



1. Project Data

Project ID P159297	Project Name FJ: Connectivity Project, Phase 3B	
Country Fiji	Practice Area(Lead) Digital Development	
L/C/TF Number(s) IBRD-86660	Closing Date (Original) 16-Dec-2019	Total Project Cost (USD) 5,612,258.69
Bank Approval Date 30-Nov-2016	Closing Date (Actual) 16-Dec-2021	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	5,950,000.00	0.00
Revised Commitment	5,612,258.69	0.00
Actual	5,612,258.69	0.00

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2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) as stated in the Loan Agreement (Schedule 1, page 5) and in the Project Appraisal Document (PAD, page 18) was "to reduce the cost and increase the availability of internet services in the Northern Division of the Borrower's territory".

b. Were the project objectives/key associated outcome targets revised during implementation?



Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

18-May-2021

c. Will a split evaluation be undertaken?

No

d. Components

There were three original components (PAD pages 20 - 21).

1. Submarine Cable System (appraisal estimate was US\$5.20 million, actual cost was US\$3.60 million). This component included:

1. Design, supply and installation of a submarine optical fiber cable to connect Vanua Levu in Fiji to the main Samoa Submarine Cable Company (SSCC) cable, including a marine survey, cable manufacture and cable deployment.
2. Construction of a cable landing station and ancillary facilities in Savusavu, including acquisition and installation of onshore equipment.
3. 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.
4. Cable (marine segment) management.

2. Regulatory Technical Assistance (appraisal and actual cost was US\$ 0.20million). This component planned to provide technical assistance (TA) to the Fijian Competition and Consumer Commission (FCCC) 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.

3. Project Management and Administration (appraisal and actual cost was US\$ 0.55 million). This component planned to support the Project Management Unit (PMU) in the Ministry of Communications (MOC) in the following areas: technical, procurement, financial management and safeguards.

A **new component was added** in the last year of implementation through the project restructuring in 2021, with the savings realized during implementation.

4. Enhancing Connectivity to the Northern Division (estimated cost US\$1.63 million, actual cost was US\$1.40 million). Activities in this component:

- a. Providing internet services to about 40 schools and health centers. Activities in this component: (i) conducting needs assessment; (ii) supplying and installing electricity (grid/generator/or solar power); (iii) supplying connectivity equipment (outers, antenna systems, modems and satellite kits); (iv) supplying peripherals (computers, webcams, headsets, printers, and equipment to the beneficiaries to access



services at schools or health centers); (v) installing connectivity equipment and peripherals; and (vi) providing community Wi-Fi hotspot solutions; and (vii) purchasing internet bandwidth.

b. Providing eight portable emergency communications solutions in the Northern Division. This included: (i) providing full connectivity and coverage across mountainous terrain and maritime areas in the Division to support emergency response efforts during natural disasters; and (ii) providing robust communications solutions in periods of bad weather by local communities.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project cost. The estimated cost at appraisal was US\$6.36 million. The actual cost was US\$5.61 million (ICR, page 2).

Project financing. The project was financed by an IBRD Loan of US\$5.95 million. The actual amount disbursed was US\$5.61 million.

Recipient contribution. The recipient contribution planned at appraisal was US\$0.41 million. According to the clarification provided subsequently by the project team, the Government provided in kind contribution (such as project related travel expenses) during implementation.

Dates. The project, which was approved on November 30, 2016, became effective on January 12, 2017, and was scheduled to close on December 16, 2019. However, the project closed two years behind schedule on December 16, 2021 (as discussed below).

Other changes. The Bank supported the following changes through a Level 2 restructuring on May 18, 2021.

- the savings achieved due to the optimized cable routing in the amount of US\$1.63 million were reallocated to finance a new component (discussed above). Additional PDO and intermediate results indicators were added in the results framework to reflect the new activity.
- The closing date was extended by two years to December 16, 2021, for completion of the added activities.

Split rating. The original PDO, indicators, and outcome targets remained unchanged throughout the project. However, to reflect the outcomes expected from the addition of a Component 4 in 2021, two new PDO indicators were introduced: “People provided with access to the Internet” including its disaggregation by gender “People (females) provided with access to the Internet” as well as “Remote locations having emergency communications capability”. Since the ambition of the project was unchanged, a split rating will not be used.

3. Relevance of Objectives

Rationale



Country and sector context: Fiji consists of over 330 islands (of which around a third are inhabited) in the South Pacific Ocean. 17% of its total population (865,611) lived in the Northern Division (Vanua Levu and Taveuni) (PAD para 2). The Division has a high incidence of poverty (48%) and was among the areas hit by the Cyclone in February/March 2016.

