thereafter implemented in accordance with the Anti-Corruption Guidelines.

(iv) The Borrower shall comply with all its obligations and exercise its rights under the CO&M Agreement so as to best protect the interest of the ICT service users in its territory and achieve the objectives of the Project.

(v) The Borrower shall obtain the Bank's written agreement prior to assigning, amending, abrogating, or waiving the CO&M Agreement, or any provision thereof, or permitting any entity participating in the implementation of the Project to do so.

(d) The Borrower shall ensure that, no later than the Ready for Commercial Service Date (or such other date which the Bank has confirmed in writing to the Borrower is reasonable and acceptable under the circumstances, as determined by the Bank in its sole discretion) all Regulatory Instruments in form and substance acceptable to the Bank are effective and applicable to Savusavu Spur and thereafter maintained, for the purpose of guaranteeing open access to such infrastructure and services on transparent, cost-based and non-discriminatory basis.

Sections and Description

Strategic Asset Management Plan (LA, Schedule 2, Section I.B.1)

No later than twenty four (24) months after the Effective Date, the Borrower shall design (or cause to be designed) and submit to the Bank a plan for the management of the Savusavu Spur and the IRU capacity, in form and substance acceptable to the Bank and consistent with the Borrower's laws and regulations and in accordance with the provisions of this Agreement (the "Strategic Asset Management Plan").

Without limitation to the provision of the paragraph immediately above, the Strategic Asset Management Plan shall (A) give priority to the promotion of an open, competitive and fairly regulated market (as opposed to the promotion of a monopoly); and (B) include, inter alia, details of ownership, divestiture options, financing and operation of the cable, including timeline for its implementation, governance arrangement, business model, assets valuation, and protection of the interest of the users of ICT services in the Northern Division.

Sections and Description

Project Operations Manual (LA, Schedule 2, Section I.E)

1. No later than three (3) months after the Effective Date, the Borrower shall adopt an operations manual for the Project in form and substance acceptable to the Bank (the "Project Operations Manual").

2. The Borrower shall ensure that the Project is carried out in accordance with the Project Operations Manual.

3. The Borrower shall obtain from the Bank written agreement prior to assigning, amending, abrogating, or waiving the Project Operations Manual, or any provision thereof, or permitting any entity participating in the implementation of the Project to do so.

4. In the event of any conflict between the provisions of the Project Operations Manual and those of this Agreement, the provisions of this Agreement shall prevail.

Sections and Description

Counterpart Funds (LA, Schedule 2, Section I.F)

1. The Borrower shall provide funds for the financing of the Project ("Counterpart Funds") in an amount which shall not be less than four hundred and ten thousand Dollars ($410,000) in the aggregate to be disbursed for Component 1(b) and (c) of the Project or as otherwise agreed with the Bank, no later than the Closing Date.

2. Counterpart Funds shall be allocated and disbursed to the Project in a manner acceptable to the Bank.

Sections and Description

Mid-term Review (LA, Schedule 2, Section II.A.2)

The Borrower shall carry out jointly with the Bank, not later than three (3) years after the Effective Date, or such other period as may be agreed with the Bank, a mid-term review of the Project (the "Mid-term Review") to assess the status of Project implementation, as measured against the indicators referred to in Section II.A.1 immediately above, and compliance with the legal covenants included or referred to in this Agreement. Such review shall include an assessment of the following: (i) overall progress in implementation; (ii) results of monitoring and evaluation activities; (iii) progress on procurement and disbursement; (iv) progress on implementation of safeguards measures; (v) implementation arrangements and Project staff turnover; and (vi) the need to make any adjustments to the Project to improve performance. To this end, the Borrower shall:

(a) prepare and furnish to the Bank, at least one (1) month before the date of the Mid-term Review, a report, in scope and detail satisfactory to the Bank and integrating the results of the monitoring and evaluation activities performed pursuant to Section II.A.1 of this Schedule, on the progress achieved in the carrying out of the Project during the period preceding the date of such report and setting out the measures recommended to ensure the efficient carrying out of the Project and the achievement of the objective thereof during the period following such date; and

(b) review jointly with the Bank the report referred to in the preceding paragraph and thereafter take all measures required to ensure the efficient completion of the Project and the achievement of the objective thereof, based on the conclusions and recommendations of such report and the Bank's views on the matter.

Sections and Description

Retroactive Financing (LA, Schedule 2, Section IV.B.1(b))

Notwithstanding the provisions of Part A of this Section, no withdrawal shall be made:

- For payments made prior to the date of this Agreement, except that withdrawals up to an aggregate amount not to exceed $1,190,000 may be made for payments made prior to this date but on or after October 1, 2016.

Conditions

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Natasha Beschorner	Team Leader(ADM Responsible)	ICT Specialist	GTI09
Cristiano Costa e Silva Nunes	Procurement Specialist(ADM Responsible)	Procurement	GGO02
David Bruce Whitehead	Financial Management Specialist	Financial Management	GGO20
Andrea Ruiz-Esparza	Team Member	Program Assistant	GTI09
Carmenchu D. Austriaco	Team Member	Finance Officer	WFALN
Chau-Ching Shen	Team Member	Finance Officer	WFALN
David Satola	Team Member	Legal	ICOIO
Duangrat Laohapakakul	Counsel	Legal	LEGES
Helene Bertaud	Counsel	Legal	LEGES
James L. Neumann	Team Member	Legal	GTI11
John Haydon	Team Member	Consultant	GTI09
Loren Jayne Atkins	Counsel	Legal	LEGES
Mark Alexander Giblett	Peer Reviewer	Private Public Partnerships	GCPPP
Natasha Caroline Allan	Team Member	Team Assistant	EACNF
Nicholas John Valentine	Team Member	Safeguards	GSU02
Penelope Ruth Ferguson	Safeguards Specialist	Safeguards	GENDR
Ross James Butler	Safeguards Specialist	Safeguards	GSU02

Timothy John Charles Kelly	Peer Reviewer	ICT Specialist	GTI11
Toufiq Ahmed	Team Member	Procurement	GFDRR
Virginia Ann Horscroft	Peer Reviewer	Economist	GMF10

Extended Team

Name	Title	Organization	Location

FIJI
P4: PACIFIC REGIONAL CONNECTIVITY PROGRAM: PHASE 3B, FJ CONNECTIVITY PROJECT

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MAP(S) NO.42586

I. STRATEGIC CONTEXT

A. Country Context

1. Fiji is one of the more developed and connected countries in the Pacific region with the highest rates of mobile phone and Internet penetration, and the most affordable information and communication technologies (ICT) services. Fiji has the potential to leverage these technologies to diversify its economy and transform public service delivery, to reduce internal inequalities and also to become a regional hub for ICT-enabled jobs and services. Development opportunities in Fiji have been largely concentrated on the main island, Viti Levu; and the Government wishes to facilitate more access to economic and social development opportunities in other parts of the country. The planned deployment of a new regional submarine optical fiber cable connecting Fiji (Suva on Viti Levu) to Samoa in 2017[i] presents an unprecedented opportunity to deliver high-speed low-cost Internet connectivity, and associated economic and social benefits to the Northern Division (Vanua Levu and Taveuni islands), the country's poorest and least developed area. A direct cable connection (branch/spur) to Savusavu in Vanua Levu from this new SSCC cable can be achieved at substantially lower cost than a direct cable from Suva to Savusavu.

2. Fiji is comprised of over 330 islands (one-third of which are inhabited) in the South Pacific Ocean about two-thirds of the way from Hawaii to New Zealand. Of the total population of about 865,611 about 80 percent live in the Central and Western Divisions of Fiji on the island of Viti Levu, and approximately 17 percent in the Northern Division (Vanua Levu and Taveuni). Currently about 49.3 percent of Fijians live in rural areas. The Northern Division has a high rate of poverty (48 percent) according to the most recent Household Income and Expenditure Survey. The Northern Division was also among the areas hit by the recent Cyclone Winston (February/March 2016).

3. Fiji's economy is relatively diversified, but new, nontraditional, sources of growth can also be developed. Average gross national income is US$5,100 per capita (World Bank, 2016). Agriculture, sugar and tourism drive economic activity, together with some contributions from natural resources (forestry, fishery and mining). Agriculture employs around 70 percent of the labor force, but accounts for just 8.1 percent of gross domestic product (GDP). The sugar industry has traditionally occupied a dominant role in economic activity, but has declined significantly in recent years due, in large part, to the end of preferential tariffs. The economy has become increasingly dependent on tourism with about 650,000 visitors annually. Fiji's growth momentum remains strong despite the downward revision in growth forecasts to 2.4 from 3.5 percent following Tropical Cyclone (TC) Winston in February 2016. The Government has projected growth rates of 3.6 percent for 2017, and 3.2 percent for 2018. Despite the cyclone, visitor arrivals have held up, rising to 4.8 percent in the year to August 2016, as most tourist resorts escaped damage. Personal remittances also rose 6.8 percent on the year in January–May 2016 as families and relatives overseas responded to the cyclone. Recovery-related construction activities and improving labor market conditions further boosted consumption and investment. The growth outlook remains positive, supported by the continued strength of tourism, remittances, and public spending on recovery and reconstruction. Annual inflation is expected to rise to 2–3 percent as shortages in some agricultural products, strong domestic demand, and capacity constraints from reconstruction activities put upward pressure on prices. The Fiji dollar is expected to continue to depreciate relative to the US dollar in 2016–18, both as a result of a stronger US dollar and higher domestic inflation.

