

Article Overview

The Tonga Optical Cable, a 827 km submarine fiber-optic system linking Tonga and Fiji, was constructed with turnkey installation, funded by the Asian Development Bank, the World Bank, and the Tongan government.

Project Overview

The Tonga Cable System connects Nukuʻalofa, Tonga to Suva, Fiji, linking Tonga to international networks via the Southern Cross Cable Network . The system spans 827 kilometers and was initially activated in 2013 . The project was managed by Tonga Cable Limited (TCL), a state-owned entity established in 2011 to oversee development and operations .

Funding and Costs

The total project cost was approximately \$32.8 million, with contributions from:

- o Asian Development Bank (ADB): \$9.7 million
- o World Bank: \$16.5 million
- o Government of Tonga: \$6.6 million

The investment covered civil works (\$4.2 million), submarine cable procurement (\$26.2 million), consulting services (\$1.2 million), and taxes/duties (\$0.8 million). Recurrent costs for operation and maintenance were estimated at \$0.4 million annually .

Construction and Installation

The cable installation was executed under a single turnkey contract, initially valued at \$18.8 million, which later increased to \$21.4 million to accommodate additional cable equipment . The construction involved:

- o Civil works for cable landing stations at Sopo, Nukuʻalofa and Suva, Fiji
- o Submarine cable laying across the 827 km route
- o Installation of supporting infrastructure, including power and signal repeaters
- o Testing and commissioning to ensure operational readiness

The project was completed on time and within budget, achieving savings of \$4.58 million, shared between ADB and the World Bank .

Extensions and Challenges

Tongara Optical Cable Construction

An extension to Haʻapai and Vavaʻu was commissioned in April 2018 . The cable has faced disruptions, including a break in January 2019 and damage from the 2022 Hunga Tonga-Hunga Haʻapai eruption, requiring specialized repair ships and temporary reliance on satellite communications .

Technical and Operational Notes

- o The system uses fiber-optic technology for high-speed data transmission.
- o It provides a reliable international Internet connection for Tonga, addressing previous connectivity limitations.
- o TCL continues to manage operations, maintenance, and upgrades, ensuring sustainability and resilience against natural hazards .

The Tonga Optical Cable represents a strategic infrastructure project that significantly improved Tonga's connectivity, demonstrating effective international collaboration, careful project management, and technical expertise in submarine cable construction.

This is a list of terrestrial fibre optic cable projects in Africa. While submarine communications cables are used to connect countries

Fujikura's Spider Web Ribbon(TM) (SWR(TM)) /Wrapping Tube Cable(TM) (WTC(TM)) offers high fiber count, density, and compactness for

View Eland Cables" range of singlemode and multimode fibre optic cables - loose tube and tight buffered. Technical support, fast

Fiber optic network construction links together digital infrastructure ensuring optical telecommunications

For this purpose submarine cables are installed, which are also used for power and/or communications

The Tonga-Fiji Submarine Cable Project will support the development and operation of a submarine fiber optic communication cable

Get a high-level overview of the fiber construction stages and what to expect. This comprehensive guide

Underground Cable Plant Construction Underground cables are pulled in conduit that is buried underground, usually 1-1.2 meters (3

How engineers will repair the undersea communications cable severed by the recent volcanic eruption

The system was originally one of the longest submarine cables in the world at 13,000 km, with eight segments linking

Tonga Cable System is a submarine fiber-optic cable system connecting Tonga with Fiji, where it connects to other international

They are also used in medical equipment. Let's learn how optical fiber cables work, and

This document provides standards and guidelines for optical fiber cable infrastructure design, deployment, and construction. It

November 2010 The Compensation and Resettlement Framework - Tonga Connectivity is a document prepared by Tonga Cable

construction of all types of terrestrial cable for public telecommunications, including marinized terrestrial cables and the associated

A volcanic eruption in the South Pacific Ocean in January 2022 caused a tsunami and

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