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COOK ISLANDS



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Country Note

THE COOK ISLANDS

February 2015

Disaster Risk Financing and Insurance

PCRAFI 2015



GFDRR



SPC
Secretariat
of the Pacific
Community



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Acronyms and Abbreviations

| | |
|---------------|---|
| ACRRP | Aitutaki Cyclone Recovery and Reconstruction Plan |
| CIIC | Cook Islands Investment Corporation |
| DRFI | Disaster risk financing and insurance |
| EMC | Emergency Management Cook Islands |
| ERTF | Emergency Response Trust Fund |
| FSC | Financial Supervisory Commission |
| GDP | Gross domestic product |
| GFS | Government Finance Statistics |
| HFA | Hyogo Framework for Action |
| IAIS | International Association of Insurance Supervisors |
| IMF | International Monetary Fund |
| ISR | Industrial Special Risks |
| JNAP | Joint National Action Plan |
| LRF | Loan Repayment Fund |
| MDBI | Material Damage/Business Interruption |
| MFEM | Ministry of Finance and Economic Management |
| MOIP | Ministry of Infrastructure and Planning |
| NAP | National Action Plan |
| PCRAFI | Pacific Catastrophe Risk Assessment and Financing Initiative |
| PIC | Pacific Island Country |
| RFA | Regional Framework for Action |
| SMEs | Small and medium enterprises |
| SOPAC | Applied Geoscience and Technology Division of SPC |
| SPC | Secretariat of the Pacific Community |
| SOE | State-owned enterprise |
| TC | Tropical Cyclone |
| UNDP | United Nations Development Programme |
| UNISDR | United Nations International Strategy for Disaster Risk Reduction |

Section

A

Currency: New Zealand dollar (NZ\$)

Average exchange rate: US\$1 = NZ\$1.22

Executive Summary

The Cook Islands is composed of 15 islands, spread across nearly 2 million km² of territorial waters. The geographic spread of the Cook Islands poses logistical problems for any necessary post-disaster relief and response efforts. The 2011 census estimated the resident population of the Cook Islands at approximately 14,974 people, with a further 2,820 temporary residents. Approximately three-quarters of the population lived in Rarotonga. The geographic spread of the population makes initial disaster response to the outer islands expensive and further burdens already-constrained public finances.

The events of 2005 demonstrated that the Cook Islands is extremely vulnerable to the threat of tropical cyclones (TCs): in the two months of February and March 2005, TCs Meena, Nancy, Olaf, Percy, and Rae swept the country. Four of these cyclones reached the maximum category 5 rating and caused severe damage to infrastructure and agriculture (Cyclone Recovery Committee 2006).

The Cook Islands is expected to incur, on average, about NZ\$6 million (US\$4.9 million) per year in losses due to tropical cyclones. In the next 50 years, the Cook Islands has a 50 percent chance of experiencing a per-event loss exceeding NZ\$97 million (US\$79.5 million), and a 10 percent chance of experiencing a per-event loss exceeding NZ\$327 million (US\$268 million) from tropical cyclones. Tropical cyclones are the predominant peril impacting the Cook Islands; Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) catastrophe models indicate negligible losses from earthquake and tsunami.

The Cook Islands has a proactive approach to disaster risk financing and insurance (DRFI), which is supported by the upper echelons of government. In January 2011, the prime minister in his role as chair of the National Disaster Risk Management Council requested that the Ministry of Finance and Economic Management look at ways to become self-reliant in initial disaster response and generate new income streams for investment in a fund specifically for disaster management response and recovery.

The Cook Islands has available a maximum amount of NZ\$5.6 million (US\$4.6 million)—in the form of contingency funds and catastrophe risk insurance—to facilitate disaster response. This amount is equivalent to 4 percent of gross total appropriations and 1.7 percent of gross domestic product in 2011. The probability in any year that disaster losses could exceed these contingency funds is estimated at 4.9 percent. The government has dedicated, yet limited, funds that can be accessed following an event.

A number of options for further improving the Cook Islands' financial protection against disasters are presented for consideration:

- (a) The development of an integrated DRFI strategy;
- (b) Investigation of using contingent credit to access additional liquidity post-disaster;
- (c) Development of an operations manual for post-disaster budget mobilization and execution; and
- (d) The identification of assets to be included in an insurance program for critical public assets.

Introduction

The Cook Islands is composed of 15 islands, spread across nearly 2 million km² of territorial waters. The geographic spread of the Cook Islands poses logistical problems for any necessary post-disaster relief and response efforts. The 2011 census estimated the resident population of the Cook Islands at approximately 14,974 people, with a further 2,820 temporary residents. Approximately three-quarters of the population lived in Rarotonga. The resident population has been in a slow but generally steady decline since 1965 as a result of outward migration. The government views outward migration as a major threat to sustainable development. A steady increase in the number of migrant workers, primarily in the tourism industry, has acted as a counter to out-migration.

Events of early 2005 demonstrated that the Cook Islands is extremely vulnerable to the threat of tropical cyclones (TCs): in the two months of February and March 2005, TCs Meena, Nancy, Olaf, Percy, and Rae swept the country. Four of these cyclones reached the maximum category 5 rating and caused severe damage to infrastructure and agriculture (Cyclone Recovery Committee 2006).

The government of Cook Islands, in conjunction with the Secretariat of the Pacific Community Applied Geoscience Division (SPC-SOPAC), the Secretariat of the Pacific Regional Environment Programme (SPREP), the United Nations

Development Programme (UNDP) Pacific Centre, the United Nations International Strategy for Disaster Risk Reduction (UNISDR), and other partners, has developed several institutional frameworks on disaster risk management and climate change adaptation at the national, subregional, and international level, including the following:

- Hyogo Framework for Action (HFA) 2005–2015
- Pacific Disaster Risk Reduction and Disaster Management Framework for Action (Regional Framework for Action, or RFA) 2005–2015
- National Action Plan (NAP) for Disaster Risk Management, 2009–2015
- Joint National Action Plan (JNAP) for Disaster Risk Management and Climate Change Adaptation, 2011–2015

The JNAP cites the creation of sustainable national financing mechanisms for disaster risk management and climate change adaptation as a priority for action (Government of Cook Islands 2011). This goal has been carried forward from the NAP, and a great deal of progress has been made in the Cook Islands toward establishing sustainable sources of finance for these areas, including establishment of the Emergency Response Trust Fund (ERTF) in 2011.

Disaster risk financing and insurance (DRFI) is a key activity of the HFA Priorities for Action 4 and 5. ¹ The HFA is a result-based plan of action adopted by 168 countries to reduce disaster risk and vulnerability to natural hazards and to increase the resilience of nations and communities to disasters over the period 2005–2015. In the Pacific, the HFA formed the basis for the development of the Pacific Disaster Risk Reduction and Disaster Management Framework for Action (Regional Framework for Action, or RFA).

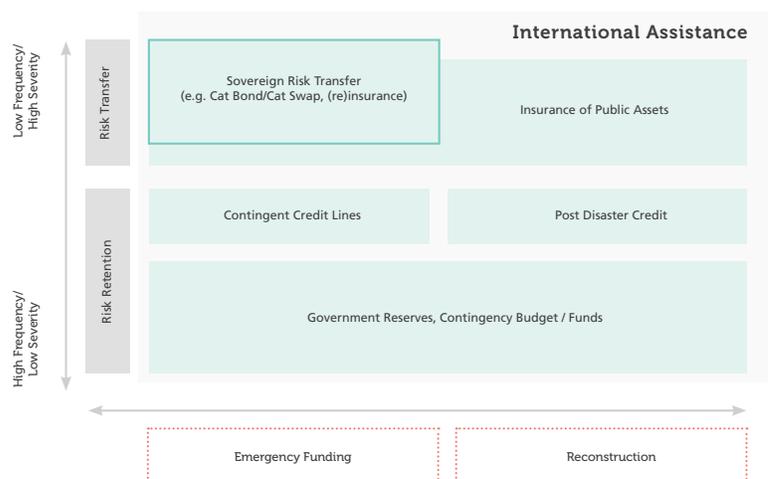
The Regional Framework for Action cites DRFI activities as a key national and regional activity. Theme 4—“Planning for effective preparedness, response and recovery”—has an associated key national activity, “Establish a national disaster fund for response and recovery.” Theme 6 of the RFA—“Reduction of underlying risk factors”—cites the development of “financial risk-sharing mechanisms, particularly insurance, re-insurance and other financial modalities against disasters” as both a key national and regional activity (SOPAC 2005). These regional implementation activities align with the three-tiered disaster risk financing strategy promoted by the World Bank.