4. Fiji has the potential to develop its digital economy, including a local ICT-enabled services industry, e-commerce, and digital government platforms which, with affordable high-speed Internet connectivity available nationwide, could benefit the majority of the population. A number of key enabling factors are already in place, including: a liberalized

telecommunications/ICT services market; existing submarine cable connectivity from Suva to Australia and the United States via the Southern Cross Cable Network (SCCN); an emerging sub-regional cable network connecting Tonga, Vanuatu and prospectively Samoa; a growing technical skills base and talent pool, supported by national and regional universities; and an emerging ICT services sector, including offshoring/outsourcing industries. Fiji has a small but growing ICT-enabled services/business process outsourcing industry. It won the 2014 European Outsourcing Association's Offshoring Destination of the Year Award, which acknowledges operators that have most successfully serviced the United Kingdom and other European outsourcing markets. The Government has recognized the importance of ICT as an enabler of private sector investment and development, and has implemented several favorable policies and incentives.

5. With continued investment in human capital, physical infrastructure, and the enabling regulatory environment, Fiji as a whole has potential to provide ICT enabled services/industries and an ICT talent pool for the wider Pacific region. While the main expansion in Fiji's digital economy is likely to continue around the capital of Suva and main development corridors, the extension of high-speed Internet to the Northern Division is expected to stimulate local businesses, through improved connectivity, e-commerce potential and reduced transaction costs, plus the development of smaller-scale ICT services.

6. More widespread and affordable access to ICT services can facilitate improved economic opportunities for women, and provide valuable access to information and services. Gender differences are strongly embedded in Fijian culture and tradition. The roles of women are impacted by ethnicity and vary in degree at the household level, but male-dominated hierarchies tend to be common regardless of ethnicity. Women's involvement in political, social and economic activities is promoted through many international and regional gender equality commitments by the Government. Women's civil society organizations have been instrumental in getting policies and laws in place for women's rights and gender justice in Fiji. In February 2014, the Government approved the National Gender Policy, which seeks to promote gender equity and equality by removing all forms of gender discrimination and inequalities to attain sustainable development.

B. Sectoral and Institutional Context

7. Fiji's ICT sector has benefited from two key factors: its access to the SCCN since 2000, and its competitive market structure. The SCCN optical fiber cable lands in Suva on Viti Levu, providing high-capacity connectivity to global telecommunications networks via Australia and the US. Fiji liberalized its telecommunications market in 2008, resulting in major improvements in coverage and access. The 2008 Telecommunications Promulgation which opened the market also established an independent regulator, the Telecommunications Authority of Fiji (TAF). The TAF deals with licensing, technical regulation, and spectrum, although some aspects are managed by the Ministry of Communications (MOC), and consumer matters. TAF also maintains a database for telecoms/ICT monitoring and evaluation system, established under an earlier Institutional Development Fund (IDF) Grant. The Fiji Commerce Commission (FCC) is responsible for monitoring unfair trade practices and introducing price controls when necessary. MOC is responsible for sector policy.

8. The current market structure is summarized in Figure 1. The main operators are Fintel, provider of international connectivity services, Telecom Fiji Limited (TFL), operator of the Public Switched Telephone Network (PSTN), Vodafone Fiji Limited, a mobile service provider, and Digicel, a mobile service provider. Fintel and TFL are 100 per cent owned subsidiaries of Amalgamated Telecom Holdings (ATH). Vodafone Fiji is owned 51 percent by ATH and 49 percent by the

Fiji National Provident Fund (FNPF). Communications Fiji Ltd provides radio communications services and has a small shareholding in Unwired, an Internet Service Provider (ISP) which is majority owned by Digicel via its ownership of DataNets of PNG. Operators receive 15 year unified licenses allowing them to provide any service for that period.

Figure 1. Fiji Telecommunications Market Structure

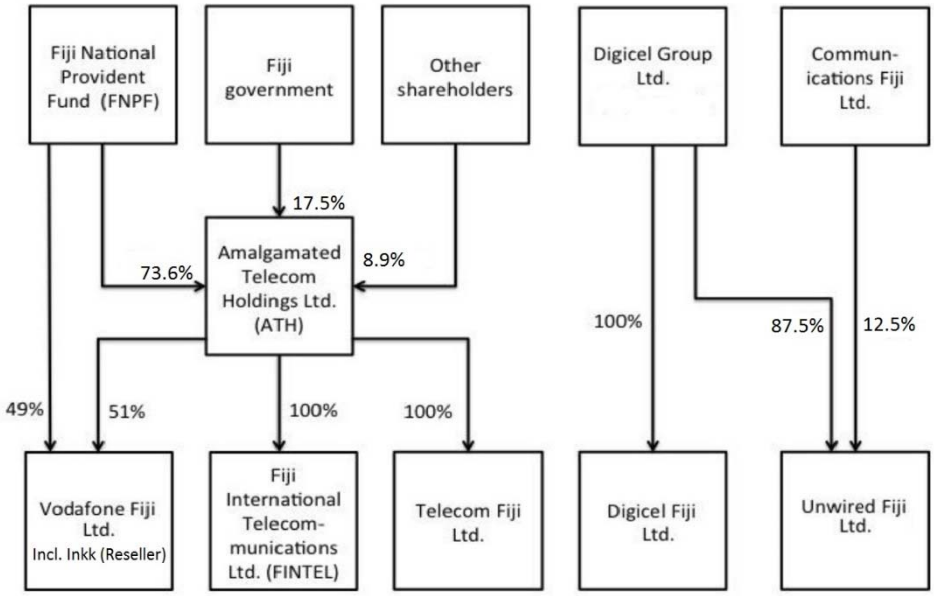


Figure 1 ICT Industry structure of Fiji

Note: ATH and Communications Fiji Ltd are listed on the South Pacific Stock Exchange. Digicel Group Ltd. is privately held, incorporated in Bermuda and domiciled in Jamaica. Sources: Adapted from ATH, Industry Data.

9. Basic mobile phone penetration as of June 2016 was 118 percent of the population. Mobile broadband (3G/4G) coverage is near-universal with 96 percent of the population within reach of a 3G signal and 50 percent within reach of a 4G signal. Mobile broadband penetration is about 50 percent. Fixed broadband access (mostly Asymmetric Digital Subscriber Line (ADSL), some optical fiber) is currently about five percent.

10. Affordability of ICT services has improved significantly since market liberalization, and particularly since the FCC's imposition of wholesale price regulations in 2010. The impact on prices from increased mobile Internet competition, and removal of duties on mobile broadband devices also has been significant. Post-paid prices have remained roughly the same between 2006 and 2016, but the amount of included data has increased. For prepaid users, the pricing options have become more flexible as operators have shifted to "bundled" approaches tailored to different user segments.

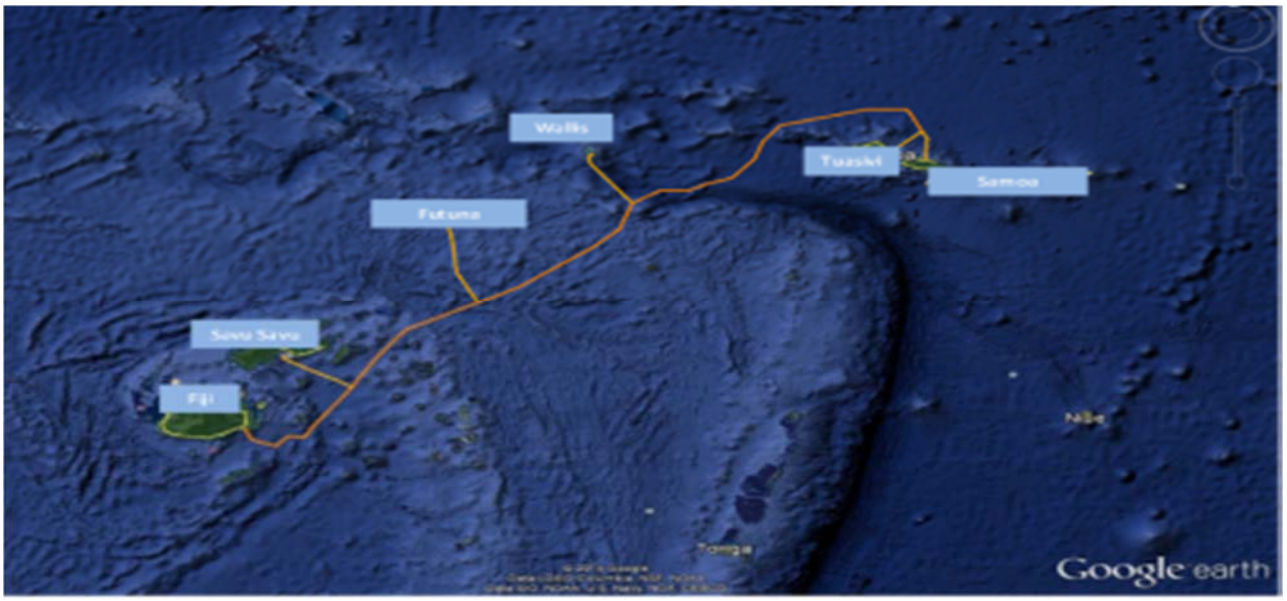
11. Access to and affordability of ICT service has lagged in the Northern Division due to the higher costs and limited capacity of the communications backbone which comprises four microwave links plus satellite links for the more remote locations. While it accounts for approximately 17 percent of the population, the Northern Division generates about 10 to 12 percent of total telecoms traffic, and revenues, in aggregate. While, overall, Fiji has a connectivity level of about 1.5 Mbps/100 people, and rising, via optical fiber, connectivity is less than one Mbps/100 people in the Northern Division. Demand for bandwidth in the Central and Western Divisions is estimated to be more than 2Mbps/100 people and growing rapidly. Moreover, demand for bandwidth in the Northern Division is projected to increase from the current

