



**SOPAC Member Countries
National Capacity Assessments:
Tsunami Warning and Mitigation Systems**

Cook Islands



Cook Islands



SOPAC

5.1 Status of Key System Components

The Tsunami Capacity Assessment Workshop results are summarised below in Table 3 in which the status of key components of the Cook Islands tsunami warning and mitigation system are outlined (as at the date the Tsunami Capacity Assessment Workshop was held in June 2008, updates between then and the publication of this report are as marked).

Table 3: Summary of current status of key components of the Cook Islands tsunami warning and mitigation system as at June 2008 (updates as marked)

Rating

Yes - fully realised
Partially realised
No - not realised

Key Component	Rating	Discussion
Authority, Coordination and NGO Role		
Legislation in place for tsunami warnings and response	Partially	<p>DRM Act 2007 (D1). Responsibility for tsunami warnings is not specifically mentioned in this Act or in the NDRM Plan 2006 (D2). This Plan is not finalised and based on pre-2007 legislation.</p> <p>Update May 2009 – The 2007 DRM Act is currently being amended (planned to be passed this calendar year) and DRM Regulations are being developed. The 2006 NDRM Plan is currently being reviewed and will be replaced by the 2009 NDRM Arrangements.</p>
Tsunami coordination committee or effort at a national and local level	Partially	<p>No tsunami coordination committee exists. The NDRM Council exists. The 2006 DRMP outlines Advisory Committees responsible for different aspects of DRM. EMCI roles are to develop, maintain and implement the NDRM Plan and all necessary sub-plans, coordinate across village, district or island levels, coordinate debriefings and support other agencies in preparing and maintaining agency plans.</p> <p>Update May 2009 – Under the new NDRM Arrangements being developed (2009) the NDRM Committee can establish working groups on advice of the Chair, the Director of EMCI.</p> <p>At the local level the DRM Act states that each Island Council must establish a DRM Committee and a Disaster Coordinator and develop a DRM Plan.</p> <p>Update May 2009 – At the local level, under reviewed arrangements, districts and outer islands will have their own DRM Committees and volunteer Disaster Coordinators.</p>

Key Component	Rating	Discussion
Authority, Coordination and NGO Role (Continued)		
Agency responsibilities clearly defined	No	Tsunami warning and mitigation system responsibilities are not well defined in either the legislation or current plans. This includes responsibilities for tsunami warnings and the lead emergency response agency (although general emergency response roles are outlined in the 2006 NDRM Plan).
NGOs have a defined role in tsunami warning dissemination, preparedness and awareness and emergency response	Partially	NGOs have no defined role in tsunami warning dissemination. The Red Cross have approximately 30 people, both paid and volunteers. They provide first aid training and survival courses. This is in collaboration with EMCI. The Red Cross are quick to respond in an event and have satellite phones that can be used. External emergency response assistance is sort through the France and NZ etc.
International and Regional Cooperation		
Country represented at an international and regional level to aid cooperation in tsunami warning and mitigation efforts	Yes	Cook Islands became a member of the IOC in 2006 and are involved in ICG/PTWS and Southwest Pacific Working Group. Involved in Regional Disaster Managers and Meteorological Director network. Linked with a number of international and regional bodies to assist in DRM. Specifically for tsunami the Cook Islands have signed an Memorandum of Understanding (MoU) with Australia relating to tsunami warning systems and climate monitoring networks (D5).
Priorities		
Priorities established for implementation of tsunami warning and mitigation system at a national level	Yes	Through the tsunami capacity assessment workshop the priorities of the group were expressed. All attendees agreed that first priorities are risk/hazard assessment and a tsunami warning action list and plan was required. Priorities listed include: <ul style="list-style-type: none"> • Assess the risk of tsunami for the Cook Islands; • Warning dissemination to the community (currently a large gap between agencies and the community); • Finalisation of the Cook Islands NDRM Plan and hazard sub-plans; • Review the communication methods; • Tsunami SOPs for all agencies who have a role in response to tsunami warning; • Increasing the awareness of tsunami in the community; • Training for Cook Island agencies involved; and • Emergency response plans for tsunami at community level (including schools).
Multi-hazard Approach		
Tsunami warning capabilities are being established within a multi-hazard framework	Yes	Legislation now exists to foster a multi-hazard approach. Cook Islands has completed a DRM NAP (D22, 2008 – 2015) supported by SOPAC, United Nations Development Program (UNDP) and Pacific Islands Forum Secretariat (PIFS) and are in the process of prioritising actions from this plan.