The Pacific Disaster Risk Financing and Insurance (DRFI) Program enables countries to increase their financial resilience against natural disasters by improving their capacity to meet post-disaster funding needs without compromising their fiscal balance. This program is one application of the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI). The Pacific DRFI program is built upon a three-tiered approach to disaster risk financing. These layers align to the basic principles of sound public financial management, such as the efficient allocation of resources, access to sufficient resources, and macroeconomic stabilization. The three tiers acknowledge the different financial requirements associated with different levels of risk:

- (a) Self-retention, such as a contingency budget and national reserves, to finance small but recurrent disasters;
- (b) A contingent credit mechanism for less frequent but more severe events; and
- (c) Disaster risk transfer (such as insurance) to cover major natural disasters. See figure 1.

This report aims to build an understanding of the existing DRFI needs and tools in use in the Cook Islands. Specifically, it aims to encourage peer exchange of regional knowledge through dialogue on past experiences, lessons learned, optimal use of these financial tools, and their effect on the execution of post-disaster funds.

Figure 1 — Three-Tiered Disaster Risk Financing Strategy



Source: World Bank 2010.

Section

01

Economic Impact of Natural Disasters

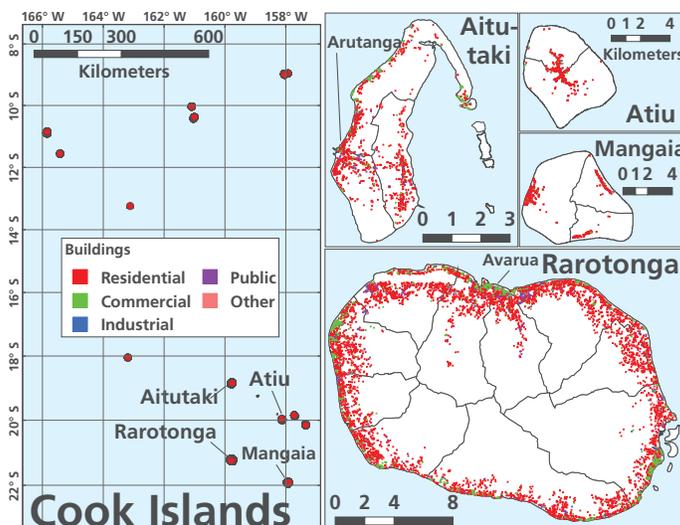
Since 1955 the Cook Islands has experienced a total of 28 natural disasters that have cost in total approximately NZ\$65.4 million (US\$53.6 million) (SPC-SOPAC 2011). Cyclones account for 86 percent of past disasters (24 of 28), with epidemics and earthquakes accounting for 11 percent and 4 percent, respectively (SPC-SOPAC 2011). Of the NZ\$65.4 million (US\$53.6 million) in disaster loss recorded in the Cook Islands, 100 percent is attributable to tropical cyclones. It should be noted that the cost of disasters presented above reflects only 10 cyclone events.

Because of its high exposure to severe tropical cyclones, the Cook Islands is among the 30 countries that experience the highest average annual disaster-related losses in terms of gross domestic product (GDP).

Average annual disaster-related losses in the Cook Islands are estimated at 2 percent of GDP (World Bank 2011).

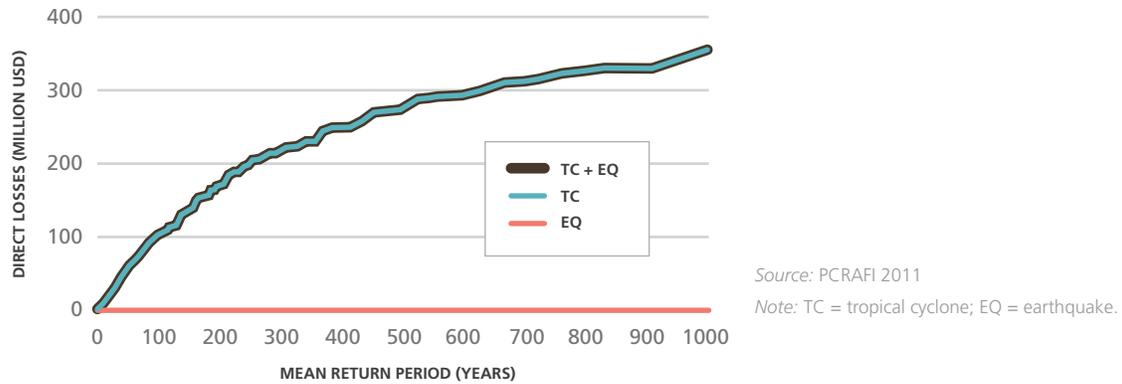
The recovery and reconstruction program following TC Pat (2010) was equivalent to 10 percent of national revenue in 2012 terms, or 3.5 percent of GDP. In 2012, tax revenue was

Figure 2 — Building Locations



Source: PCRAFI 2011.

Figure 3 — Direct Losses by Return Period



approximately NZ\$100 million (US\$81.9 million). This narrow revenue base poses problems for stable public financial management in the Cook Islands, just as it does for many other Pacific Island Countries (PICs).

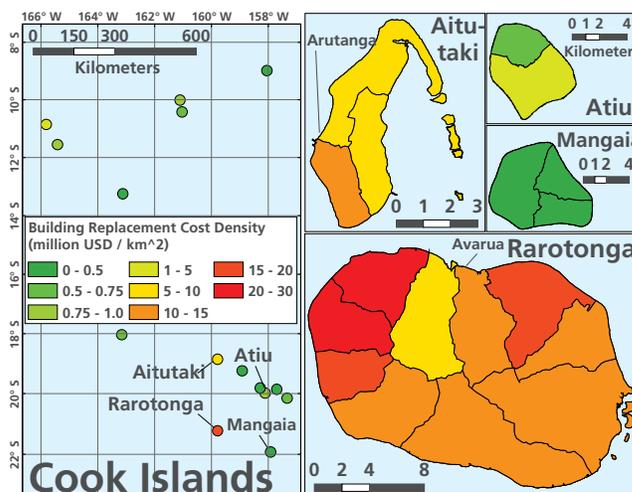
The economy is driven by tourism, pearl farming, fishing, and agriculture, all of which are susceptible to adverse weather conditions.

Emigration poses problems for skilled labor-force availability to support the tourism industry, in particular, and it has led to an increase in the number of migrant workers in the tourism sector. Notwithstanding these issues, the Cook Islands is

among the best-performing Pacific economies, with GDP per capita around NZ\$15,477 (US\$12,686) in 2012 (ADB 2013).

The build-up of assets along the coastline of the capital, Rarotonga, has increased the country’s vulnerability and exposure to damage from tropical cyclones and storm surge (see figure 2). Coastal construction has been driven by the tourism industry, which seeks to offer tourists direct access to the waterfront. The risk of damage from tropical cyclones and storm surge has increased with this development, since many natural barriers that protect the coastline have

Figure 4 — Average Annual Loss by Area



Source: PCRAFI 2011

been removed to create uninterrupted views of the ocean.