level of 1.2 Gbps to 19 Gbps over the next 10 years and 170 Gbps over the next 25 years. Microwave and satellite links are insufficient to meet such demand.[ii]

12. A submarine optical fiber cable to Vanua Levu is therefore necessary to meet traffic demand and additionally to increase resilience and lessen the risk that communications will be interrupted by cyclones or other severe weather events. Fiji is in the cyclone zone and so experiences several each year. Following the recent cyclone Winston, only one of the four microwave links between the main island and the Northern division remained in service; all have subsequently been repaired, but are potentially vulnerable.

13. The proposed cable to Vanua Levu would also connect the Northern Division to a broader sub-region. Under the Pacific Regional Connectivity Program Phase 3, Samoa Connectivity Project (P128904) the World Bank, together with the Asian Development Bank (ADB), the Government of Australia, the Government of Samoa, and the shareholders of the SSCC are financing a new submarine optical fiber cable that will connect Samoa (Upolu and Savai'i) to Fiji (Suva on Viti Levu island). The deployment of this SSCC cable presents an opportunity for connecting Vanua Levu via a branch/spur at lower cost than a direct cable from Suva. The territory of Wallis and Futuna (France) is also commissioning spur cables to the new SSCC cable through a Project financed by the Government of France. By mid- to end-2017, Fiji, Samoa, and Wallis and Futuna are therefore all expected to be linked via a subregional network, with onward international connectivity to Australia and the US via the SCCN (Figure 2).

Figure 2. Planned Samoa-Fiji-Wallis and Futuna Subregional Cable System



C. Higher Level Objectives to which the Project Contributes

14. The Country Engagement Note for Fiji (Report No. 93708) was presented to the Board in March 2015. Its objectives are to: (a) promote macroeconomic stability and inclusive private sector-led growth; and (b) protect vulnerable populations. These themes are linked to Fiji's specific needs and its stated development goals as well as to the World Bank Group's twin goals of reducing extreme poverty and boosting shared prosperity. Building on the Bank's earlier engagement on telecommunications liberalization and regulatory reform, the proposed Project envisages support for infrastructure in a relatively isolated region of Fiji.

15. Successive governments of Fiji have sought to redress the imbalances between the Central/Western and the Northern Division through the "Look North" policy. This is a long-standing program of development addressing primary infrastructure (such as roads, water, housing, and sanitation) as well as education, health, and access to key services such as electricity and telecommunications. The Project is therefore a widely shared priority for the Fijian Government given the role of affordable, high speed international connectivity in delivering longer-term, high level policy goals particularly with respect to the development of the Northern region: improved public service delivery (including online government services, health and education and financial services), increased private sector development opportunities, and reduced transaction costs for businesses and individuals.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

The objectives of the Project are to reduce the cost and increase the availability of internet services in the Northern Division of the Borrower's territory.

B. Project Beneficiaries

16. The direct beneficiaries of the Project will be the people of Fiji (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. 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 to poorer households and rural communities in the Northern Division, 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 through the TAF's existing monitoring and evaluation system. By making Internet access more affordable and widely available, the Project will contribute to citizen engagement, not only on this operation, but also more broadly to all of Fiji's economic and social development issues. Illustrative benefits are listed below:

a. *Disaster preparedness/management:* An optical fiber submarine cable is not vulnerable to cyclone damage and will make communications backbone networks in Fiji more resilient to natural disasters. 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. They can also provide "last mile" communications solutions for disaster early warning systems.

b. *Participation of women:* The Project is expected to have a positive impact on women's access to affordable Internet services in Fiji. 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 available online.

c. *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.

d. *Primary producers*: Communications infrastructure facilitates access to information on market prices, weather, agricultural extension services, and e-commerce platforms.

e. *Service industries*: More affordable and widely available Internet which facilitates entrepreneurship—including specific opportunities for women. Telecommunications infrastructure also facilitates the extension of mobile phone and/or Internet-enabled financial services.

f. *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.

g. *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

17. Progress will be measured against the following PDO level results indicators (for the Northern Division of Fiji), as applicable:

a. Access to Internet services, including mobile (number of subscribers per 100 people);

b. Wholesale internet bandwidth price at point of inter connection (US$/Mbps per month);

c. Retail price of internet services (US$/GB);
d. Available internet bandwidth for the Northern Division (Gbps);
e. Direct Project beneficiaries and percentage of female beneficiaries;
f. Regulatory framework that supports open access and nondiscriminatory pricing.

III. PROJECT DESCRIPTION

A. Project Components

18. The proposed Fiji Connectivity Project is closely linked to the ongoing Samoa Connectivity Project (P128904). The Project will finance the incremental costs of the extension of the SSCC cable to Savusavu on Vanua Levu Island in Fiji, and the installation of terrestrial equipment to achieve an operational Suva to Savusavu cable system. This Project also includes institutional development components to ensure that the cable is able to deliver services to the widest possible population at the lowest possible cost.

19. The Government of Samoa/SSCC have already commenced procurement for the SSCC cable, through a competitive process, with the Savusavu connection provided for as an “extended configuration” to this main cable system. The SSCC is targeting the cable to be ready for service in Samoa by August 2017. This requires that complementary works for the Savusavu extension commence by Q4 2016 calendar year, entailing some retroactive financing if expressly approved by the board. The Savusavu extension is expected to be completed in Q4 2017 calendar year, and the monitoring of Project-related benefits and impacts will continue through 2021. Project components are summarized below:

20. **Component 1. Submarine Cable System (US$5.2 million)**, comprising the following elements:

a. Design, supply and installation of a submarine optical fiber cable to connect Vanua Levu to the main SSCC cable, including a marine survey, a cable manufacture and cable deployment.

b. Construction of a cable landing station and ancillary facilities in Savusavu, including acquisition and installation of onshore equipment.

c. Acquisition of the indefeasible right to use the additional optical fiber pair that will be embedded into the main SSCC cable for the Borrower's use for a period of at least 25 years or until decommissioning of the SSCC cable, if earlier.

d. Cable (marine segment) management.

21. **Component 2. Regulatory Technical Assistance (US$ 0.20 million).** This will finance the provision of technical assistance to the FCC in relation to interconnection and access agreements, including the negotiations and implementation of regulatory instruments to ensure cost based and nondiscriminatory access to the cable infrastructure, support for cost analysis, tariff-setting and carriers' rights and obligations.

22. **Component 3. Project Management and Administration (US$ 0.55 million).** This will finance the provision of support to the Project management unit in MOC, including with respect to technical, procurement, financial management and safeguards aspects.

23. The Project's climate adaptation relevant investments are estimated to include the entirety of Components 1, 2 and 3 related to connectivity, regulatory technical assistance, and project management. The expansion of optical fiber cable backbone networks in the Northern Division of Fiji and the establishment of non-discriminatory access agreements increase the portion of the population with fast, reliable and resilient communication services and in this way help build an inclusive and effective disaster early warning and response system.

B. Project Cost and Financing

24. The total cost of the Project is US$6.36 million. IBRD will finance US$5.95 million. An overview of the total proposed financing by component is summarized in Table 1. The burden for any contingencies above the amounts budgeted is expected to be borne by the Government.

Table 1. Project Financing by Component (US$ million)

Component	TOTAL cost	IBRD Financing	Govt. Financing
1. Submarine Cable System	**5.610**	**5.200**	**0.410**
1 (a) Suva to Savusavu cable (marine segment, extension of SSCC cable)	2.650	2.650	0.000
1 (b) Landing stations and ancillary equipment	2.530	2.300	0.230
1 (c) Indefeasible right of use (on marine segment)	0.180	0.000	0.180
1 (d) Project management (marine segment)	0.250	0.250	0.000
2. Regulatory Technical Assistance	**0.200**	**0.200**	**0.000**
3. Project Management & Administration (including front-end fee)	**0.550**	**0.550**	**0.000**

TOTAL	**6.360**	**5.950**	**0.410**

C. Lessons Learned and Reflected in the Project Design

25. 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.