Key Component	Rating	Discussion
Research Expertise		
Active research is being undertaken within the country for seismology and tsunami to strengthen the tsunami warning and mitigation system	No	Not in-country.
Tsunami monitoring infrastructure		
Existence of seismograph stations and integration of real time data from these stations into the tsunami warning process	Partially	One Comprehensive (Nuclear) Test Ban Treaty (CTBT) seismic station exists on Rarotonga (owned by NZ National Radiation Laboratory via a MoU with CTBT). This is operated by CIMS. In principle this data is available to the Cook Islands tsunami warning centre in real time but is not analysed locally and fed into warnings.
Existence of sea level stations and integration of real time data from these stations into the tsunami warning process	Partially	One (Bureau NTC sea level gauge exists (Rarotonga) with real time information (one minute reporting), available via the Global Telecommunications System (GTS) for the Cook Islands and the international community. Cook Islands does get this data from GTS for marine and aviation weather. This data is also available to the Cook Islands via the Bureau's Registered User Website. A USA tidal gauge is also co-located with the Bureau gauge with satellite transmitter for data (National Oceanic and Atmospheric Administration (NOAA) Data Collection Platform (DCP)). This data is not fed into Cook Islands specific tsunami warnings at present. Update April 2009 - A separate Bureau system, powered from solar has also been installed as a back up to the Bureau NTC site and reports on a one minute interval.
Sharing of seismic and sea level data internationally to facilitate improvement of PTWC tsunami messages for the region	Yes	CTBT seismic station is part of international network. Sea level station is available to the international community via the GTS and the Bureau's Registered User Website.

Key Component	Rating	Discussion
Warnings		
Nation receives PTWC messages	Yes	CIMS is designated agency for receiving PTWC messages. They have 12 staff on an 8 person roster. Received by Emergency Managers Weather Information Network (EMWIN), internet (alarmed e-mail, primary means of receiving message) and SMS to EMCI, CIMS and the Police Commissioner.
24/7 operational staff at warning receipt and dissemination location	Yes	CIMS is staffed 24/7. Police are 24/7 and are the 'warning dissemination agency' at present.
Disseminate national tsunami warnings as guided by a Standard Operating Procedure	No	SOPs detail procedure to pass this warning on to Police and Cook Islands Airport Authority (CIAA) Supervisor. CIMS takes PTWC messages and removes unnecessary info and disseminates to islands by using cyclone distribution mechanisms (media by radio and television) without any formal requirement to do so. For cyclone warnings the Ministry of Police has delegated the responsibility for dissemination to CIMS, primarily through the media, after they are received from Fiji and after approval from the Police and the Prime Minister (PM) is gained. Update May 2009 - The National Tsunami Emergency Response Plan and SOPs (to be developed) will outline responsibilities for warning dissemination. Interaction between CIMS and the Police for issuing of tsunami warnings requires clarification.
System redundancies in place for receipt of PTWC messages and dissemination of national warnings	Partially	CIMS is backed up by CIAA (not 24/7 coverage). CIAA receive the PTWC message by Aeronautical Fixed Telecommunications Network (AFTN). CIAA inform CIMS and the Police Operations Centre if they receive a PTWC message.
Redundant 24/7 methods available for dissemination of warnings to community (e.g. public radio, sirens etc.)	No	Available but not utilised for tsunami. Amplitude Modulated (AM) radio on Cook Islands (four stations on Rarotonga, only two operate 24/7) is transmitted via satellite to five islands in northern group and rebroadcast on Frequency Modulated (FM) transmitter on the island. Local island has ability to add to or transmit own message on their own FM transmitter (some islands are not aware of this). Other islands in southern group can hear AM transmitted from Rarotonga. Other smaller communities have short wave radio access. Tsunami siren installed at Puaikura Council on western Rarotonga. Church Bells used also in Puaikura. Bells are usually very effective at spreading a message. Church bells not formally used for tsunami or cyclone. Text SMS at Rarotonga and to Aitutaki (no other islands). See above for radio information. Television on Rarotonga only. Some northern islands have own television network (local content and also international content). Southern Cook Islands has broadband internet.

Key Component	Rating	Discussion
Warnings (Continued)		
Effective warning dissemination to remote communities	No	Further development of procedures required (as above).
Communications coverage of whole country that is effectively utilised for the dissemination of tsunami warning messages	No	Communications to all the islands exists but is not utilised for tsunami (as above).
Issue of marine tsunami warnings and guidance for vessels, harbours and ports	Partially	Telecom Cook Islands rebroadcast high seas forecasts and warnings from Fiji. They can also add cyclone and tsunami warnings for rebroadcast when required. This is done with CIMS assistance in the case of cyclones and tsunami.
Emergency Response and Evacuation		
Disaster preparedness and emergency response system has been reviewed and opportunities for improvement and training identified	Yes	Cook Islands has completed a DRM NAP (D22, 2008 – 2015) supported by SOPAC, UNDP and PIFS. Cook Islands are currently preparing their list of priorities for implementation.
Tsunami emergency response, evacuation and recovery plan exists	No	None as yet but the Cook Islands plan to have one in the near future, based on the same format as the existing cyclone plan (1996/1997). Update May 2009 – The 2006 NDRM Plan is currently being reviewed and will be replaced by the 2009 NDRM Arrangements. EMCI will then be responsible for the development of a National Tsunami Emergency Response Plan and SOPs detailing roles and responsibilities of organisations. Agency/organisation plans are considered vital.
The designated agency for evacuation is identified and have authority by law	Yes	Police are the designated agency for issuing public evacuations for most hazards and they would be the group that issue evacuations for tsunami warnings (after consultation with the PM). Update May 2009 – The DRM Act and arrangements will further confirm these responsibilities.

