Tsunami Early Warning Dissemination System, Fiji

Date
June 2017 – February 2018

Total cost of project
USD 70,000

Client
Pacific Community (SPC)

Project overview
Fiji lies in a complex tectonic setting along the boundary between the Australian Plate and the Pacific Plate. Southwards from Fiji, the Pacific Plate is subducting beneath the Australian Plate along the Tonga Trench forming the Tonga Ridge island arc system and the Lau Basin back-arc basin. To the southwest of Fiji, the Australian Plate is subducting beneath the Pacific Plate forming the Vanuatu Ridge island arc system and the North Fiji back-arc basin. The primary need was for a nationwide tsunami warning mass notification system design. The design recommendations would take into consideration an all-hazard, all-media approach, for which the (TEWS) design could be scaled to address other hazards. A proposed road map could then be rolled out across Fiji with new TEWS investments for greater utility.

Tonkin + Taylor International (T+TI) devised a robust end-to-end Early Warning System (EWS) taking a “ground up” approach. Minimising the time to author and disseminate warnings was of utmost importance; i.e. no more than 2 minutes for Mineral Resources Department (MRD) to author and approve and 3 minutes for multiple channels to complete the warning dissemination. It was imperative that all populations within the targeted warning area were alerted and able to take appropriate action. The EWS needed to consider all relevant languages, people with disabilities (e.g. illiterate, deaf, blind, and elderly), and functionally illiterate (e.g. tourists ignorant to the alerting languages, context, and procedures). T+TI determined that the necessary and sufficient technologies that would best serve Fiji with minimal resource investments were:

1. Unified Mass Alert System (UMAS)
2. Cell Broadcast
3. Siren Towers
4. Digital Television
5. AM/FM Radio

The implementation strategy took into consideration the incremental cost effectiveness, cost to introduce the new technology with features, cost to scale (i.e. operationalise new sites), and the cost to alert recipients in the following order of priority:

1. CAP-enabled UMAS for a single input multiple output warning
2. National Cell Broadcast Centre for all-hazards
3. Siren towers for isolated islands deprived of mobile cellular coverage
4. Digital Television for households and businesses
5. RDS-enabled AM/FM radios for transient populations

Exceptional thinking together
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Services provided
TEWS design; Disaster Risk Reduction; community, NGO and Government engagement; international cooperation.

Sectors
• Natural hazards
• Coastal engineering

Performance
Fiji now has a robust Tsunami Early Warning System which was tested in 2017 and 2018, and shown to be working effectively.

Key personnel
Dr Bapon Fakruddin, Senior Natural Hazards Specialist, DRR Specialist

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