26. *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, in the Regional Communications Infrastructure Project in East Africa and the West Africa Regional Communications Infrastructure Project programs (including Liberia, The Gambia and Rwanda, among others) and under the Central African Backbone Project (e.g., Sao Tome and Principe), open-access arrangements have been built into the contractual structure of the private-public partnership (PPP) and the associated regulatory framework in order to promote direct infrastructure-based competition.

27. The legal and regulatory environment in Fiji 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. Both Fiji and PNG 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 have not accrued to consumers. Fiji introduced a more open access regime in 2010 resulting in significant internet price reductions. Access and pricing remain challenging in PNG. In Tonga (Phase 1 of the Pacific Regional Connectivity Program), the price of wholesale bandwidth was reduced once the Tonga-Fiji cable became operational in August 2013, and access to Internet increased significantly. 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. In the Samoa and Palau-FSM Connectivity Projects, infrastructure investments and regulatory reforms are being closely coordinated. The Project will therefore provide support to the FCC to enhance its capability for ex post regulatory intervention and supervision to promote competition in downstream markets.

28. *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.

29. *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 cable operations will be outsourced to 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

30. The World Bank will sign a Loan Agreement (LA) with the Ministry of Economy (MOE) which currently assumes responsibility for finance. The Ministry of Economy (MOE) will be the authorized representative for all Loan-related matters. The Ministry of Communications (MOC) has been designated by the Government as the entity responsible for the implementation of the Project. The MOC will establish a Project Management Unit (PMU), and recruit consultants to support the work of the PMU. A Project Operations Manual will be prepared within three months of Project Effectiveness.

31. *Cable Preparation and Construction Phase.* The MOC will oversee the implementation of all Project components. During the Project preparation and cable system construction phase, the Government will retain ownership of the cable system assets, as noted above.

32. *Cable Operations (post-construction) Phase*. MOC is not a telecommunications service provider. Therefore, as soon as practicable, but no later than the ready for commercial service date (or such other date which the Bank has confirmed in writing to the Government is reasonable and acceptable under the circumstances, as determined by the Bank), the Government shall enter into one or more legal agreements with an eligible cable operating entity meeting the requirements listed in the Project Operations Manual, selected in a manner acceptable to the Bank for the transfer of the commercial operation and management of the fiber pair in the SSCC Cable, the branching unit for the connection of the Savusavu Spur to the SSCC Cable, the Savusavu Spur and the Savusavu landing station, in form and substance satisfactory to the Bank (the "CO&M Agreement").

33. Without limitation to the provision above, the cable operating entity shall meet the following requirements:

a. demonstrated previous experience in operating optical fiber submarine cable systems;

b. demonstrated previous experience in operating a wholesale telecommunications service; and

c. compliance with appropriate corporate financial ratios, which the Bank has confirmed in writing to the Government is reasonable and acceptable under the circumstances.

34. Further, the CO&M Agreement shall contain provisions satisfactory to the Bank 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 CO&M Agreement, or any provision thereof, or permitting any entity participating in the implementation of the Project to do so.

35. Not later than twenty four (24) months after Project Effectiveness, the Government shall design (or cause to be designed) and submit to the Bank a plan for the management of the Savusavu Spur and the IRU capacity, in form and substance acceptable to the Bank and consistent with Fiji's laws and regulations and in accordance with the provisions of the Loan Agreement (the "Strategic Asset Management Plan"). Without limitation to this provision, the Strategic Asset Management Plan shall (a) give priority to the promotion of an open, competitive and fairly regulated market (as opposed to the promotion of a monopoly); and (b) include, *inter alia*, details of ownership, divestiture options, financing and operation of the cable, including timeline for its implementation, governance arrangement, business model, assets valuation, and protection of the interest of the users of ICT services in the Northern Division.

B. Results Monitoring and Evaluation

36. The MOC will be responsible for overall monitoring and evaluation, in conjunction with the FCC and TAF. Data gathering and analysis will be undertaken by the FCC and TAF based on data provided by telecommunications service providers, Fiji 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 MOC 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.

37. Implementation support missions will be conducted at least twice a year, supported by the newly-established Country Office in Suva. Given expected effectiveness by the first quarter of 2017, a midterm review will be scheduled in November 2019.

C. Sustainability

38. The Project will support improvements in service coverage and quality in the Northern Division of Fiji 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 the Northern Division, as noted in the section on economic and financial analysis below. The Project will also contribute to capacity building for the FCC to enhance knowledge development during and beyond Project completion.

D. Role of Partners

Coordination with Samoa

39. This Project may be considered a strategic partnership between Fiji and Samoa, so collaboration between all parties, including governments, industry, and development partners is important. The World Bank, ADB, and the Australian Department of Foreign Affairs and Trade (DFAT) are already working closely on all aspects of the SSCC cable, and the Governments of Fiji and Samoa maintain regular contact during the preparation phase. Key issues for coordination with Samoa include the following marine components, among others:

a. Sharing of information for the route design in Fiji's territorial waters relevant to the connection to Savusavu;
b. Land acquisition for, and design, specification, construction and fit out of a Savusavu cable landing station (for installation of Submarine Line Terminating Equipment (SLTE) and associated testing);
c. Contractual arrangements for the proposed Savusavu cable components, as SSCC in Samoa and MOC in Fiji will sign separate contracts with the supplier of the main SSCC cable;
d. Coordinated Project management arrangements for the marine segment.

Coordination with Wallis & Futuna (France)

40. The Government of France has mobilized funding for a second extended configuration to the SSCC cable, namely the construction of cable spurs to the islands of Wallis and Futuna, to provide high-speed internet to this hitherto isolated Territory. Contractual arrangements between SSCC and the cable operating entity in Wallis and Futuna are in progress. No direct contractual arrangements are anticipated between Fiji and Wallis and Futuna. However, the three sub-regional partners may consider options to establish a sub-regional working group.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

41. The overall implementation risk rating is Moderate. The Project will finance a physical connection to the proposed SSCC cable, plus terrestrial infrastructure near the town of Savusavu on Vanua Levu Island, and technical assistance. The main risks are as follows:

a. *Regional coordination.* Project implementation entails a significant degree of coordination with other countries/institutions in the region, including the Government of Samoa and the SSCC, and, to a lesser extent, the Government of France/Territory of Wallis and Futuna. This will be managed by regular government to government engagement, and by MOC engaging the office of the Solicitor-General of Fiji to support it in negotiating and agreeing on financial and implementation arrangements with SSCC.

b. *Regulatory Risks.* A successful Project outcome in Fiji depends on a sound regulatory environment and effective oversight. 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, particularly in the post-construction and post-divestiture phase. Technical assistance will be given to the FCC to enhance regulatory outcomes.

c. *Institutional Capacity for Implementation and Sustainability.* The underlying arrangement for the ownership of the cable, ancillary equipment and capacity, and the operation of the overall system is not yet finally decided. This creates a certain amount of uncertainty which may be a source of delay moving forward. However, this risk has been assessed as lower than slowing down the supply and installation of the submarine cable between Samoa and Fiji (which would see the validity of the current bid lapsing), or disconnecting the installation of the main cable and the Savusavu Spur (which would result in considerable additional costs). In order to mitigate such risk, the Loan Agreement contains flexible provisions which will allow the stakeholders to agree on various contractual ownership and operation options going forward, but each such contract will have to be in form and substance acceptable to the Bank (the Savusavu Spur Supply Contract, the IRU, the Savusavu Landing Party Agreement, the Commercial Operations and Maintenance Agreement, the Strategic Asset Management Plan, and the choice of the Cable Operating Entity). This means that none of the related non-objections can be given routinely and each request for clearance of a legal agreement may result in difficult negotiations with the client.

d. *Fiduciary risks.* Procurement risk is rated moderate. Despite the complexity of procurement of submarine cable systems, the main procurement is substantially advanced. SSCC has signed the supply contract with the vendor for the main Samoa-Fiji Cable. MOC is negotiating a contract for the Savusavu extension. Financial management risk is rated moderate due to the Government's previous experience in managing World Bank-funded operations, and by limiting the total number of transactions.

VI. APPRAISAL SUMMARY

A. Economic and Financial (if applicable) Analysis

42. *Economic Analysis.* The potential macroeconomic impact of connecting Vanua Levu via the proposed SSCC cable can be assessed by estimating the impact on GDP of the Northern Division over the next 25 years.[iii] It is assumed that, with the right enabling conditions in place, every 10 percent increase in broadband penetration could generate around 1.3 percent in GDP growth rate, and that the submarine cable contributes up to 33 percent to this (the other 67 percent being due to regulations and access network development). Under these assumptions, the discounted economic impact on GDP over the next

25 years (with a 10 percent discount rate)[iv] is US$112 million and the economic rate of return is of 53-60 percent.