The Cook Islands is expected to incur, on average, about NZ\$6 million (US\$4.9 million) of losses per year due to tropical cyclones.

In the next 50 years, the Cook Islands has a 50 percent chance of experiencing a loss exceeding NZ\$97 million (US\$79.5 million) and a 10 percent chance of experiencing a loss exceeding NZ\$327 million (US\$268 million) (see figure 3).

Figure 4 shows the modeled average annual loss by area, with red indicating high levels of average annual losses—in the range of NZ\$0.6 million to NZ\$0.8 million (US\$0.49 million–US\$0.65 million). The full risk profile can be found in annex 4.

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Public Financial Management of Natural Disasters

In 2007, Emergency Management Cook Islands (EMCI) was moved from the supervision of the police to the Office of the Prime Minister (OPM). This move gave EMCI greater political visibility and resources: its annual budget allocation more than doubled, from NZ\$46,000 (US\$37,700) in 2006 to NZ\$102,000 (US\$83,600) in 2007. The budget allocation for the 2013 financial year was NZ\$105,542 (US\$87,500) for operational and capital costs.

The Cook Islands has a proactive approach to DRFI, which is supported by the upper echelons of government. In January 2011, the prime minister in his role as chair of the National Disaster Risk Management Council requested that the Ministry of Finance and Economic Management (MFEM) look at ways to become self-reliant in initial disaster response and generate new income streams for investment in a fund specifically for disaster response and recovery.

The demand for self-reliance followed a delayed response to TC Pat in 2010, which caused widespread devastation on the island of Aitutaki. National agencies wanted to respond

but could not access the funds needed to facilitate action.

Effective post-disaster financial response relies on two fundamental capabilities:

- (a) The ability to rapidly mobilize funds post-disaster; and
- (b) The ability to execute funds in a timely, transparent, and accountable fashion.

This section discusses the Cook Islands' existing procedures for post-disaster budget mobilization and execution and where possible provides examples of their use.

Post-Disaster Budget Mobilization

The MFEM is heavily involved in disaster response, and the financial secretary sits on the Response Executive, a committee that is required to report directly to the cabinet.

The role of the Response Executive is to provide advice and support to ensure effective emergency response and initial relief coordination. It is primarily concerned with systematic acquisition and distribution of resources in accordance with requirements imposed by the national emergency or declared disaster.

Following response to TC Percy in 2005 and TCs Pat and Oli in 2010, the MFEM has taken an ex-ante approach to DRFI. To help finance immediate relief, it has established NZ\$500,000 (US\$409,000) in dedicated domestic reserves

(the ERTF) and has purchased catastrophe risk insurance with a maximum payout of NZ\$3.4 million (US\$2.79 million) under the Pacific Catastrophe Risk Insurance Pilot. While these steps do not negate the need for international assistance, they provide dedicated funds for initial response and ensure that the government maintains control during this crucial period.

Mobilizing ex-post financial measures (such as budget reallocation) and the contingency fund can take between one and two weeks.

A Statement of Disaster will generate access to the ERTF, but use of the contingency fund and reallocation of funds (even within the same ministry) may take one to two weeks to mobilize, given that both require cabinet approval. The cabinet sits every week, so it is unlikely but not impossible that the reallocation of funds could take as long as two weeks to mobilize. Table

Table 1— Sources of Funds Available

| | SHORT TERM (1-3 MONTHS) | MEDIUM TERM (3-9 MONTHS) | LONG TERM (OVER 9 MONTHS) |
|---|----------------------------|-----------------------------|------------------------------|
| <i>Ex-post Financing</i> | | | |
| Donor Assistance (relief) | | | |
| Budget Reallocation | | | |
| Domestic Credit | | | |
| External Credit | | | |
| Capital Budget Realignment | | | |
| Donor Assistance (reconstruction) | | | |
| Tax Increase | | | |
| Flash Appeal | | | |
| <i>Ex-ante Financing</i> | | | |
| Emergency Fund | | | |
| Contingency Budget | | | |
| Contingent Credit | | | |
| Sovereign (parametric) Catastrophe Risk Insurance | | | |
| Traditional Disaster Insurance | | | |

Source: Government of the Cook Islands; World Bank.

Box 1— The Pacific Catastrophe Risk Insurance Pilot

The Pacific Catastrophe Risk Insurance Pilot aims to provide immediate budget support following a major tropical cyclone or earthquake/tsunami. The insurance is designed to cover emergency losses, which are estimated using both a modeled representation of the event based on hazard parameters and a calculation of total modeled physical damage. Unlike a conventional insurance scheme, where a payout would be assessed against actual incurred costs, this scheme pays out on the results of a model. The advantage of this approach is that it results in a much faster payout. The payout would act as a form of budget support and would go some way to cover the costs that would be incurred by the

government in the aftermath of a severe natural disaster that disrupts the provision of government services. Countries can choose between three layers of coverage—low, medium, and high—depending on the frequency of events. The lower layer will cover events with a return period of 1 in 10 years, that is, more frequent but less severe events. The medium layer will cover events with a 1-in-15-year return period, while the higher layer will cover less frequent but more severe events, or those with a return period of 1 in 20 years. However, countries may request that a more customized option be developed for them.

1 provides an indication of when funds can be mobilized and where possible the amount of funding available.

The Cook Islands has a variety of ex-ante and ex-post financial tools, and the timing for mobilizing and executing these funds varies significantly. Building on the World Bank framework for disaster risk financing and insurance (see annex 1), table 1 shows the ex-ante and ex-post financial tools available, specifies those utilized by the Cook Islands, and gives indicative timings. The tools utilized by the Cook Islands are highlighted in blue. Those sections highlighted in gray are for generic instruments that to date have not been used in the Cook Islands.

The sections below discuss in detail the ex-ante and ex-post finance tools available to the Cook Islands, including information on the time it

takes to mobilize these funds and the amount of funds available.

Ex-Ante Practices and Arrangements

The uncertainty surrounding international assistance following a disaster has placed pressure on countries to establish domestic sources of finance for post-disaster relief, such as the establishment of national reserves or the transfer of risk to the international insurance market. The ex-ante practices and arrangements that have been made by the Cook Islands include a contingency budget, the ERTF, and sovereign catastrophe risk insurance.

Contingency budget

Section 70b(i) of the Cook Islands Constitution sets a cap on the contingency budget equivalent to 1.5 percent of the total sums

appropriated (Government of Cook Islands 2004). These sums were the equivalent of NZ\$1.7 million (US\$1.4 million) for the 2012/13 fiscal year. It should be acknowledged, however, that the contingency budget is not exclusively for disaster response, and it is unlikely that the full amount would be available in the event of a disaster.

Emergency Response Trust Fund

Following the prime minister’s request that the country become self-reliant in the provision of initial disaster response, EMCI collaborated with the MFEM and the Ministry of Infrastructure and Planning (MOIP) to establish the Emergency Response Trust Fund. Led by EMCI, these agencies within one year were able to draft a policy for the ERTF that was approved by the cabinet. This policy details the budget execution process, the reporting requirements to ensure that expenditures are transparent and accountable, and the role of the trustees’ management committee.

The purpose of the ERTF is to enable a swift and coordinated response by the Disaster Response Executive once a State of Emergency or State of Disaster is activated. The fund is limited to emergency response, including

the following: deployment of initial damage assessment team(s); reestablishment of essential services; deployment of appropriate ministry staff from Rarotonga to assist or relieve staff on the outer islands; deployment of skilled volunteers, tools, parts, and machinery to assist with clearance and immediate repairs; transport, accommodation, food, and water for volunteers and relief workers; and all costs associated with either air or sea freight (ERTF Policy 2011).

The ERTF was fully operational and had received an appropriation from the annual budget by December 2011, less than 12 months after it was initially discussed.

