

Tonga: Hunga Tonga–Hunga Ha'apai Volcano [FINAL]

ETC Situation Report #18

Reporting period: 15/01/2022 to 30/04/2023

The ETC in the Pacific was activated in 2016 under the structure of the Pacific Humanitarian Team (PHT) to support telecommunications preparedness in the region. The ETC in the Pacific supported the response to the eruption of the Hunga-Tonga-Hunga-Ha-apai (HTHH) underwater volcano and the subsequent tsunami which hit Tonga from 15 January 2022 to 4 April 2023.

Highlights

- From 15 January 2022 to 4 April 2023, the ETC delivered telecommunications emergency response support to Tonga, following the impact of the Hunga-Tonga-Hunga-Ha'apai underwater volcano eruption and subsequent tsunami. As of 4 April 2023, the ETC has transitioned service delivery and coordination through a handover to the Tongan Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC) and the National Emergency Management Office (NEMO).
- At the onset of the emergency, the WFP-led ETC in the Pacific and partners rapidly supported government responders with nine prepaid satellite phones to enable voice service communication. By February 2022, three portable BGAN satellite terminals for data connectivity were set up by the ETC for government responders in Nuku'alofa and Vava'u. By August 2022, the ETC, in collaboration with the Government of Luxembourg, provided data connectivity services in the Emergency Operations Centre (EOC)s on Ha'apai and Vava'u islands through two sets of emergency.lu VSAT satellite terminals. The services were operational until March 2023 when the ETC, in collaboration with the Government of Luxembourg, decommissioned the equipment.
- Further, the ETC collaborated with the Government of Tonga to install HF radio systems on the islands of 'Eua, Vava'u, and Ha'apai. Users were trained on operating the system. Following the project handover, MEIDECC will further install the system on Niuatoputapu and Niuafu'ou to connect the remote islands to the HF radio control station on the mainland. The system will serve as a critical tool for communications between responders during emergencies and non-emergency.



MEIDECC staff test the HF radio communications system for use by government responders.
Photo: WFP/ETC

Communications in Tonga

On 15 January 2022, both international and domestic communications were severely interrupted by damage sustained to the undersea communications cable. Technical tests indicated that the 827 kilometre-long Tonga cable was cut in two places—37 kilometres offshore from Tonga’s capital, Nuku’alofa, and another cut situated 47 kilometres offshore.

By 22 February 2022, 90 percent of mobile phone voice services, SMS, and internet connectivity were restored in Tongatapu, following repair work on the international section of undersea communications fibre cable. Services of the two Mobile Network Operators (MNOs) in Tonga—Digicel and the Tonga Communications Corporation (TCC)—were also restored in Tongatapu.

However, communication with the outer islands of Tonga remain a challenge as the domestic section of cable—also damaged during the volcanic eruption—has not yet been repaired. Tonga Cable Limited (TCL), which is overseeing the repair work, is sourcing the ideal type of fibre cable for the repairs. Therefore, communications with the outer islands of Tonga are not yet fully restored.

Until the cable is repaired, access to communications for responders and affected communities on the outer islands remains limited. The restoration of the domestic fibre cable was previously expected to be completed by April 2023—this timeline has now been extended to July 2023 by TCL.

Though occasionally unstable, MNO services had been restored on the remote islands of Vava’u and Ha’apai by January 2023 and are operational to date.

ETC Activities

Coordination and information management

The ETC in the Pacific—led by the WFP Multi Country Office (MCO) in Fiji—worked with the Tongan MEIDECC and NEMO for the emergency telecommunications response and capacity building in Tonga throughout the response from January 2022 until April 2023. The response was augmented by the deployment of an ETC standby partner (SBP) from NORCAP to support activities’ coordination from 21 July 2022 until 4 April 2023 to implement ETC activities.