Regarding broadband connectivity, Fiji has benefitted from two key developments in the years before appraisal: *First*, Fiji has had access to the Southern Cross Cable Network (SCCN) since 2000 connecting Suva on Viti Levu with Australia and the United States. *Second*, Fiji liberalized its telecommunications market in 2008 which resulted in expanded internet coverage and access. The 2008 Telecommunications Act opened the market and established an independent regulator - the Telecommunications Authority of Fiji (TAF). However, opportunities to integrate the digital economy were limited in areas outside Viti Letu. Access and affordability of Information Communication Technology (ICT) services particularly lagged in the Northern Division due to high costs and limited capacity of the communications backbone. A submarine optical fiber cable to Vanua Levu was considered necessary to meet traffic demand and to increase resilience (to lessen the risk that communications will be interrupted by cyclones or other severe weather events).

Government strategy. Successive governments of Fiji had sought to redress the imbalances between the Central/Western and the Northern Division through the "*Look North*" policy, through addressing infrastructure constraints (such as roads, water and sanitation). The development of a new regional submarine optical fiber cable in the region presented an opportunity for Fiji to improve internet connectivity and associated economic and social benefits in the Northern Division.

Alignment with the World Bank Country Strategy. At appraisal, the objectives of the Bank's Country Engagement Note (2015) for Fiji were: (i) promote macroeconomic stability and inclusive private sector-led growth; and (ii) protect vulnerable populations. At completion, the PDO was consistent with the objective 1.3 "Enhancing delivery of productivity-enabling resilient infrastructure" of the Bank's Country Partnership Framework (CPF) for 2021 -2024. The CPF focused on fostering private sector led growth and building resilience.

Alignment with the World Bank Regional Strategy. The project was fully aligned at appraisal with the Bank's 2018 Regional Integration Assistance Strategy (RIAS) and its Update for 2021-2023. The update focused specifically on connectivity and highlighted the need for closing the remaining connectivity gaps, especially in some of the smaller and poorer Pacific Islands. The project was aligned with the connectivity pillar of the Bank's ICT strategy approved in 2012, which aimed to scale up affordable access to broadband internet and supporting Public-Private-Partnership (PPP) arrangements to promote universal internet access.

Previous Bank experience. This project, the first Bank-financed ICT project in Fiji, was the third phase of the Pacific Regional Connectivity Program. This program aimed to reduce the cost and increase the availability of international bandwidth for participating countries in the Pacific through a broadband connection from Samoa to Fiji. The project design was similar to other regional connectivity projects. At the time of appraisal, the Samoa Connectivity Project (P128904) (which was ongoing) aimed to develop a broadband connection from Samoa to Fiji.

The project included ICT infrastructure investments and TA for improving the policy and regulatory framework for private sector participation in the sector. As indicated in the theory of change discussed in section four, the outputs of the ICT infrastructure would reduce the cost and increase the availability of



internet services in Fiji's Northern Division. With the savings realized during implementation, the project scope was expanded to extending internet connectivity to 40 schools and health care facilities and providing eight portable emergency communications solution in the Northern Division. Given the current relevance of the PDO to the Government's and the Bank's regional and country strategy for Fiji, this review rates the PDO relevance as **substantial**.

Rating

Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To increase the availability of internet services in the Northern Division of Fiji.

Rationale

Theory of Change. The results framework is clear. The outputs such as deploying a submarine optical fiber cable connecting Vanua Levu to the main Samoa Submarine Cable Company (SSCC), constructing a landing station and ancillary facilities in Savusavu and acquiring indefeasible right to use the additional optical fiber pair that will be embedded in the SSCC cable for at least 25 years, together with providing internet services to schools and health centers and portable emergency communications solutions, were likely to increase the availability of internet services in the Northern Division in Fiji. The outcomes were likely to be reinforced by the TA activities to the Fiji Commerce Commission (FCC) regarding interconnection, access agreements and non-discriminatory access to the cable infrastructure. The causal links between project activities, outputs and outcomes were logical. The intended outcomes were monitorable.

Outputs.

- The submarine cable system and the cable and its supporting infrastructure were operational at project closure. 95 kilometers (km) of fiber optic network was built and 75 km of submarine broadband cable, including connection points and landing station were installed as targeted.
- The indefeasible Right of Use (IRU) arrangement was secured through a contract between Fiji and Samoa as part of the SSCC.
- The landing station, which was needed at the location where the cable enters the island was built on a publicly owned land, thereby eliminating the need for the Savusavu Landing Party Agreement.
- Agreements on the cable's commercial operation for sharing the costs of managing the cable amongst operators so that the cable operation is self-sustaining, were concluded with a private operator, Fiji Telecommunications International (FINTEL). The interconnection rates were cost-based and under non-discriminatory access arrangements for operators.