Following its establishment and receipt of the initial appropriation, the ERTF received additional funds from the government and the Pacific Islands Forum Secretariat to establish a minimum reserve of NZ\$500,000 (approximately US\$409,000). It is expected that the fund will be increased to reach NZ\$1 million (US\$819,000). The country’s experience with the ERTF demonstrates the importance of ex-ante cooperation between government agencies, and suggests how quickly procedures can be developed when several agencies work together to remove barriers to effective post-disaster budget execution.

Sovereign catastrophe risk insurance

Table 2— Selected Insurance Coverage, 2014–2015 Pilot Season

| TROPICAL CYCLONE | |
|--|-----------------------------------|
| Policy period | November 1, 2013–October 31, 2014 |
| Peril selected | Tropical cyclone |
| Layer of coverage selected | 1 in 10 years |
| Coverage limit as a percentage of contingency budget | 200 percent |
| Reporting agencies | Joint Typhoon Warning Center |

Source: World Bank and PCRAFI 2013.

Section

Table 3— Total Operating Expenditure, Fiscal Year 2013/14

| | 2013 NZ\$ MILLION | US\$ MILLION | PERCENTAGE OF TOTAL EXPENDITURE |
|---------------------------------|-------------------|--------------|---------------------------------|
| Payments on behalf of the Crown | 78.4 | 64.2 | 66% |
| Operating | 28.5 | 23.4 | 24% |
| Other ^a | 11.9 | 9.8 | 10% |
| Total budget | 118.8 | 97.4 | 100% |

Source: MFEM 2013; World Bank

Note: a. This comprises airport authority, debt-servicing interest, and depreciation.

The Cook Islands has financed its premium in an innovative way: by collaborating with state-owned enterprises (SOEs). The SOEs find it difficult to access insurance for infrastructure in the insurance marketplace. To overcome this problem, the Cook Islands has arranged to fund half of its premium through SOE contributions and half through a contribution from the national budget; the SOEs will receive 50 percent of any payout. The MFEM and SOEs agreed to finance the premium in this way as a form of self-insurance; it is recommended that they consider increasing their insurance coverage in the future. This is a model that could be considered by other countries participating in the pilot program.

The Cook Islands' participation in the Pacific Catastrophe Risk Insurance Pilot provides access to an injection of liquidity within the first month of a qualifying disaster. This coverage came into effect on November 1, 2014, and was renewed on November 1, 2015. The Cook Islands opted for coverage against tropical cyclones (see table 2) and chose the lower layer of

coverage—that is, they chose coverage for more frequent but less severe events.

In the event that the Cook Islands experiences a tropical cyclone with an estimated emergency loss² that exceeds the attachment point, it will be eligible for a payout equivalent to over double the annual contingency budget. Events that generate an emergency loss beneath the attachment point must be managed by optimizing the use of other financial tools.

Ex-Post Practices and Arrangements

A disaster often exceeds a country's capacity to cope with such an event, and there will generally be a need for ex-post practices and arrangements. An optimal strategy for DRFI relies on a combination of ex-ante and ex-post financial instruments. Ex-post arrangements benefit from being able to establish the extent of the disaster and prioritize the response needs. As a result these arrangements take longer to implement than ex-ante arrangements, but they can often mobilize



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and Trade/
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larger amounts of finance. This section discusses the ex-post practices and arrangements that have been made by the Cook Islands.

Budget reallocation

Under the Ministry of Finance and Economic Management Act 1995/1996, ministries may transfer operational funds between departments with the agreement of the minister responsible and the financial secretary. Any ministry spending over its appropriation as a result of these transfers will be investigated by the Public Expenditure Review Committee, which may direct that funds to be repaid from any subsequent appropriation.

In 2012/13, the Cook Islands adopted the Government Finance Statistics (GFS) format of the International Monetary Fund (IMF) to present Crown expenditures. Table 3 shows

a summary of the total operating expenditure for the financial year 2013/14. It is estimated that approximately NZ\$28.5 million (US\$23.4 million), or 24 percent, can be reallocated from the operating expenditures in between departments within the same ministry with the approval of the minister and the financial secretary.

External credit

In 2012/13 gross debt servicing was approximately NZ\$4.8 million (US\$3.9 million) and included loans from New Zealand and the Asian Development Bank, both major development partners to the Cook Islands. Debt outstanding as of June 30, 2012, was NZ\$93.6 million (US\$76.2 million), an 18 percent reduction from 2010. Annual debt service is equivalent to 4.4 percent of recurrent expenditure (MFEM 2013).

Section

03

The Cook Islands is in the process of establishing a fund for debt repayment, the Loan Repayment Fund (LRF). The LRF would manage the repayment of government debt and of guaranteed debt of SOEs. The government is to deposit funds in the LRF annually to provide for the repayment of all government borrowing and government guaranteed borrowing. Annual contributions to the LRF are to be based on the debt service requirements for the year.

The Cyclone Emergency Assistance Project with the Asian Development Bank provided a NZ\$4.8 million (US\$3.9 million) loan to help with the recovery efforts following the series of cyclones that affected the Cook Islands in 2005. This loan took four months to approve, significantly delaying the necessary relief and recovery work and demonstrating the need to have access to a pre-agreed upon line of contingent credit to minimize disruption to the provision of relief and recovery.

Given the structured management of existing debt, the use of contingent credit could be explored as an alternative to securing cash reserves for disaster response. MFEM expressed an interest in optimizing the use of contingent credit as an alternative to increasing the level of cash held in the ERTF.

Donor funds for relief and reconstruction

While donor funds will always be required following disaster, there is often an element of uncertainty surrounding how much will be provided, what will be provided, and when funds will arrive in country. Consequently, overdependence on international relief as a source of post-disaster financing can delay the provision of initial relief and inhibit ex-ante contingency planning. Development partners, international organizations, local nongovernmental

organizations, businesses, and individuals contribute in the form of cash grants and aid in kind. The provision of aid in kind, while vital, can affect the costs borne by governments for the distribution these goods.

Donor assistance for reconstruction often takes significant amounts of time and requires negotiation between the country and its donors to establish key priorities.

Significant amounts of finance can be assigned, however. For example, New Zealand Aid provided NZ\$6.4 million (US\$5.3 million) to support the Aitutaki Cyclone Recovery and Reconstruction Plan (ACRRP). Reconstruction financing may be conditional and may be aligned to donor rather than national priorities.

Total Response Funds Available

The Cook Islands has a maximum amount of NZ\$5.6 million (US\$4.6 million) available to facilitate disaster response. This amount is equivalent to 4 percent of gross total appropriation and 1.7 percent of GDP in 2011. Figure 8 shows the three-tiered DRFI strategy alongside the sources of funds and the maximum amounts of funding available to the Cook Islands following an event. However, it should be acknowledged that the contingency budget is not exclusively for disaster response, and it is unlikely that NZ\$1.7 million (US\$1.4 million) would be exclusively available for response. Consequently, there is likely to be a gap between the amount available from the contingency and ERTF before a payout may be triggered by breaching the selected attachment point of the catastrophe risk insurance pilot. It is estimated that there is a 4.9 percent chance in any year that disaster losses will exceed these contingency funds.

Post-Disaster Budget Execution

Following TC Pat in 2010, the Cook Islands government reallocated NZ\$2.7million (US\$2.2 million) from its outer islands budget to reestablish essential services and for infrastructure support; the aim was to enable businesses to resume immediate operations so that the locals could assist with recovery efforts. An additional NZ\$6.4 million (US\$5.2 million) was provided by New Zealand Aid to support the ACRRP.