43. 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 and services and e-commerce, and reduce business transaction costs in the Northern Division. The Project is expected to contribute towards greater financial inclusion by facilitating the faster roll-out of Internet/mobile-based financial services.

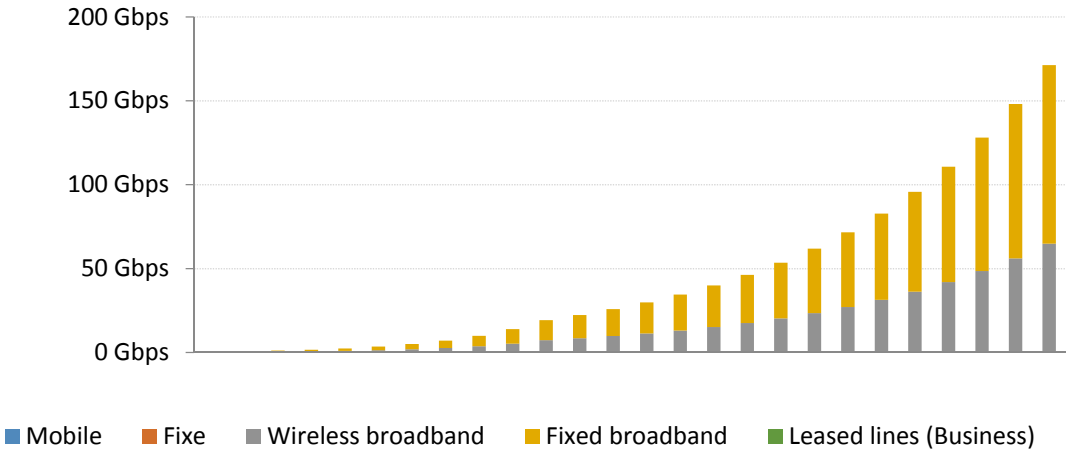
44. The Project is expected to generate significant social benefits related to more efficient delivery of services, such as health, education, and general public information via the Internet at lower cost, and to facilitate communication among citizens and enhanced social participation. Higher quality and more affordable Internet services will also facilitate communication with overseas-based Fijian citizens/family members.

45. Analysis of a possible Vanua Levu optical fiber submarine cable, carried out by telecommunications industry stakeholders in 2015, and by the World Bank in early 2016, concluded that this cable investment would not be viable on commercial terms (with commercial cost of capital and repayment terms) due to the relatively low revenue projections for the Northern Division for the short- to medium-term. Public sector low-cost and long-term financing is therefore 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. With the anticipated divestiture, private sector financing will be used to cover operations and maintenance costs, and user fees for telecommunications and internet services will support financial sustainability for the longer term.

Market and Demand

46. The analytical methodology of the market and longer term demand for bandwidth is based on bandwidth demand analysis/projection and estimated revenue projections. It also considers which backbone technology can respond most effectively to this demand. Bandwidth demand for Fiji's Northern Division has been estimated using two approaches: (a) top-down (comparative analysis with countries with similar market conditions which yields a figure for bandwidth demand per capita X total population; and (b) 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. Under the most optimistic or high-case scenario (Figure 3 below), demand for bandwidth is expected to reach 30 Gbps over the next 10 years and 170 Gbps over the next 25 years. Neither microwave nor satellite services will be able to deliver this level of capacity; for this reason, the preferred technology solution is optical fiber cable.

Figure 3. Northern Division: Projected Bandwidth Demand (high-case scenario)



Bandwidth Demand, 2016-2041 (high-case scenario).

Sources: Regulator and operator data and World Bank Projections (2016).

Table 2. Financial Analysis: Assumptions

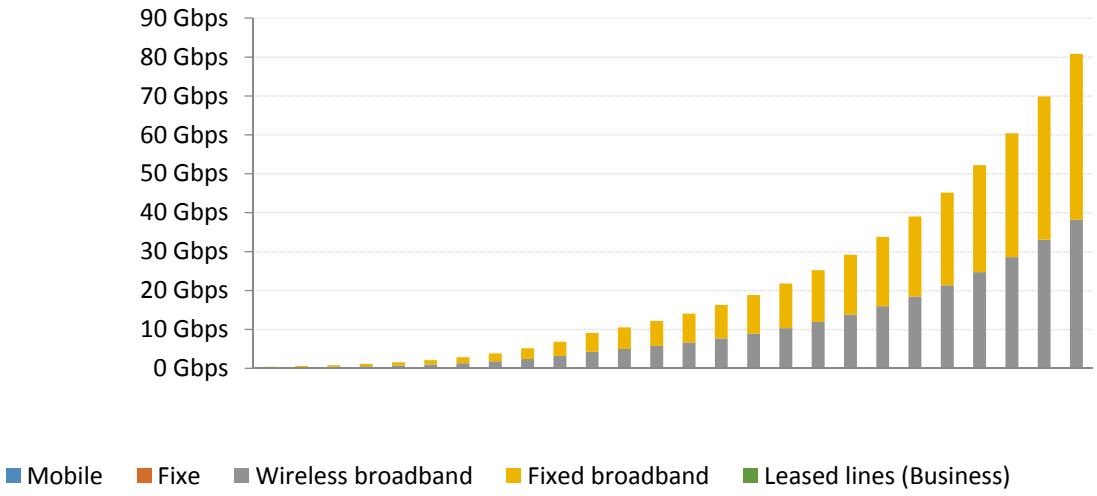
Item	Assumptions
IBRD loan[a]	
Maturity period (including grace period)	18 years
Grace period	5 years
Payment method	Level principal repayment (i.e. a constant amount of principal being repaid every 6 months)
Revenues and cost items	
Bandwidth pricing	• For international traffic:

	○ US$103/Mbps/mo in 2017. This corresponds to the price fixed by Fiji's Commerce Commission end 2014, effective from 01/01/2015. ○ Annual bandwidth price reduction of 10%, which leads to a pricing of US$8/Mbps/mo in 2041 • For domestic traffic: ○ US$15/Mbps/mo in 2017 ○ Annual bandwidth price reduction of 3%, which leads to a pricing of US$7/Mbps/mo in 2041
IRU on Southern Cross Cable	• IRU prices in 2017 are the ones announced in 2015 by SX • Annual bandwidth price reduction of 10% • The report considers an *extremely conservative case, where Vanua Levu could not benefit from any of existing purchased capacity of Fiji on the Southern Cross cable.* • Purchase by blocks of 1 Gbps to Australia/New Zealand + 1 Gbps to US. In fact, according to the demand forecast, purchasing IRU by blocks of 1 Gbps is a good option in order to avoid important cash-out due to large-capacity-IRU purchase and reduce IRU non-usage rate. It is assumed that Fiji's traffic profile is approximately 50-50 between Australia/New Zealand and the US
IP transit in Australia and US	• Blended IP transit for US and Australia/New Zealand (50-50), which approximates $8/Mbps/month in 2017 • Annual price reduction of 10%
Operating cost	Annual cost increase of 3% due to inflation
Tax payment	20% of profit
Cashflow elements	
Account receivable	8% of revenues (assuming a delay of 30 days payment)
Account payable	12% of capacity cost (IRU on Southern Cross and IP transit cost) (assuming a delay of 45 days payment)

47. Under a more conservative (medium demand growth) scenario (Figure 4), bandwidth demand would surpass 10 Gbps within ten years and exceed 80 Gbps over the next 25 years, still a considerable increase over current rates and beyond the capability of any other available technology. This will be driven

by demand for multimedia services as well as machine to machine communications (internet of things). As neither microwave nor satellite services will be able to deliver this level of capacity; the preferred technology solution is still an optical fiber cable.

Figure 4. Northern Division: Projected Bandwidth Demand, 2016-2041 (medium-case scenario)



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

48. *Financial analysis.* The current business model for the proposed new cable investment is wholesale of bandwidth capacity, which could be either international or domestic. In fact, two models could be considered: (a) to sell directly international bandwidth (including IP transit) to operators in Northern Division, and (b) to sell only national traffic between the Northern Division and Suva to operators.

49. Under the assumptions in Table 2, and based on the analysis in Table 3, the Project is profitable with an NPV of US$10 million at 10 percent discount rate in case of international traffic model, and US$1 million at 10 percent discount rate in case of domestic traffic model. A positive NPV at 10 percent could even be achieved when the annual wholesale bandwidth price reduction rate is of 14 percent (which makes a price of US$23/Mbps/month in 2027). However, a cash buffer of US$0.9 million will be required by the cable operating entity in order to cover operating needs over the first three years and guarantee a positive cash flow, mainly to finance capacity purchase on Southern Cross (estimated 1 Gbps) in order to satisfy international bandwidth demand from the Northern Division in case of the international traffic model. In the case of the domestic traffic model, such a “cash buffer” would be in the order of US$0.6m as the project would not be profitable in the first years.