- The project provided TA on policy and regulatory matters pertaining to ownership, operation, and management of the cable to the staff of the Ministry of Commerce (MOC). There were no targets for this indicator. The regulatory framework established under this project supported open access.
- Satellite-based internet services for 40 schools and health centers and portable emergency communications solutions that could be used in the Northern Division in case of emergencies were provided as targeted.
- The planned privatization of the ownership of the cable was pending when the project closed. The ICR noted and the project team subsequently clarified, that although the government plans to privatize the cable, it had not taken any decision on the modalities since the project closed.

Outcomes.

The outputs described above were intended to realize the following outcomes: (i) increase access to internet services; and (ii) increase the availability of internet bandwidth for the Northern Division.

- Access to internet services (defined as the number of subscribers per 100 people) across the entire country increased from 55 at the baseline to 138 when the project closed, far exceeding the target of 80.
- According to the data provided by the Telecommunications Authority of Fiji, the availability of internet bandwidth for the Northern Division increased from 1.5 Gpbs at the baseline to 100 Gpbs when the project closed, exceeding the target of 10 Gpbs.
- The number of direct project beneficiaries (defined as the entire population of the Northern Division estimated at 130,000) increased to 130,000, exceeding the target of 80,000. 49% of the beneficiaries were female as compared to the target of 50%.

This review rates the efficacy of PDO 1 **high**, given that most of the outcomes were exceeded.

Rating

High

OBJECTIVE 2

Objective

To reduce the cost of internet services in the Northern Division of Fiji.

Rationale

Theory of change. The theory of change outlined above is also relevant to this objective. Installing the new submarine cable will besides increasing the availability of internet services will potentially reduce their prices, as the new broadband cable will help in providing exponentially faster, more reliable and more cost-effective internet services than the microwave technologies it replaces. These factors can be expected to reduce the cost of internet services in the Northern Division. The causal links between project activities, their outputs and outcomes were clear, and the intended outcomes were monitorable.

Outputs.



The outputs described above were also relevant to this objective.

Outcomes.

The outputs described above were to contribute to the intended outcomes of reducing the cost of internet services in the Northern Division.

- The wholesale internet bandwidth price at point of intersection decreased from US\$110 per Mbps/month at baseline to US\$18/Mpbs/month, exceeding the target of US\$75.
- The retail price of internet services (residential, base plan) decreased from US\$0.6 per GB at baseline to US\$0.04 at project closure, exceeding the target of US\$0.3.

The efficacy with which PDO 2 was achieved is rated **high** by this review, given that expected outcomes were realized or exceeded.

Rating

High

OVERALL EFFICACY

Rationale

Overall, efficacy is rated as high, given that the intended outcomes were either achieved or exceeded.

Overall Efficacy Rating

High

5. Efficiency

An analysis of a possible Vanua Levu optical fiber submarine cable was carried out at appraisal by the telecommunications industry stakeholders in 2015 and by the Bank in 2016. This analysis concluded that cable investment would not be commercially viable (given the commercial cost of capital and repayment terms), due to the relatively low revenue projections for the Northern Division in the short and medium term. This analysis concluded that public-sector low cost and long-term financing was therefore needed for the initial capital investment (PAD, para 45).

The analytical methodology of the market and longer-term demand for bandwidth was based on bandwidth demand analysis/ projections and estimated revenue projections. Under the most optimistic (high case scenario), demand for bandwidth was expected to reach 30 Gbps over the next 10 years and 170 Gbps over the



next 25 years. Neither microwave nor satellite services would be able to deliver this level of capacity. Therefore, the Bank deemed the optical fiber cable as the preferred technology solution (PAD, para 46).

Savings. Savings of US\$1.63 million (representing 27.3% of the project financing) were realized during implementation. These savings were utilized for scaling up activities in the Northern Division.

Economic Analysis. At appraisal the potential impact of connecting Vanua Levu via the SSCC cable was assessed by looking at the following dimensions: estimated impact on Gross Domestic Product (GDP) and social benefits. This activity accounted for 87% of the appraisal estimate and 62% of the actual cost. The PAD (para 42) noted that every 10% increase in broadband penetration could generate around 1.3% GDP growth rate. The discounted economic impact on GDP over the next 25 years (with 10% discount rate) was estimated to be \$112 million and the economic rate of return (EIRR) was in the range of 53-60%.