The completion report for the ACRRP suggests that overall financial management could be improved through personnel secondments from MFEM. The report indicated that overall, financial management processes could have been better coordinated between the implementing and

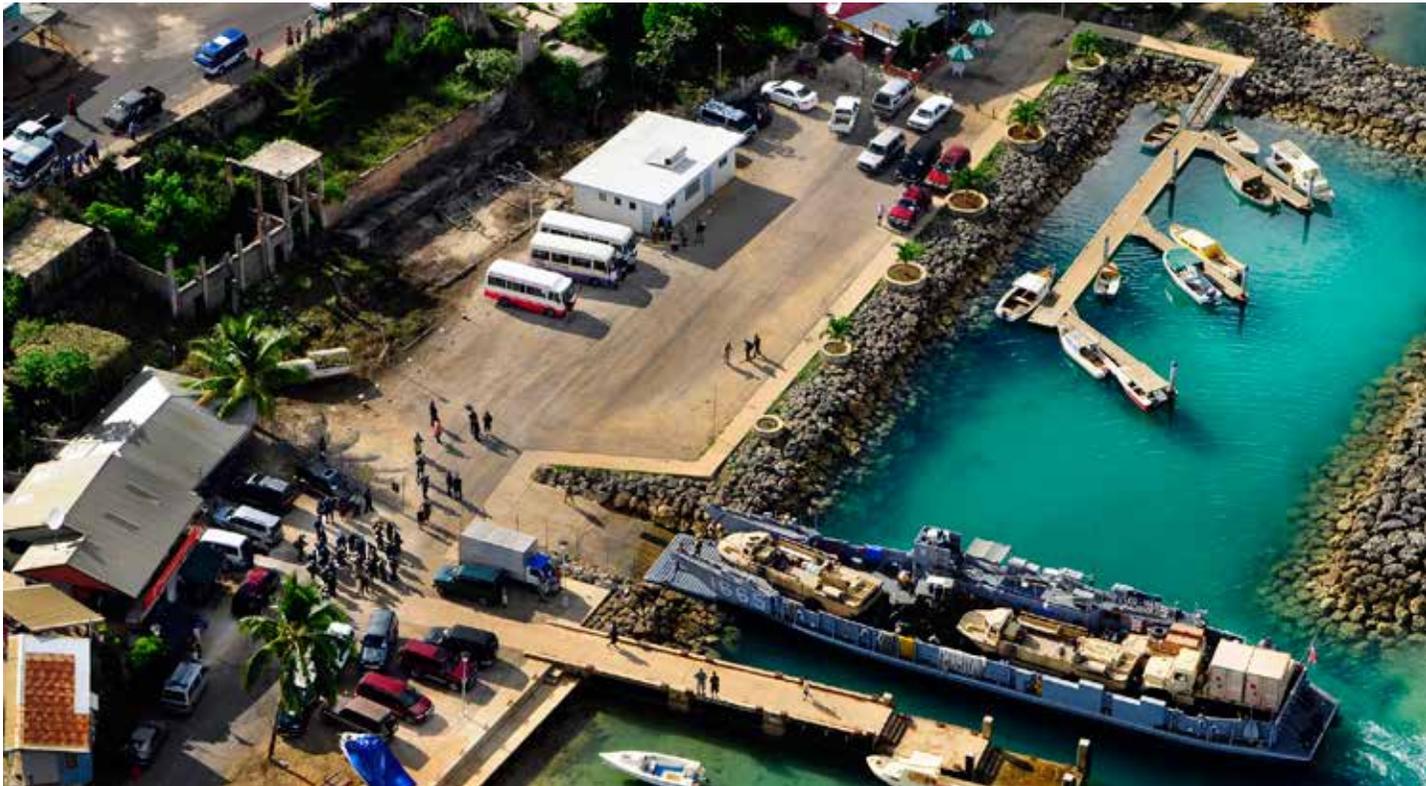
aid-coordinating agencies to ensure timely and accurate processing and reporting of expenditure. The total cost of the ACRRP was NZ\$597,074 (US\$489,000) under the planned budget (ACRRP 2013).

Following a Statement of Disaster or a Statement of Emergency by the prime minister under part 3 or 4, respectively, of the Disaster Risk Management Act (Act No. 33) of 2007, the funds contained within the ERTF can be disbursed for any purchases deemed necessary by the fund's trustee management committee. There are four trustees on the committee: the national controller, director of EMCI, secretary of MOIP, and the financial secretary. Upon agreement within the committee, all funds can be spent if required in order to facilitate response. The fund is to be administered in accordance with Cook Islands Government Financial Policies and

Figure 5 — Amount of Ex-Ante Funds Available for Immediate Response

| Disaster risks | Disaster risk financing instruments | Amount of funds available |
|--|---|--|
| High-risk layer (E.G. Major earthquake, major tropical cyclone) | Disaster risk insurance | Catastrophe risk insurance coverage NZ\$3.4m (US\$2.8m) |
| Medium-risk layer (E.G. Floods, small earthquakes) | Contingent credit | |
| Low-risk layer (E.G. Localized flood, landslides) | Contingency budget, national reserves, annual budget allocation | Contingency budget: NZ\$1.7m (US\$1.4m) ERTF: NZ\$0.5m (US\$0.4m) |

Source: World Bank.



▲
Photo Credit
US Navy / Flickr ©

Procedures, specifically the MFEM Act (Act No. 21 of 1995/96), and the draft Trust Fund Procedures.

Although ERTF procedures and processes are well documented, there appears to be limited awareness of them within MFEM. Given the small number of staff in the department this is not surprising; it is likely that those initially involved have moved to positions elsewhere in government. In small island states it is easy for institutional knowledge be lost upon the departure of a few key individuals.

The Cook Islands has developed policies and procedures well founded on past experiences.

The government has dedicated, yet limited, funds that can be accessed following an event, but not all staff are aware of the procedures involved in accessing them. It would be helpful to carry out

staff training and to develop a dedicated post-disaster budget execution manual to ensure swift post-disaster mobilization and execution when next required.

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Domestic Catastrophe Risk Insurance Market

The insurance market in the Cook Islands is small, with the portfolio for general insurance premium estimated to be NZ\$8.2 million (US\$6.7 million), including aviation. There is one local insurance provider who holds NZ\$4.4 million (US\$3.6 million) of the market, while the remainder is placed offshore. Insurance agents and brokers placing risk offshore are required to report back to the Financial Supervisory Commission (FSC) with details of those offshore placements.

Insurance law and regulation within the Cook Islands is governed by the Insurance Act (2008), the Insurance Code (2010), and Insurance Regulations (2009). Insurance supervision is the responsibility of the FSC.

There is a high uptake of insurance by the private sector, particularly in the tourism industry, where it is estimated that 80 percent of operators purchase property insurance.

Almost all these policies include tropical cyclone coverage, and some of the policies include coverage against sea surge. In addition, many tourism industry operators, irrespective of size, hold business interruption insurance.

The Cook Islands is exposed to the catastrophic peril of cyclones. It is located in the Southern Hemisphere tropical cyclone zone, and though the cyclone season officially runs from November to May, tropical storms may occur outside this period. There have been few earthquakes or tsunami events in the Cook Islands.

▼ **Photo Credit**

Australian Department of Foreign Affairs and Trade/Flickr



Insurance for catastrophe insurance perils of earthquake and cyclone are available in the market and can be included in property insurance products. Cyclone insurance is not

covered under standard property coverage wordings, and is available by extension only.

Property insurance rates for the cyclone peril are 0.45 percent in the Cook Islands, which is higher than the rate in most other Pacific countries. Rates for the earthquake peril are 0.12 percent, around the Pacific average.

The Cook Islands government does have an indemnity property insurance program in place for the majority of its assets.

The program is arranged by Cook Islands Investment Corporation (CIIC). It does not insure buildings under NZ\$50,000 in value, and many infrastructure assets are not insured. Cyclone insurance is not included in this program.

SOEs have independent indemnity property insurance programs in place for the majority of their assets. Cyclone insurance is not included in the majority of these programs. SOEs contributed 50 percent of the premium for the parametric pilot insurance program in 2013.

Please refer to annex 3 for the full market insurance review that was conducted in the Cook Islands.