Table 3. Financial Characteristics of the Project

	International traffic model		Domestic traffic model	
	At pre-determined bandwidth price reduction rate	**At highest allowed bandwidth price reduction rate**	**At pre-determined bandwidth price reduction rate**	**At highest allowed bandwidth price reduction rate**
Annual bandwidth price reduction rate	10%	15%	3%	4%
Project NPV (at 10% discount rate)	US$11.2 m	US$0.5 m	US$2.0 m	US$0.7 m
Project IRR	20%	11%	12%	11%
Lowest cashflow (assuming an initial opening cash =$0)	-$0.4 m (FY2017)	-$0.4 m (FY2017)	-$0.4 m (FY2023)	-$0.5 m (FY2023)

B. Technical

50. Since 2001, Fiji has been connected to the US, Australia and New Zealand through the SCCN, as noted above. This connection has boosted access to services and data usage, reduction of prices, deployment and adoption of fixed and mobile broadband services. The Southern Cross Cable lands at Suva on Viti Levu. From this location, the high capacity of the optical fiber is distributed around the main island by optical fiber (two systems) and short range high capacity microwave. However, due to the lack of optical fiber network between Viti Levu and the other islands, the possibility of developing ICT services on these has so far been limited. Connectivity solutions on these islands, including Vanua Levu (the second largest island of Fiji) and Taveuni (the third largest), have so far relied on satellite solutions and microwave links. A microwave link network was developed in 2011 to link the main islands of Viti Levu and Vanua Levu.

51. Current total installed and operational capacities (across all the main operators) between the main island of Viti Levu and Vanua Levu are as follows: installed capacity 2.867 Gbps; in-service capacity 1.917 Gbps; peak use demand 1.505 Gbps. Going forward, this capacity will be insufficient to provide the required bandwidth capacity and quality from the near future. With up to 16 percent of the country's population on Vanua Levu, and with international bandwidth readily available on Viti Levu, connecting Vanua Levu by optical fiber would bring much higher capacity and higher quality backbone connectivity. Vanua Levu is also the connection point to the Eastern Division of Fiji (six percent of the population); Taveuni is 10km away from Savusavu. Accordingly, a high capacity optical link to Vanua Levu also offers additional connectivity benefits for the Eastern Division. Optical fiber cable backbone offers greater resilience than terrestrial backbone (microwave) in the event of cyclones.

52. Various options for a new submarine cable to connect Savusavu were examined from technical, economic and strategic perspectives. These included a direct connection from Suva to Savusavu, plus alternate landing sites; the estimated cost was about double that of the solution proposed under this Project. The preferred option is therefore a connection to the SCCN in Suva, Fiji via the planned SSCC cable. The cable will thereby provide access to direct IP transit services via Southern Cross to Australia, Hawaii or the west coast of the US.

53. The planned cable consists of a spur from the main trunk to Savusavu with a Non Power Switch Full Fiber Drop Branching Unit and one unrepeatered fiber pair between Savusavu and Suva. The Suva – Savusavu Digital Line Section is 198 km long. The planned cable will provide a total of 8x100 Gbps installed capacity for Savusavu with an expected lifespan of at least 25 years. Initial lit capacity is expected to be 100 Gbps in the Savasavu-Suva fiber pair. The spur from the Branching Unit 4 to the Savusavu cable landing station is 95km.

C. Financial Management

54. The financial management assessment was carried out in accordance with "Principles Based Financial Management Practice Manual," issued by the Board on March 1, 2010. Under the Bank's OP/BP 10 with respect to Projects financed by the World Bank, the Borrower is required to maintain financial management systems—including accounting, financial reporting, and auditing systems adequate to ensure they can provide the Bank with accurate and timely information regarding the Project resources and expenditures. The existing financial management systems are assessed as adequate to meet the financial management requirements as stipulated in OP/BP 10.00. The project's overall financial management risk is rated as "Moderate".

Budgeting

55. A budget for the whole Project will be prepared, broken down by year, and appropriate levels of detail (e.g. component or category, whichever is deemed most relevant and useful).

Counterpart Funding

56. Counterpart funding of US$0.41m is required from the Government for costs associated with Component 1(b) and 1 (c) or as otherwise agreed with the Bank.

Funds Flow

57. Funds will flow from the World Bank to the Government a) into a Designated Account (DA) from which payments can be made, b) via direct payments, c) via reimbursement of Government expenditure and d) special commitments (see Disbursements section below for more details on the DA).

Accounting and Maintenance of Accounting Records

58. MOC uses Info Global Masterpiece, which is the integrated financial management system for the Government. MOC and other government agencies operate on a cash basis of accounting. Accounting records are maintained by MOC and MOE and are to be made available to both auditors and the World Bank, as required.

Internal Controls; including Internal Audit

59. MOC has an FM policies and procedures manual, based on that used by MOE. Internal audit of the Government is based in and performed by MOE for all agencies.

Periodic Financial Reporting

60. Unaudited interim financial reports (IFRs) of the Project will be prepared on a quarterly basis. The financial reports will include an analysis of actual expenditure for the current period, year to date and for the cumulative to date, plus outstanding commitments, compared against total project budget. The format will be developed and agreed by the implementing agency and the World Bank prior to due date for the submission of the first IFRs. The IFRs will be forwarded to the World Bank within 45 days of the end of each quarter of the Borrower's fiscal year.

External Audit

61. An annual audit of the Project funds will be required. The Office of the Auditor-General (OAG) of Fiji is mandated to audit all Government funds. The Auditor-General requires annual financial statements to be prepared in accordance with IPSAS accounting standards. The audited financial statements, audit report and management letter must be received by the World Bank within nine months of the end of the fiscal year, and shall be made publicly available by the Recipient in a manner acceptable to the Bank as per the General Conditions of IBRD Loans.

FM Supervision Plan

62. Below is the plan for supervision of the FM aspects of the Project.

FM activity	Frequency
Desk reviews	
Unaudited interim financial reports (IFRs) - review	Quarterly
Annual audit report - review	Annually
On site visits	
Formal supervision	Half yearly initially, then Annually based on risk and performance ratings.
Monitoring of actions taken on issues highlighted in review of the IFRs and audit reports, auditors' management letters, and other applicable reviews	As needed.
Transaction reviews (if needed)	On an as needed basis, and in the case of any issue arising.

Financial Management Action Plan

63. A summary of the Financial Management Action Plan is shown below.

No.	Action	Date by which action required	Responsible
1	Prepare and agree format of unaudited IFRs that will be used for quarterly reporting.	Completed.	MOC & World Bank FM Specialist

DISBURSEMENTS

Disbursement Methods and supporting Documentation Arrangements

64. The Project will use four disbursement methods: (a) advances; (b) direct payment; (c) reimbursement, and (d) special commitments. Direct payment would only be used for large payments or when payments are in currencies that the Borrower may have difficulty obtaining. Reimbursement would only be used if Government funds were used for project expenses rather than expenditure being through the Designated Account (DA). Special commitments may be needed if goods are purchased from overseas. Disbursements will be against List of Payments and Statements of Expenditure. Required supporting documentation for disbursements will be outlined in the Disbursement Letter.

Designated Account

65. The Project will need a Designated Account (DA) for Advances. The currency of the DA will be Fiji Dollars (FJD). A segregated DA will be required. MOC currently banks with Bank South Pacific (BSP).

Retroactive Financing

66. An amount not to exceed US$1,190,000 as expressly approved by the Board will be provided for eligible expenditures under disbursement category (1) in Table 4 to be incurred after October 1, 2016, provided that the Bank's relevant procurement guidelines are followed.

Table 4. Eligible Expenditures

Category	IBRD Loan Amount of Loan Allocated (expressed in USD)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services and consultant services for the Project (except Component 1(c) of the Project), including Incremental Operating Costs and Training.	5,935,125	100%
(2) Front-end Fee	14,875	Amount due pursuant

		to Section [2.03] of the Loan Agreement in accordance with Section 2.07 (b) of the General Conditions].
TOTAL AMOUNT	5,950,000	

D. Procurement

67. Procurement will be carried out in accordance with the World Bank's —Guidelines: Procurement of Goods, Works and non-consulting services under IBRD Loans and IDA Credits and Grants dated January 2011 (Revised July 2014; and —Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers dated January 2011 (Revised July 2014), and the specific provisions stipulated in the Legal Agreements.

68. The overall procurement-related risk is rated moderate. The Government has previous experience in implementing Bank-financed Projects, but in-house staff capacity for procurement is limited within MOC. MOC will engage a procurement specialist to support overall implementation. For Component 1, MOC is currently coordinating with Fintel for technical inputs and guidance in the procurement process.

69. For Component 1 (a), a direct contract will be negotiated with the submarine cable system vendor for the main SSCC cable. Contracts for goods and works under Component 1(b), will be bid competitively, as will consultancies under Components 2 and 3. The summary procurement plan is provided in Table 5.