The ICR (para 37) observed that the targets were likely to be exceeded for two reasons. One, the capital expenditure for the cable was significantly lower than estimated at appraisal due to the savings realized during implementation; and two, the project significantly exceeded its intended penetration rate. Over a baseline 55% (subscribers per 100 people), the project target was 80%. The number of subscribers when the project closed was 138%. This led to an EIRR of 70%. The project was 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 (PAD, para 44).

Administrative and Operational issues during implementation. During the first eighteen months after appraisal, the project delivered the planned investments (the broadband cable) and achieved nearly all the planned outcomes. However, two years from late 2018 to early 2020, implementation slowed considerably and few activities took place. The ICR (para 48) notes that the start of the COVID - 19 pandemic contributed to delays in a final government decision on the best use of the savings realized during implementation. However, all the planned activities (including the added activities) were completed with a two year extension of the closing date.

In sum, the efficiency with which the project was implemented is rated as substantial.

Efficiency Rating

Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	60.00	87.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	70.00	62.00 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.



6. Outcome

Relevance of the PDO to the Government strategy and the current Bank strategy is rated as substantial. Efficacy is rated high given that the outcomes were either realized or exceeded. Efficiency is rated substantial. The project's overall outcome is, therefore, rated as satisfactory.

a. Outcome Rating

Satisfactory

7. Risk to Development Outcome

Technical risk. The risk to development outcome that the submarine cable would become dysfunctional or be no longer usable before the end of its normal life cycle (approximately 2045) is rated as low. The ICR (para 75) observed that the cable has been operational since 2018, demonstrating its sound technical quality. The ICR also notes that the cable has become a critical piece of Fiji's telecommunication infrastructure and that any interference with the functioning of the cable (such as due to a major cyclone or earthquake) - would certainly lead to a prompt and national and international response to repair the critical infrastructure.

Government commitment. There is a moderate risk to development outcome associated with the government commitment to liberalizing the sector. The ICR (para 76) observed that while this risk cannot be predicted, conversations with government confirmed that the Government is committed to liberalizing the sector and adopting competitive market practices.

8. Assessment of Bank Performance

a. Quality-at-Entry

The appraisal document prepared by the Bank for this project was based on the experiences from previous Bank-financed ICT sector projects, other regional connectivity projects (including in the Pacific), and also from operations in the Pacific region. Lessons incorporated at design included: (i) combining infrastructure investments with regulatory reforms for promoting competition in the sector: and (ii) allocating adequate resources for technical, transactional and managerial support, given the limited capacity in the country (PAD, pages 22 - 23).

The implementation arrangements were simple and appropriate. The MOC was in charge of project coordination. The PMU housed in the MOC was responsible for implementation (PAD, para 30).

The project team identified several risks at appraisal such as issues with regional coordination (given that the project implementation entailed significant degree of coordination with other countries and regional



institutions), regulatory and institutional capacity risks. The mitigation measures included TA to FCC. With mitigation measures, the overall project risk was rated as moderate at appraisal (PAD, para 41).

The arrangements made at appraisal for monitoring and evaluation (M&E) and safeguards and fiduciary compliance were appropriate (discussed in sections 9 and 10).

Quality-at-Entry Rating Satisfactory

b. Quality of supervision

Nine implementation Status Results (ISR) reports were filed over the project lifetime of approximately seven years. The supervision team utilized the savings realized during implementation to scale up project activities in the Northern Division. The support provided by the supervision team aided in safeguards and financial management compliance (discussed in section 10). The project team clarified that the continuity of leadership was maintained, with two task team leaders during implementation.

However, there were supervision shortcomings. There were gaps in reporting and filing of documents. The ICR (para 71) observed that though the supervision missions were conducted regularly, some mission documents were difficult to trace. Likewise, as noted in section 10, procurement documentation had some gaps. When it became clear that there would be project savings, a closing date somewhat closer to the completion of the works might have been appropriate and that this could have triggered a more rapid decision on the use of the project savings in the later stages of the project.

In sum, overall Bank performance is rated as moderately satisfactory due to the moderate shortcomings in supervision.

Quality of Supervision Rating Moderately Satisfactory

Overall Bank Performance Rating Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The results framework was clear and the key outcome indicators - access to internet services, wholesale internet bandwidth price of interconnection, the retail price of internet services and the number of direct project beneficiaries (including female beneficiaries) - were clear, straight-forward and easy to measure.