Key Component	Rating	Discussion
Emergency Response and Evacuation (Continued)		
Plans have been made for safe evacuation of population centres including aspects such as maps, routes and signage	No	This has not been completed for tsunamis. The Police currently make the decisions on how long people need to evacuate an area with a given hazard. No evacuation plans have been developed on a large scale, however three primary schools on Rarotonga have tsunami evacuation plans and routes. These have been tested and are exercised in the schools. No large scale evacuation plans, maps, routes and signage exist. Update May 2009 – Working on covering all schools and working towards developing advanced GIS capabilities in country which will allow mapping of safety centres etc.
Procedures are tested and exercised to improve the response through better planning and preparedness	Partially	EMCI schedule a full scale exercise to be conducted once a year on a national basis. It alternates between a table-top exercise one year and an operational exercise the next. These exercises are usually cyclone or plane crash and are completed in partnership with the CIAA and Police. Update May 2009 – The Cook Islands participated in Exercise Pacific Wave 2006 and 2008.
Land use policies and building codes are in place to mitigate against the tsunami hazard	Partially	Legislation that governs building standards as well as building codes is in place. Parts of these relate specifically to cyclones. These are generally only practised in Rarotonga, not the outer islands. Difficult to enforce. Building permits are generally only seen as a means of securing bank loans.
Tsunami hazard, vulnerability and risk		
Completion of studies to assess the tsunami hazard in the country or Region	Yes	Some research of 1865 event by E. Okal University of North-western USA. GA has completed a preliminary tsunami hazard study for the Southwest Pacific as well as a probabilistic study (both including the Cook Islands). Limited tsunami history record exists for the Cook Islands.
Local risk assessments have been completed for at risk communities	No	No tsunami specific work has been carried out as yet. Translating the studies that exist into community risk profiles has not occurred. However, technical agencies are building GIS capacity and identifying low lying areas and elements at risk.
Adequate data exists and local inundation modelling has been completed for population centres	No	No tsunami inundation modelling has been completed and there is no in-country capacity to undertake this work. Some storm surge modelling has been completed under the Asian Development Bank (ADB) Climate Proofing study). High resolution bathymetry is available for Manahiki Lagoon, Aitutaki and some areas on Rarotonga (Avarua harbour to Avatiu wharf) other areas are covered by hydrographic charts. Topography data exists in 15 metre contour intervals for Rarotonga (other islands in group unclear). Coastal areas on Rarotonga are covered by two metre contours, which would need to be revised in parts. This data is held by Ministry of Works (D14). Very limited high resolution topography data available for identification of low-lying areas and/or inundation modelling (only a small area around Avatiu has high resolution topography as part of ADB Climate Proofing study (Avatiu wharf area).

Key Component	Rating	Discussion
Public and stakeholder awareness and education		
Measures have been taken to ensure the public understand and take action in the event of a tsunami warning being issued	Partially	The Cook Islands produce large cyclone action posters. Plans exist to develop tsunami posters also. These are put up in public places and in schools. Tsunami education programs have included natural tsunami warning signs as well as what to do in the event of a tsunami. More work is required to ensure people are aware of natural tsunami warning signs rather than going down to the waters edge to watch tsunami.
Community level education and preparedness programs exist for tsunami	Partially	EMCI and CIMS commenced a tsunami awareness program in early in 2008 that went for three months. This involved going into a subdistrict in Rarotonga (four villages and three primary schools) and holding community discussions and giving presentations about tsunami (one evening for each community). Concurrently, a media campaign commenced which targeted the whole of Rarotonga. A Cook Islands television advertisement was produced and aired for three months (NZ\$1050/month). The advertisement talked about what a tsunami was, what they looked like and how they behaved as well as what to do and not do in the event of a tsunami. Exercise and traditional knowledge documentaries have also been completed. Funding is a problem.
Training programs for the national media exist for natural hazard and tsunami	No	There is no specific training program for the media. Attempts are being made to provide the media with more graphics to use for hazards. This is already done for weather.