Table 5. Summary Procurement Plan

	Contract No.	Description	Estimated (US$m)	Type	Method
1	FC/GW1a/1	Savusavu Extension (marine segment)	2.65	Works	Direct Contract
2	FC/GW1b/1	Civil works-Savusavu	0.50	Works	Shopping
3	FC/GW1b/2	Savusavu cable landing station	1.68	Works	ICB
4	FC/GW3b/1	Office equipment for MOC PMU	0.05	Goods	Shopping
5	FC/GW3b/3	Multi-service provisioning platform	0.35	Goods	Shopping
6	FC/CI/1	Project management: MOC Technical Support & Savusavu works	0.18	Consultant services	IC
7	FC/CI/2	Project coordinator/procurement	0.04	Consultant services	IC
8	FC/CI/3	Project administrative support/accountant	0.10	Consultant services	IC
9	FC/CI/4	Safeguards support	0.06	Consultant services	IC

	Contract No.	Description	Estimated (US$m)	Type	Method
10	FC/CF/1	Project management-submarine cable	0.25	Consultant services	SSS

70. **Procurement of Plant Design, Supply, and Installation (US$2.65 million):** This procurement will be for the marine segment of the submarine cable system, i.e. to supply an additional optical fiber pair on the SSCC cable, from Suva to a branching unit (BU4) on this cable; a spur cable from BU4 to a beach manhole (BMH) at Savusavu, connection of the cable at Savusavu BMH to submarine line terminating equipment (SLTE) and to install & test end to end operations. This procurement will be done under Direct Contracting, given that the specifications for the Savusavu extension cable, including incremental optical fiber capacity on the main trunk cable, from Suva to Savusavu, the branching unit on the main trunk cable, plus the spur cable, was included as an "extended configuration" option in the bidding documents for the SSCC cable (P128904). This bidding process commenced in December 2015, led by the Government of Samoa and the bidding followed the World Bank Procurement Guidelines. The evaluation was completed on August 2016 and the contract award is forthcoming. MOC wishes to take advantage of the extended configuration and direct contract the Contractor awarded the Vanua Levu cable procurement. The Bank will prior review the draft negotiated Contract between MOC and the Contractor.

71. **Procurement of Works (US$2.18 million):** This procurement entails: (a) Construction of the Savusavu cable landing station (CLS) and facilities, connection to the Telecom Fiji Ltd Exchange, and a point of interconnection (POI) for operators; and (b) civil works and ancillary equipment for the CLS. Small value works less than US$1,000,000 may be procured through Shopping. The bidding documents for the contracts are under preparation.

72. **Procurement of Goods (US$0.40 million):** This will be for a Multi-Service Provisioning Platform (MSPP) for the cable system, to be procured through Direct Contracting (US$0.35million), and for office equipment and peripherals (US$0.05 million) to be procured through Shopping.

73. **Selection of Consultants (US$0.63 million):** Consulting contracts 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 Consultants Guidelines. Consulting services estimated under US$500,000 equivalent per contract may follow the Selection Based on Consultants Qualifications (CQS). The Least-Cost Selection (LCS) would be used for simple assignments such as audit services. Under the circumstances described in paragraph 3.9 of the Consultants Guidelines, consultants may be selected and awarded on a Single-Source Selection (SSS), subject to the Bank's prior approval. Individual consultants will be selected and contracts awarded in accordance with the provisions of paragraphs 5.1 through 5.5 of the Consultants Guidelines. Under the circumstances described in paragraph 5.6 of the Consultants Guidelines, individual consultants may be selected and awarded on a Single-Source basis, subject to the Bank's prior approval. MOC will be hiring firms and individuals to support Project management and technical assistance for the FCC.

74. **Prior Review:** Prior review and procurement method thresholds for the Program are shown below and are included in the procurement plan.

Procurement Method	Procurement Thresholds	Prior Review Threshold
Goods		
Shopping	≤US$100,000	None
Direct Contracting	In accordance with authorizing circumstance provided in the Guidelines	All contracts subject to prior review
Works (Supply and Installation also)		
Shopping	≤US$1,000,000	None
ICB	≥US$1,000,000	All contracts subject to prior review
Direct Contracting	In accordance with authorizing circumstance provided in the Guidelines	All contracts subject to prior review
Selection of Consultants		
Selection Methods	Applicability	Prior Review Thresholds
Firms (QCBS, QBS, LCS, CQS and SSS)	In accordance with the Consultants Guidelines (CQS may be used for contracts estimated to cost≤US$500,000)	≥US$200,000, expect SSS where all contracts subject to prior review
Individuals		None. Prior Review on exceptional basis only. All sole source and procurement and legal related assignments are subject to prior review.

75. **Frequency of Procurement Supervision:** In addition to the prior-review to be carried out by the Bank, procurement supervision missions will visit the field to carry out post-review of procurement activities every 12 months. The post review sampling ratio will be 20 percent of contracts.

76. **Procurement Plan:** The overall procurement plan was agreed and finalized, (dated October 19, 2016). It will be available on MOC's website and on the World Bank's external website. The procurement plan will be updated in agreement with the Bank annually, or as required, to reflect Project implementation needs and improvements in institutional capacity.

E. Social (including Safeguards)

77. The Project is expected to result in numerous positive social and economic benefits for Vanua Levu through improved access to communications. Due diligence, during Project preparation, has identified that there will be no involuntary resettlement. OP4.12 is therefore not triggered. The inner reef is owned by the Government and the preferred location for the terrestrial assets (beach manhole, terrestrial cabling and cable landing station) is all on Government-owned land. The beach manhole and the cable landing station will be located on Airports Fiji Limited land (a State-owned Enterprise), and the terrestrial cabling will be buried within an existing cable ducting, along a road easement.

78. OP4.10 Indigenous Peoples has not been triggered. The assessment undertaken by OPCS and documented in the Environmental and Social Safeguard Instrument for the Pacific (ESSIP) found that in Fiji, the native Fijian population is distinct in many respects from the historically migrant Indian population, but does not meet all of the Bank's defining characteristics. Although culturally distinct subgroups may be present in outlying islands within Fiji (e.g., Rotuma Island), two of the defining characteristics (the indigenous language is not different from the official language, and there generally are not customary cultural, economic, social or political institutions that are separate from a dominant society and culture) are not present. It is noted that the fiber optic cable will come ashore in a location where no culturally distinctive sub-groups exist. There are no populations in the Project area, including beneficiaries of the improved connectivity, that meet the defining characteristics of the policy.

F. Environment (including Safeguards)

79. The Project is not expected to have significant environmental impacts. The Project is classified as Category B as the impacts are not irreversible or unprecedented and can be mitigated and remedied. The Project triggers OP4.01 Environmental Assessment, OP4.04 Natural Habitats and OP4.11 Physical Cultural Resources. An Environmental and Social Impact Assessment (ESIA), and Environmental and Social Management Plan, have been prepared, with an emphasis on the potential impacts on the reef and foreshore environments and appropriate mitigation measures. The disclosure date of the ESIA in country and on the Bank's website was September 23, 2016.

80. A site selection process was carried out as part of Project preparation, where the environmental and social impacts of several alternative beach manhole and cable landing station sites was considered as part of the technical evaluation of site suitability. Several alternative sites were discounted because of the higher risk of potential issues with access to land and potential impacts on beach / foreshore use. The final landing site is expected to be on the eastern side of the runway at the airport of Savusavu. This means that the cable run from the landing point BMH to the CLS will be a few hundred metres and along the edge area of the airport runway on Government land, owned by Airports Fiji Ltd.

81. With respect to potential impacts in the deep water, the ESIA identifies that the risk of vulnerable habitats (sea-mounts, hydrothermal vents etc.) being present is very low between the branching unit and the inner reef at Savusavu. The key mitigation measure is to avoid those habitats. The detailed marine survey (bathymetry and ecological survey), to be carried out prior to the finalization of the cable laying

route, will identify any such features and it is standard practice to avoid them to prevent potential damage to the cable.

82. With respect to potential impacts in the near shore, the ESIA shows that there are few critical habitats in the existing reef and inshore areas. The cable laying process will be guided by ecologically-qualified divers who will ensure that the cable will avoid any significant coral assemblages. There are no physical cultural resources within or near the proposed Project footprint. However, OP4.09 Physical Cultural Resources has been triggered as a precautionary measure in case any are found during works and the chance find procedure is invoked.

G. Other Safeguard Policies

No other safeguard policies are triggered.