MEIDECC/NEMO signed a Letter of Agreement (LoA) to reflect the standby partnership contribution of equipment and services provided in Tonga by Global ETC partner, the Government of Luxembourg. The equipment was set up in August 2022 on the islands of Ha’apai and Vava’u to provide connectivity services in the Emergency Operations Centres (EOCs) until April 2023.

In March 2023, the ETC participated in a workshop hosted by the International Telecommunication Union (ITU) to support the development of a National Emergency Telecommunications Plan (NETP) for Tonga. The ETC in the Pacific will continue to engage with ITU on the NETP as well as the ICT Capacity Assessment (ICA) for Tonga as part of preparedness initiatives in the region.

The ETC conducted a user satisfaction survey in Q4 2022 which resulted in an overall user satisfaction rate of 93% for ETC services and activities delivered in Tonga since the eruption of the Hunga Tonga–Hunga Ha'apai Volcano in January 2022. Read the full report [here](#).

Telephony

Amid logistical challenges at the onset of the emergency, the ETC deployed a total of nine satellite phones to Tonga, each credited with pre-paid airtime to facilitate critical information sharing and coordination of the response.

The first three satellite phones, dispatched by the WFP MCO in the Pacific, were distributed on 31 January 2022 to key stakeholders in the Tongan government. Two WFP satellite phones were assigned to the Prime Minister and the Deputy Prime Minister on Tongatapu, and one WFP satellite phone was assigned to the MEIDECC National Emergency Recovery Committee (NERC) on Vava'u.

By 24 February 2022, a further six satellite phones and three SIM cards were dispatched by ETC partner, ITU. One ITU satellite phone was assigned to the head of MEIDECC on Tongatapu. Two ITU satellite phones were assigned to NEMO and the Ministry of Health on Vava'u. Three ITU satellite phones were distributed to NEMO, the Ministry of Health, and the Governor's office on Ha'apai Island.

Data connectivity

BGAN terminals

By 10 February 2022, the ETC had deployed a total of three portable BGAN terminals for connectivity. All three BGAN terminals were equipped with data provided by Télécoms Sans Frontières (TSF).

Two portable BGAN satellite terminals were dispatched to Vava'u to provide connectivity in the MEIDECC District Emergency Management Committee (DEMC) facility.

A third BGAN was activated for humanitarian coordination purposes for staff in the UN Resident Coordinator's Office (RCO) in Nuku'alofa.

VSAT terminals

By 9 March 2022, two high-speed VSAT satellite connectivity kits were dispatched and prepositioned in Tonga by ETC partner, the Government of Luxembourg.

Following the site assessment and shipment of add-on modems, the VSATs were installed by the ETC and MEIDECC in the EOCs on Vava'u and Ha'apai island groups on 12 August and 20 August 2022 respectively.

The newly operational and stable high-speed connectivity services supported over 20 MEIDECC staff based in the EOCs to coordinate the disaster response.

A VSAT operational procedures, maintenance, and monitoring system was jointly developed by the ETC, MEIDECC, and NEMO team.

In September 2022, a heavy rainstorm caused electrical outages in the EOCs in Vava'u and Ha'apai, causing a downtime in data connectivity services. The services were restored by 24

October 2022. The ETC supported a technical team from MEIDECC to install Uninterruptable Power Supply (UPS) systems. The UPS systems provided a stable and regulated power supply to mitigate against the impact of similar damage. The UPS system allowed MEIDECC to actively monitor fluctuations in power and receive alerts ahead of time.

Additional data connectivity challenges were faced during multiple seismic activity that occurred between November 2022 and January 2023, resulting in intermittent low speed data connectivity at both EOCs in Vava'u and Ha'apai. An ETC technician conducted a mission to Vava'u island from 6 to 7 February 2023 and resolved the connectivity issue in Ha'apai. Due to the significantly decreased use of the Ha'apai EOC, a decision to decommission the VSAT on Ha'apai island was agreed.

By March 2023, the ETC coordinated with the Government of Luxembourg to decommission both sets of emergency.lu VSAT satellite terminal equipment installed on Ha'apai and Vava'u islands, which had supported government responders with connectivity services in the EOCs since August 2022. The equipment was transported from Vava'u to Nuku'alofa on 3 April for onward shipping to Luxembourg.