Options for Consideration

The Cook Islands has implemented several DRFI instruments to increase its financial protection against disasters. Some actions that would strengthen this work further are outlined below for consideration.

Recommendation 1: Develop an overarching disaster risk financing strategy aligned to existing processes. The Cook Islands has taken a proactive ex-ante approach to DRFI. However, the activities in place have been developed in isolation, and while some processes are documented, this information can be difficult to find. An overarching DRFI strategy could be developed, and possibly endorsed by the cabinet, in order to create a single document that would articulate the financing options available and associated policies behind these tools. It would be complemented by an action plan for implementation.

Recommendation 2: Investigate the use of contingent credit to complement existing finance options. The Cook Islands has a strong history of using credit to its best advantage and has developed the LRF to ensure prudent management of debt in the future. Having access to a line of contingent credit that has been agreed upon in advance could prove a useful way to access cash following a disaster and could help minimize disruption to the provision of relief and

recovery. The government has expressed interest in establishing access to credit in advance of an event so that the funds can be received as soon as required without any negotiation.

Recommendation 3: Develop an operations manual detailing the processes required to facilitate swift post-disaster budget mobilization and execution. This document would build on the procedures established for the ERTF and refer to emergency procurement procedures in place. A manual that detailed existing practices in a single document would help staff understand correct procedures by formalizing existing processes—such as the allocation of a member of staff from MFEM to the EMCI—that are now conducted on a goodwill basis. Such processes are at risk of lapse when they rely on a few key individuals in government, as is the case in the Cook Islands.

Recommendation 4: Develop an insurance program for key public assets. This program would identify possible assets to be included, investigate existing insurance coverage provided in country, and develop a table detailing coverage options by provider to help determine which assets to include in the program and to select appropriate coverage. This program could investigate the use of an insurer vehicle if appropriate.

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End Notes

1 Priority for Action 4—“Reduce the Underlying Risk Factors”—has an associated key activity of financial risk-sharing mechanisms, such as insurance, while Priority for Action 5—“Strengthen disaster preparedness for effective response at all levels”—includes the establishment of emergency funds such as contingency budget, national reserves, and annual budgetary allocations. See UNISDR (2005).

2 Emergency loss is estimated as a percentage of direct losses, which include the cost of repairing or replacing damaged assets.

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Section

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About PCRAFI

The Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) is a joint initiative between the Secretariat of the Pacific Community through its Applied Geoscience and Technology Division (SPC-SOPAC), the World Bank, and the Asian Development Bank, with financial support from the government of Japan, the Global Facility for Disaster Reduction and Recovery (GFDRR), and the European Union, and with technical support from Air Worldwide, New Zealand GNS Science, and Geoscience Australia.

The initiative aims to provide the Pacific Island Countries (PICs) with disaster risk modeling and assessment tools for enhanced disaster risk management, and to engage PICs in a dialogue on integrated financial solutions to increase their financial resilience to natural disasters and climate change. The initiative is part of the broader agenda on disaster risk management and climate change adaptation in the Pacific region.

The Pacific Disaster Risk Financing and Insurance (DRFI) Program is one of the many applications of PCRAFI. It is designed to increase the financial resilience of PICs by improving their capacity to meet post-disaster financing needs without compromising their fiscal balance. Through DRFI, technical assistance is available to PICs to build capacity in the public financial management of natural disasters. The technical assistance will build on the underlying principles of the three-tiered

disaster risk financing strategy and focus on three core aspects:

- the development of a public financial management strategy for natural disasters, recognizing the need for ex-ante and ex-post financial tools;
- the post-disaster budget execution process, to ensure that funds can be accessed and disbursed easily post-disaster; and
- the insurance of key public assets, to resource the much larger funding requirements of recovery and reconstruction needs.

The PICs involved in PCRAFI are the Cook Islands, the Federated States of Micronesia, Fiji, Kiribati, the Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Timor-Leste, Tonga, Tuvalu, and Vanuatu.

For further information, please visit <http://pacrisk.sopac.org> or contact PCRAFI@spc.int.

Annex 1

World Bank Framework for Disaster Risk Financing and Insurance

Major disasters increase public spending requirements and reduce revenues, placing further strain on limited national budgets. The immediate and long-term fiscal consequences of a disaster depend on the sources of revenue available to the government versus its public expenditure commitments. Investment in disaster risk financing instruments can help prevent the diversion of funds from key development projects and significantly reduce the time needed to activate an initial response. Financial protection is a core component of any comprehensive disaster risk management strategy, and should be implemented alongside the pillars of risk identification, risk reduction, preparedness, and post-disaster reconstruction (see figure A.1).

The World Bank framework for disaster risk financing and insurance advocates a three-tiered approach for the development of financing arrangements to cover the residual disaster risk that cannot be mitigated. These layers align to the basic principles of sound public financial management, such as the efficient allocation of resources, access to sufficient resources, and macroeconomic stabilization. The first layer, retention, relates to countries' development of an internal layer of protection against natural disasters to prevent the diversion of funds from

development projects (see figure A.2). This layer uses tools such as contingency budgets and national reserves. The aim is to finance small but high-frequency disasters. The second layer is aimed at less frequent but more severe events that are too costly to pre-finance through retention mechanisms. Here, liquidity mechanisms—such as contingent credit, which can mobilize additional funds immediately following an event—become cost-effective.

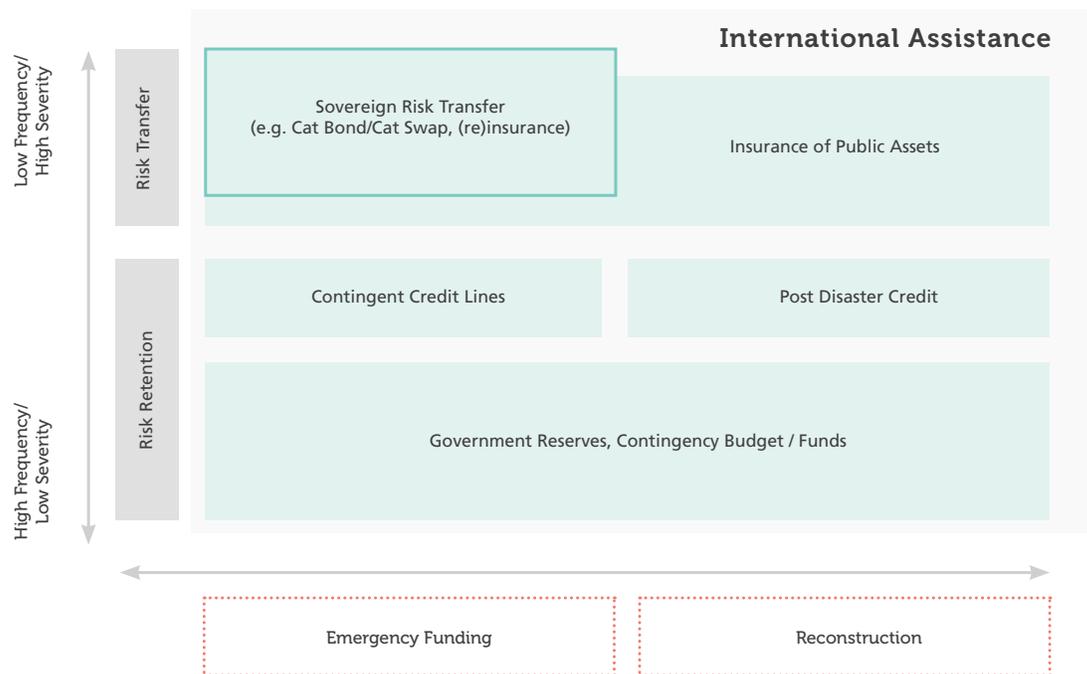
The third layer, disaster risk transfer (such as insurance), focuses on mobilizing large volumes of funds for large but infrequent natural disasters. For events of this type, risk transfer instruments—such as insurance or catastrophe swaps and bonds—become cost-effective in averting a liquidity crunch.