With the exception of the first indicator (access to internet services is not focused on Fiji's Northern Division but reflects access to Internet services across the entire country), the remaining indicators measured



progress in the Northern Division of Fiji. The MOC, the Fiji Commerce Commission (FCC) and the Telecommunications Authority of Fiji (TAF) were responsible for M&E. The telecommunications service providers and the Fiji Bureau of Statistics were responsible for collecting the data for monitoring performance (PAD, para 36).

b. M&E Implementation

The ICR (para 62) noted that the project regularly reported progress of component one and two activities during implementation. The project appropriately added intermediate indicators to monitor progress of the activities that were added with the restructuring of the project in 2021.

c. M&E Utilization

The ICR (para 64) observed that the simple project configuration and the early achievement of its results, did not provide an opportunity to use M&E data to inform further project management and decision making.

In sum overall M&E is rated as significant, given that the indicators overall offered a valid and reliable framework to assess the project results.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The Project was classified as Category B (partial assessment project) under the World Bank safeguard policies. Three safeguard policies were triggered at appraisal: Environmental Assessment (OP/BP 4.01); Natural Habitats (OP/BP 4.04); and Physical Cultural Resources (OP/BP 4.11) (PAD, para 79). The PAD (para 79) observed that the adverse impacts of the project were not irreversible and could be mitigated. An Environmental and Social Impact Assessment (ESIA) and an Environmental and Social Management Plan (ESMP) were prepared, with emphasis on the potential impacts on the reef and foreshore environments and appropriate mitigation measures were incorporated at appraisal.

There was compliance with environmental safeguards (ICR, para 66). The ICR observed that the main concern was the routing of the cable on the seabed and on the island of Vanua Levu at a beach manhole (BMH) and landing station in Savusavu. Smart routing of the cable and close supervision by the Bank's safeguard team ensured avoidance of environmental degradation both in the sea and on land.

b. Fiduciary Compliance



Financial management. The Bank conducted an assessment of the financial management arrangements of the PMU at appraisal. The assessment concluded that the arrangements were adequate, and the financial risk was rated as moderate at appraisal (PAD, para 54).

The financial management of the project was deemed to be satisfactory by the Bank (ICR, para 68). There were no significant issues. Financial audits were carried out with satisfactory results for 2019, 2020 and 2021. The Bank waived the 2018 audit due to the low levels of disbursement. The ICR noted that a final audit was due in April 2023. According to the project team, the final audit was submitted in November 2022.

Procurement. The Bank conducted a procurement assessment at appraisal. The Government had previous experience in implementing Bank-financed projects and the procurement risk was rated as moderate at appraisal (PAD, para 67).

The ICR (para 67) noted that all contracts were executed in a timely fashion. However, there were some issues with the documentation of the procurement activities. The main issue was due to the non-utilization of the Systematic Tracking of Exchanges in Procurement during implementation and procurements were frequently cleared by email. A procurement post review conducted on February 20, 2022, found non-compliances in all the four sampled contracts but none of those non-compliances required legal action by the Bank.

c. Unintended impacts (Positive or Negative)

The ICR (para 47) observed that the successful installation of the cable is contributing to increasingly making Fiji as a hub for Pacific submarine cables.

d. Other

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons



The ICR draws the following main lessons from the experience of implementing this project, with some adaptation of language.

1. Complementing infrastructure investments and regulatory reforms can help in positively impacting the outcomes in ICT projects. Given that important previous lessons from reforms in the telecommunication sector from around the world showed that monopoly control of essential bottleneck infrastructure severely restricts the development of the ICT sector, the design of this project included open-access arrangements that were built into the contractual structure of the cable. This arrangement worked well in this project.

2. The project duration needs to be well-aligned to the project's activities. This project was expected to complete its activities in the first half of the timeline and the second half was to be used to monitor the project outcomes over time. The lesson for this project is that a closing date somewhat closer to the completion of the works might have been more appropriate and that this could have triggered a more rapid decision on the use of the project savings in the later stages of the project.

3. The recipient capacity needs to be carefully assessed at design, especially in countries with little experience in working with World Bank projects. Some of the operational and administrative issues observed in this project, such as procurement and information processing, pointed to the need to pay particular attention to building such capacity.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR is clear, well-written and adheres to the recommended length. The theory of change provided in the text clearly articulates the causal links between the project activities, outputs and the intended outcomes. The analysis and evidence provided in the ICR is adequate for monitoring project performance. The photographs provided in the ICR on page 13 enables the reader to visualize the project's achievements. The ICR however could have provided more details on the continuity of leadership.

a. Quality of ICR Rating

Substantial