Until the domestic communications cable of Tonga is repaired later in 2023, government responders on Ha'apai and Vava'u will rely on back-up data connectivity terminals.

HF radio communications

In February 2022, following a request from NEMO in Tonga, the ETC in the Pacific collaborated with WFP FITTEST to start mobilizing HF radio network equipment for planned installations in six locations in Tonga—Tongatapu, 'Eua, Ha'apai, Vava'u, Niuatoputapu, and Niuafou'ou island groups. The new HF radio network will enable more effective and secure communications between the main island of Tongatapu and the outer islands.

The ETC imported the HF radio equipment into Tonga in September 2022. In early December 2022, the ETC, in collaboration with Tongan government, successfully installed and tested a HF radio control station located in the MEIDECC communications centre in Nuku'alofa on the main island of Tongatapu. To date, the control station is connected to the new HF radio network installed on three remote islands—'Eua, Ha'apai and Vava'u. The remaining two installations will be carried out on Niuatoputapu and Niuafou'ou islands by MEIDECC and NEMO technicians. The new nationwide HF radio network is a critical tool in keeping responders connected in any future emergencies as well as supporting daily operational communications.

The ETC also trained users on the installation and operational procedures of the new HF radio system. Eight staff from MEIDECC, NEMO, and other government agencies were trained in HF radio communications in a week-long session from 23 to 27 January 2023. The training aimed to boost the skills and capacity of national responders to participate in the installation of the HF radio network across the outer islands and to ensure the long-term sustainability of the solution.

VHF radio communications

Tonga has an existing coastal VHF radio network in Tongatapu, 'Eua, Ha'apai, and Vava'u.

Following the volcano and tsunami disaster in January 2022, assessments showed the need for a VHF radio solution to augment the existing coastal VHF network. The VHF radio equipment arrived in Tonga on 4 March 2023. The installation of the equipment is handed over to MEIDECC, who will implement service delivery and coordination. The ETC provided MEIDECC with all training and configuration tools to install the equipment.

Additional radio support

The ETC in the Pacific supported MEIDECC with nine laptops and one tablet device to equip the technical and operational teams with the tools to monitor, manage, and maintain the functional status of both HF and VHF radio networks, as well as serve as tools for improved information management in MEIDECC's department of communications.

Unmanned Aircraft Systems (UAS)

In collaboration with MEIDECC, the ETC facilitated an Unmanned Aircraft Systems (UAS) training programme for five government response personnel in Tonga. The UAS training programme was held from 26 to 30 September 2022. Personnel were drawn from the MEIDECC (two), NEMO (one), Geological Services (one) and the Tonga Civil Aviation (one). All personnel passed the training and were awarded the Remotely Piloted Aircraft Systems (RPAS) licenses issued by the Drone Trust New Zealand. The certified drone pilots will work as part of a capacity building taskforce to conduct post disaster assessments and support other organisations engaging in UAS technology in Tonga.

Additional Information

See the [ETC Dashboard](#).

Funding

The ETC and partners used existing communications equipment in stock and in-kind contributions from partners to support the response in Tonga.

A contribution of US\$217,000 was received from the Government of Japan to support the response. The Government of Japan funds are utilised for the HF training components as well as the VHF capacity enhancement solution procurement, delivery, deployment, and additional operational activities.

All funding for the ETC response in Tonga was facilitated by the WFP MCO in the Pacific.

Challenges

Logistical challenges impacted the timely shipment of equipment to Tonga, including disruptions in global supply chains, issues with import levies, and the availability of flights for cargo.

Meetings

The final Global ETC Joint teleconference on the response in Tonga took place on 15 February 2023 at 08:00 UTC.

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All information related to the ETC response in Tonga can be found on the website:

www.etcluster.org/emergency/tonga-volcanic-eruptionsunami

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