There is a clear time dimension to post-disaster funding needs and the various phases of relief, recovery, and reconstruction. Some financing instruments can be activated rapidly. Others may take longer to activate but can generate substantial funding. The disaster risk financing strategy needs to reflect both time and cost dimensions, ensuring that the volume of funding available at different stages in the response efforts matches actual needs in a cost-efficient manner.

Figure A.1 — Disaster Risk Management Framework



Figure A.2 — Three-Tiered Disaster Risk Financing Strategy



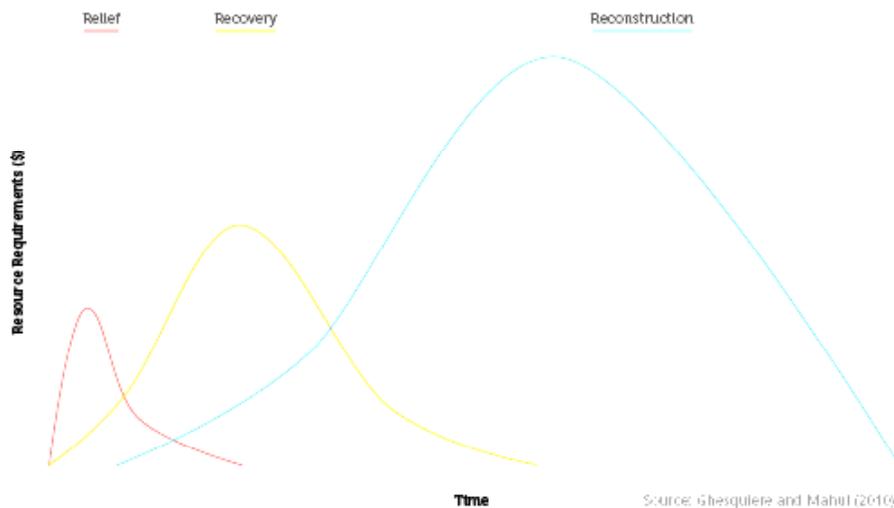
The initial relief phase requires a quick injection of liquidity from day 0 but does not need to be sustained for a long period of time (see figure A.3). Rapid budget mobilization and execution are key for financing initial disaster response, and governments should develop appropriate policies and procedures for procurement and acquittals to facilitate them. Initial relief should be met via annual budget allocations and the establishment of dedicated reserves for disaster response that can be accessed immediately; major catastrophes will exhaust these funds quickly. The residual risk associated with higher-cost events should be transferred to third parties via a mixture of more expensive (re)insurance tools and catastrophe bonds and, for the most extreme events, international assistance.

The recovery phase requires additional funds but not immediately (see figure A.3). Some of

the funds for this phase can therefore be raised via post-disaster budget reallocation and the realignment of national investment priorities. However, the opportunity cost for these options is high, given that they can lead to reduced expenditure on other key investment areas, such as health and education. Consequently, governments may also choose to utilize development partner contingent credit arrangements.

In contrast, the reconstruction phase has much larger financing requirements needed over a much longer period of time (see figure A.3). Given the large funding requirements associated with reconstruction, this phase often requires post-disaster reconstruction loans to complement traditional disaster insurance. Governments may also introduce temporary post-disaster tax increases aligned to budget restructuring.

Figure A.3 — Post-Disaster Phases: Funding Requirements and Duration



If adequate and timely funding arrangements are not in place, the adverse socioeconomic impact of a disaster can be significantly exacerbated, at both the macroeconomic and household levels. An optimal disaster risk financing and insurance strategy aims to combine ex-ante and ex-post financial instruments to secure adequate and timely funding at lower cost for the successive post-disaster phases. The optimal mix of finance instruments will be unique to each country based upon its associated hazard and exposure. Table A.1 lists potential finance instruments that can be used to address disasters. Those that are shaded in blue indicate the generic timelines for mobilizing and executing these funds, though each country may be slightly faster or slower depending on its internal processes. The table can be adapted by countries to reflect these differences according to the financial instruments they have utilized and the time it takes to mobilize these funds. Given the

innovative nature of the work in this area and the number of products under development, this list is not exhaustive.

Ex-post financing vehicles are those that become available in the wake of an event. The most familiar form of ex-post disaster financing is donor assistance for relief. There are two forms this finance can take, cash grants and aid in kind, and both play an important role in response. The provision of aid in kind, while vital, can affect the distribution costs for these goods. While donor funds will always be required, there can often be an element of uncertainty surrounding how much will be provided, what will be provided, and when funds will arrive in country.

Budget reallocation often plays a key role for the continuation of relief and the initial stages of the recovery program. Generally, this process takes time, as the reallocation of funds will need to be

Table A.1— Availability of Financial Instruments Over Time

| | SHORT TERM (1-3 MONTHS) | MEDIUM TERM (3-9 MONTHS) | LONG TERM (OVER 9 MONTHS) |
|---|----------------------------|-----------------------------|------------------------------|
| <i>Ex-post Financing</i> | | | |
| Donor Assistance (relief) | | | |
| Budget Reallocation | | | |
| Domestic Credit | | | |
| External Credit | | | |
| Capital Budget Realignment | | | |
| Donor Assistance (reconstruction) | | | |
| Tax Increase | | | |
| Flash Appeal | | | |
| <i>Ex-ante Financing</i> | | | |
| Emergency Fund | | | |
| Contingency Budget | | | |
| Contingent Credit | | | |
| Sovereign (parametric) Catastrophe Risk Insurance | | | |
| Traditional Disaster Insurance | | | |

Source: World Bank 2013.



agreed upon by the cabinet and across ministries. Budget reallocation can sometimes divert funds from key development projects and hence seriously harm the long-term growth prospects of the country. The same issues are relevant to capital budget realignment, although the timelines for that process are typically significantly longer.

Domestic credit, such as the issuance of government bonds, can be used to raise additional revenue to fund post-disaster expenditures. Again, due to the processes involved, domestic credit will take some time to operationalize and is best suited to financing recovery and reconstruction activities. External credit will likewise take time to be agreed upon with providers and will require clear articulation of the activities it is to finance. Both of these forms of credit will have an impact on the debt-servicing ratio of a country and may not be a viable option for heavily indebted countries.

Donor assistance for reconstruction can be delivered as a form of direct budget support, grant, or a post-disaster reconstruction loan. The form of finance used here will depend on the size of the event, the development status of a country (for example, low-income countries may have access to concessional loans and have more access to grants), and the debt-servicing ratio of a country. Typically, this form of finance is conditional and requires sufficient lead time for aligning the priorities of countries and donors to meet reconstruction and recovery needs.

Tax increases will help redress the increase in public expenditure following a disaster by generating additional revenue. Although higher taxes could be politically unfavorable, they create a sustainable source of finance for reconstruction activities. Conversely, some governments have applied tax incentives to encourage donations to response

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funds from both the private sector and members of the public. This approach can be popular when tax credits are written off on annual tax returns.

Ex-ante financing provides an element of financial certainty during a disaster, because governments have established these sources of finance in advance. These funds can be quickly disbursed following an event so that essential relief work commences immediately. A reserve fund provides a dedicated amount of funding for response and if properly managed can accrue over time to increase the level of funding available. However, the opportunity cost of holding money in a dedicated fund is high, as it diverts funds from the operational budget. Careful analysis should be undertaken to identify the optimal level of reserves that a country should hold and maintain.

Contingent credit is a relatively new instrument, with current forms offering disbursement following an event whose magnitude has been agreed upon in advance. It can be fungible or conditional by design. As with other sources of credit, the amount available will depend on the development status of the country and the debt-servicing ratio. The advantage of contingent credit is that a drawdown can be made within a 24-hour period.

