

# A PAPER ENTITLED "IMPACTS AND RESPONSE MEASURES TO CYCLONES IN RAROTONGA, COOK ISLANDS (SOUTHWEST PACIFIC)"

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## RECORD NUMBER OF CYCLONES (OR HURRICANES)

Cyclone Meena, which struck on 6th February 2005, was the first of five cyclones to hit during a four week period. It mainly affected the main town of Avarua, to the north. Cyclone Nancy arrived on 13th February 2005, damaging the east coast. Two days later, Cyclone Olaf wrought havoc in the west on 17th February 2005, affecting most of the bigger resorts. The last two were Cyclone Percy on 2<sup>nd</sup> March, and Cyclone Rae on 5<sup>th</sup> March 2005. Cyclone Percy's worst effects were on the northernmost atoll of Pukapuka. Coping with the frequency of these events was a steep learning curve, necessitating refinements in preparation for the next cyclone. There was no loss of life but debris lay everywhere.

There were widespread warnings from November 2004 onwards of a 50% chance of a cyclone this season, and reminders of the need to put up 2-3 days supplies of food and water, a functioning torch and transistor radio, together with a bag containing essentials in case of evacuation. During the days preceding Cyclone Meena, there were regular radio broadcasts to board up windows, tie down roofs and evacuate all areas within 100 metres of the coast. Frequently-updated Internet sites, such as APCEDI were most useful, until the arrival of the cyclones closed down communications, in order to minimize damage to the satellite communications equipment. The Cook Islands Environment Act requires elevation of structures within 30 metres of the mean high water mark, so as to minimize damage from storm sea surge. The piles of coral rocks surrounding seaside residences was testament to the sense of this regulation.

The experience of the residents of the high volcanic islands in the Southern group differed from that of the low-lying atolls in the Northern Cooks. In the southern group, Rarotonga (the capital) suffered serious damage to about 60 of the estimated 4,000 households. Some businesses did not evacuate, and suffered not only building damage but losses of stock. Atiu, Mangaia and Mauke suffered severe damage to the harbour facilities. It was necessary to warn people against sightseeing. Private contractors circulated with heavy machinery in order to keep the roads clear.

It was more difficult for those in the Outer Islands. Residents were apparently unable to hear radio broadcasts from Rarotonga, although the radios in some motor vehicles were able to pick up a signal. For some time, the only communication with the atoll islands of Nassau and Pukapuka was by ham radio operators, who relayed the weather forecasts and instructions at predetermined times.

## RELIEF & RECOVERY

First priority immediately after the cyclone was to ensure that the airport and roads were clear and functioning. The MP for each constituency coordinated community working groups, assisted by 20 soldiers from Tahiti, only an hour away by air. They were the first outside helpers provided under response measures established by FRANZ, which consists of France, Australia and New Zealand. At home, the

women and children cleared any debris in the yard which could become projectiles in the next cyclone. Repairs to buildings were effected promptly, in anticipation of the next cyclone.

The next outside helpers were skilled volunteers from Cook Islanders resident in New Zealand, funded by NZAID, who worked to restore electricity, phone and water services. Most stayed about two weeks, and some travelled to the Outer Islands to assist there.

Next priority was assistance to the private commercial sector. This was generally accepted because people took the longterm view that their livelihoods should be protected.

This type of speedy practical assistance was a morale-booster for all, relieving over-tired infrastructural staff and demonstrating that help was available from the outside world. Life was almost back to normal for most southern Cook Islanders by mid-March 2005.

Not so for the northern group atoll of Pukapuka, which was seriously affected by Cyclone Percy. . Most of the buildings had lost their roofs, so residents suffered 2-3 days of wet and cramped conditions. Immediate needs included tents for shelter, dry clothing, water and food, and restocking medical supplies for chronic illnesses. Rough seas interfered with shipping and discharge of cargoes, and it took time to clear the debris from the airport.

Pukapuka was inundated by waves, which contaminated wells and planting lands. Without roofs, the water tanks could not capture rainfall and potable water supplies were low. Red Cross officials organised a delivery of fresh water from American Samoa, cutting delivery time by three days. FRANZ later delivered a desalinator to provide drinking water, but it remains a troublesome issue. A security guard has had to be established to avoid misuse and overuse.

Hydroponics had already been introduced through the Ministry of Agriculture food security program, and may provide the means to avoid long-term dependence on imported foods until traditional methods can be used again.

Cyclone Percy severely damaged the 13-year old solar energy program on Pukapuka, as most of the photovoltaic panels were sited on the roofs and consequently blown off. But an estimated 60% of these are salvageable. Diesel generation for electricity requirements is proposed, but given the current price of diesel, it might be preferable to reinstate the solar energy system, backed up by wind generators.

## RECONSTRUCTION

Government priorities have now shifted to cyclone rehabilitation activities. The NZ government has contributed nearly \$1.8 million in immediate response so far. Relief packages are available from the banks for personal and business banking customers who have suffered property damage. This is important as one cannot obtain insurance against cyclone damage.

An Cyclone Emergency Assistance Loan from Asian Development Bank provides government with a flexible resource for the government to finance priority requirements with the objective to reinstate essential public services. The two-year program will also include technical assistance to strengthen disaster and recovery management, including damage assessment.

The damage to infrastructure, government properties, beaches and private housing for Rarotonga alone is estimated at NZ\$7 million, or one-seventh of the annual budget for the Cook Islands government this year (NZ\$101million).

The current estimate by government of the total costs for response, recovery and rebuilding communities, infrastructure, services, supplies and vegetation affected by the cyclones is NZ\$25 million over a 10-year period. The Cook Islands Minister of Finance believes that mere restoration is short-sighted. Rather,

reconstruction in a manner which minimizes future destruction from cyclones would ensure funds will have been spent more effectively.

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## REFERENCES

“Be Prepared : Kia Vai Teateamamao” a DVD about traditional methods of forecasting extreme changes in our weather, and how Cook Islanders prepared for these changes. Produced by the National Environment Service of the Cook Islands and funded by Canadian International Development Agency.

Anecdotal evidence: Mr David Akaruru, Energy Division, Ministry of Works, Rarotonga, Cook Islands.

Anecdotal evidence: Ms Pasha Carruthers, Environment Service, Rarotonga, Cook Islands.

Anecdotal evidence: Mr Arona Ngari of the Cook Islands Meteorological Office

Anecdotal evidence: Mr Tom Wichman, Consultant, Rarotonga, Cook Islands.

Cook Islands News: 19 March 2005; 2 April 2005.