H. World Bank Grievance Redress

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 : Fiji

P4: Pacific Regional Connectivity Program: Phase 3B, FJ Connectivity Project

Project Development Objectives

The objectives of the Project are to reduce the cost and increase the availability of internet services in the Northern Division of the Borrower's territory.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
Name: Access to Internet Services (number of subscribers per 100 people)	✓	Number	55.00	80.00	Annual	Telecommunications Authority of Fiji: Annual Reports. Telecoms/Internet Service Providers: Annual Reports.	Telecommunications Authority of Fiji
Description: It measures the number of people who pay for access to the Internet per 100 peop le in a given country. Guidance: Access to the internet includes: dial-up, lea sed line, and fixed broadband. It also includes the so-called "free Internet" us ed by those who pay via the cost of their telephone call, those who pay in advan ce for a given amount of time (prepaid), and those who pay for a subscription (e ither flat-rate or volume-per usage based). It should include wireless Internet users that have a specific subscription covering Internet access (e.g., WiMAX u sers, 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 a lways larger than the number of subscribers. If breakdown data is available, th e TTL can opt to include data (using optional breakdowns in the ISR system) by a ccess 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/m ale subscribers. This indicator is applicable for projects targeted at the nati onal level. With baseline data, this indicator shows the additional number of p eople 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 tar geted to the whole country, it is a good proxy for the contribution of the proje ct to improvements in access. Data is readily available from telecommunications operators, regulators and ITU.							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
Name: Wholesale Internet bandwidth price at point of interconnection US$/Mbps/month		Amount(USD)	110.00	75.00	Annual	Telecommunications Authority of Fiji: Annual Reports. Telecoms/Internet Service Providers: Annual Reports.	Telecommunications Authority of Fiji
Description:							
Name: Retail price of internet services (residential, base plan US$/GB)		Amount(USD)	0.60	0.30	Annual	Telecommunications Authority of Fiji: Annual Reports. Telecoms/Internet Service Providers: Annual Reports.	Telecommunications Authority of Fiji
Description:							
Name: Available internet bandwidth for the Northern Division (Gbps)		Text	1.5	10.0	Annual	Telecommunications Authority of Fiji: Annual Reports. Telecoms/Internet Service Providers: Annual Reports.	Telecommunications Authority of Fiji
Description:							

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
Name: Regulatory framework supports open access and nondiscriminatory pricing		Yes/No	N	Y	Annual	Fiji Commerce Commission determinations.	Fiji Commerce Commission
Description:							
Name: Direct project beneficiaries	✓	Number	0.00	80000.00	Annual	Telecommunications Authority of Fiji. Statistical Reports.	Telecommunications Authority of Fiji. Statistics Office
Female beneficiaries	✓	Percentage	50.00	50.00	Annual	Telecommunications Authority of Fiji: Annual Reports. Telecoms/Internet Service Providers: Annual Reports.	Telecommunications Authority of Fiji.
Description: Direct beneficiaries are people or groups who directly derive benefits from an i ntervention (i.e., children who benefit from an immunization program; families t hat 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, specif y what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.							

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	95.00	Every 6 months	Project Progress Report	MOC
Description: It measures the number of kilometers of fiber-optic network built under the proj ect (i.e. with project funds). Guidance: Fiber optic network refers to the net work constructed with fiber optic cables. The definition of "built" means the c ondition that the fiber optic cables are physically laid regardless lit or in us e. 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 transmis sion capacity, would not be factored into the indicator). This would allow for t he 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 tec hnological change. Thus, measuring route kilometers of fiber is a more neutral m easure than counting individual fibers or their transmission capacity. As backb one projects will be built primarily through PPP, project funds will therefore t ypically not finance 100% of the project. It is expected that the baseline valu e for this indicator will be zero. The data will be available from the operator s under the project.							
Name: Regulatory framework provides for open access to domestic optical fibre networks		Yes/No	N	Y	Every 6 months	Project Progress Report	Telecommunication s Authority of Fiji (TAF) and MOC
Description:							
Name: Cost-based interconnection rates for Savusavu cable, under nondiscriminatory pricing regime		Yes/No	N	Y	Every 6 months	Project Progress Report	Telecommunication s Authority of Fiji (TAF) and MOC
Description:							

Target Values

Project Development Objective Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Access to Internet Services (number of subscribers per 100 people)	55.00		65.00	70.00	80.00	80.00	80.00
Wholesale Internet bandwidth price at point of interconnection US$/Mbps/month	110.00	110.00	95.00	75.00	75.00	75.00	75.00
Retail price of internet services (residential, base plan US$/GB)	0.60	0.60	0.45	0.30	0.30	0.30	0.30
Available internet bandwidth for the Northern Division (Gbps)	1.5	1.5	3.0	5.0	10.0	10.0	10.0
Regulatory framework supports open access and nondiscriminatory pricing	N	N	Y	Y	Y	Y	Y
Direct project beneficiaries	0.00						80000.00
Female beneficiaries	50.00						50.00

Intermediate Results Indicators

Indicator Name	Baseline	End Target
Length of Fiber Optic Network Built (km)	0.00	95.00

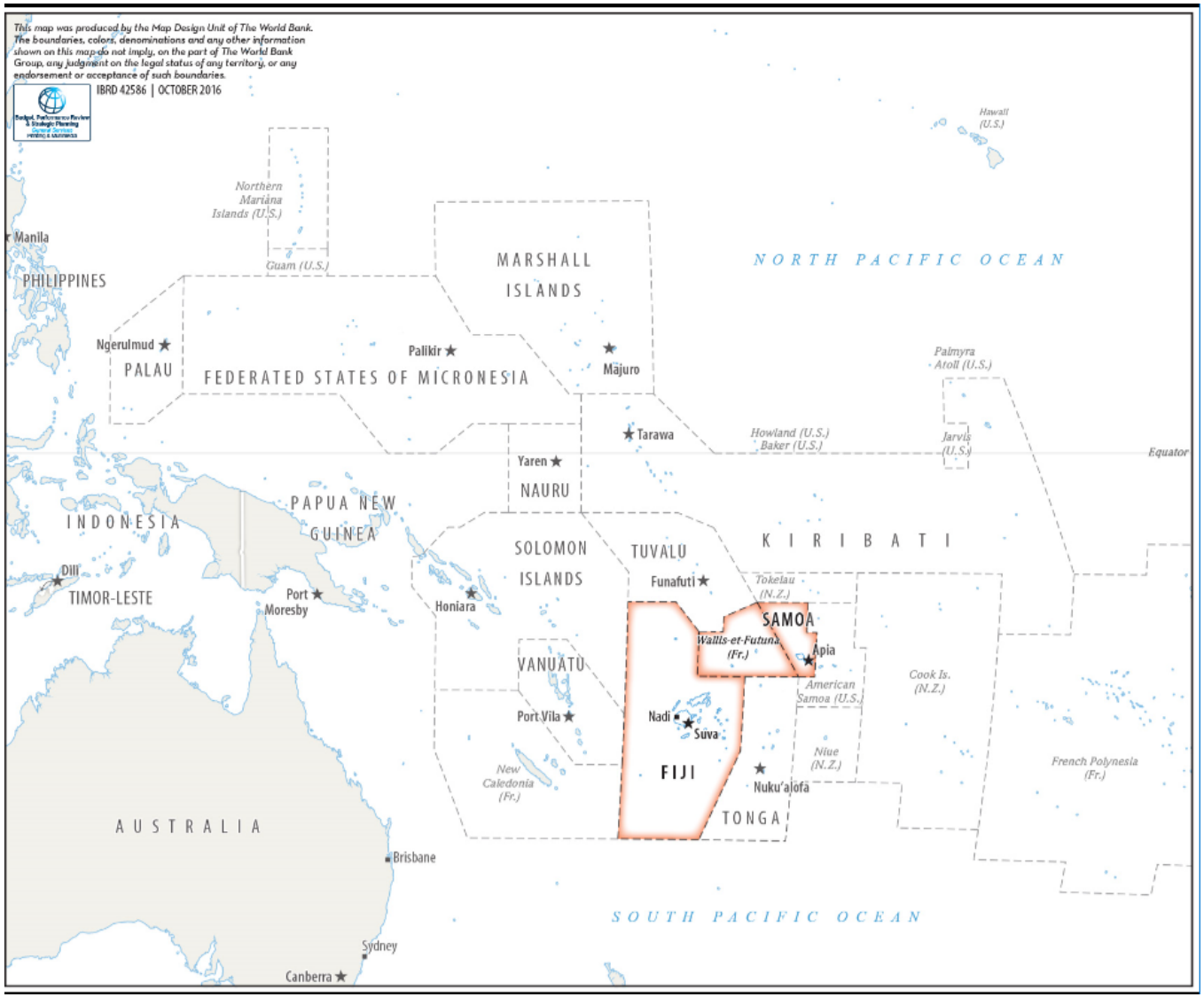
Indicator Name	Baseline	End Target
Regulatory framework provides for open access to domestic optical fibre networks	N	Y
Cost-based interconnection rates for Savusavu cable, under nondiscriminatory pricing regime	N	Y

[i] The cable is cofinanced by IDA under the Pacific Regional Connectivity Program, Phase 3 Samoa Connectivity Project (P128904), the Asian Development Bank (ADB), the Government of Australia, the Government of Samoa and the investors in the Samoa Submarine Cable Company.

ii Visitors (tourists and others) will impact overall broadband demand, but this is not captured here. Assuming about 700,000 annual visitor arrivals 20% of those visitors may buy a prepaid SIM card which may or may not include data. However, such cards are limited in time, usually they last two months so they are not included in penetration rates or demand analysis.

[iii] The assessment is based on several studies undertaken by the World Bank, International Telecommunications Union, Organization for Economic Cooperation and Development, Global System for Mobile Communications Association, and Cisco.

[iv] This impact already takes into account initial investment and operating cost of the cable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Yaren
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