Parametric insurance uses hazard triggers, linking immediate post-disaster insurance payouts to specific hazard events. Unlike traditional insurance settlements that require an assessment of individual losses on the ground, parametric policies do not pay based on actual losses incurred. Instead, the payout disbursements are triggered by specific physical parameters for the disaster (e.g., wind speed and earthquake ground motion). The payouts provide a rapid, yet limited, injection of liquidity that can be a valuable boost to relief funds.

Traditional disaster insurance offers indemnity coverage. Receipt of funds may take longer than with parametric insurance, as a detailed damage assessment is required. However, as payouts are directly linked to the damage experienced, the payout will better match the needs of the insured party.

Public financial management in the Pacific is dictated by the fact that many PICs are classified as Small Island Developing States (SIDS). Typically, countries in this classification have a narrow revenue base, are net importers, and have a consequential reliance on aid as an income stream. These characteristics can limit the options available for post-disaster finance. It is unlikely that a SIDS government could afford to reallocate the capital



budget, and a tax increase could make many items unaffordable and hence be detrimental to citizens' quality of life. Given these constraints on the national budget, alternatives such as contingent credit and risk transfer options should be used to reduce the drain on limited public funds.

PIC governments face critical challenges for financial resilience to natural disasters. Most PICs have restricted options for securing immediate liquidity for swift post-disaster emergency response without compromising their long-term fiscal balance. In addition, PICs are constrained by their size, borrowing capacity, and limited access to international insurance markets. In the absence of easy access to debt and well-functioning insurance markets, a large portion of the economic losses stemming from adverse natural events is borne by governments and households, with support from development partners.

The Pacific has seen several recent cases that show the need for immediate liquidity post-disaster. In the Cook Islands, in the immediate aftermath of TC Pat in 2010, a delay in the receipt of travel funds meant that key government personnel could not immediately commence the initial damage assessment. Following TC Vania in 2010, Vanuatu had to reallocate a significant amount of the national budget. Similarly, Fiji and Samoa had to reallocate budgetary funds in the wake of TC Evan in 2012 and 2013; and the Santa Cruz earthquake in the Solomon Islands in February 2013 drained the annual budget for the National Disaster Management Office and used the majority of the national contingency budget.

Lacking contingency reserves and access to short-term loan funds, PICs have limited post-disaster budget flexibility and rely heavily on post-disaster donor assistance. Studies by SPC (2011 and 2012) that look at the fiscal impact of past disasters in selected PICs demonstrate the financial constraints

in post-disaster budget reallocation and build a case for establishing national reserves. While international assistance will always play a valuable role, overdependence on such assistance as a source of financing carries limitations; international aid can be uncertain, which inhibits contingency planning, and can be slow to materialize. Increasingly, PICs such as the Cook Islands are establishing national reserves for funding initial response.

The World Bank, SPC, and their partners, with grant funding from the government of Japan, have implemented the Pacific Disaster Risk Financing and Insurance Program to help the PICs increase their financial resilience to natural disasters and improve their financial response capacity in the aftermath of natural disasters. This program is part of the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI).

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Annex 2

Glossary

Attachment point. The attachment point (deductible) amount is essentially the excess payable before any payout is made under a policy. That is, anything under this value will be borne by the policy holder.

Catastrophe swap. A catastrophe swap, also known as a cat swap, is a financial tool used to transfer some of the risk that the covered party faces from catastrophes to the international reinsurance or capital markets. In the case of the Pacific Catastrophe Risk Insurance Pilot, tropical cyclone and/or earthquake risk is passed to the financial markets.

Coverage limit. This indicates the maximum payout as defined under the policy.

Emergency losses. Emergency losses in the context of the Pacific Catastrophe Risk Insurance Pilot are calculated by using a percentage of the estimated ground-up losses.

Exhaustion point. The exhaustion point indicates the loss level at which the payout under a policy reaches its maximum point.

Ground-up losses. Ground-up losses in this context refer to estimated total damage to buildings, infrastructure, and cash crops.

Payout. A payout refers to the amount of cash that countries will receive following an eligible event.

Premium. The premium is the cost that an insured party will pay for a given level of coverage: the more that is included in the coverage provided, the higher the premium will be. Premiums are determined by the amount of coverage a country chooses, the event attachment point (deductible) and exhaustion point (limit) of that coverage, and the risk profile of the country.

Risk pool. A risk pool is a group of people, institutions, or countries that collaborate to manage risk financially as a single group.

Annex 3

Insurance Market Review, February 2014

Executive Summary

The insurance market in the Cook Islands is small, with the portfolio for general insurance premium estimated to be NZ\$8.2 million (US\$6.7 million), including aviation. There is one local insurance provider who holds NZ\$4.4 million (US\$3.6 million) of the market, while the remainder is placed offshore. Insurance agents and insurance brokers placing risk offshore are required to report back to the Financial Supervisory Commission (FSC) with details of those offshore placements.

Insurance law and regulation within the Cook Islands is governed by the Insurance Act (2008), the Insurance Code (2010), and Insurance Regulations (2009). Insurance supervision is the responsibility of the FSC.

There is a high uptake of insurance by the private sector, particularly in the tourism industry, where it is estimated that 80 percent of operators purchase property insurance. Almost all these policies include tropical cyclone coverage and some of the policies include sea surge coverage. In addition, many tourism industry operators, irrespective of size, hold business interruption insurance.

The Cook Islands is exposed to the catastrophic peril of cyclones. It is located in the Southern Hemisphere tropical cyclone zone, and though the season officially runs from November to

May, tropical storms may occur outside this period. There have been few earthquakes or tsunami events in the Cook Islands.

Insurance for catastrophe insurance perils of earthquake and cyclone are available in the market and can be included in property insurance products. Cyclone insurance is not covered under standard property coverage wordings, and is available by extension only. In the Cook Islands, property insurance rates for the cyclone peril are higher (0.45 percent) than in most other Pacific countries, and are around the Pacific average for the earthquake peril (0.12 percent).

The Cook Islands government does have an indemnity property insurance program in place for the majority of its assets. The program is arranged by Cook Islands Investment Corporation (CIIC). It does not insure buildings under NZ\$50,000 in value, and many infrastructure assets are not insured. Cyclone insurance is not included in this program.

State-owned enterprises (SOEs) have independent indemnity property insurance programs in place for the majority of their assets. Cyclone insurance is not included in the majority of these programs. SOEs contributed 50 percent of the premium for the parametric pilot insurance program in 2013.

Introduction

Insurance Market

In the Cook Islands, total non-life (general) insurance premium, all classes including aviation, is estimated at NZD\$8.2 million (US\$6.7 million). Estimates based on anecdotal evidence from insurance industry sources suggest that of this amount, NZD\$4.4 million (US\$3.6 million), or 54 percent of the market, is placed with local insurer Tower Insurance Cook Islands Limited (Tower), and the remaining NZD\$3.8 million (US\$3.1 million) is placed with offshore insurers.

The non-life insurance industry within the Cook Islands is limited to Tower as the only locally licensed company. Tower has a small local office with three employees who handle direct domestic insurance, agency business, and insurance for small and medium enterprises (SMEs). The Auckland office of Tower manages insurance for corporate businesses.

There are four licensed insurance agents in the market: Australian and New Zealand Banking Group Limited (Cook Islands), Bank of Cook Islands Limited, Shaun Gallagher Insurance, and Richard ET Fisher Insurance Services.

There is one licensed insurance broker, Willis New Zealand Limited (Willis).

Insurance may be placed offshore by an approved insurance agent or insurance broker licensed under the Insurance Act. Those agents and brokers must report back to the Financial Supervisory Commission (FSC) with details of those offshore placements. The main offshore insurer used in the market is the London market (including Lloyd's), which is the major international insurance market. Another offshore insurer used to provide some additional capacity is the New India Insurance Company Ltd via branches in New Zealand or London.

The non-life premium spending in the Cook Islands, at NZ\$417.2 (US\$342), is higher than comparable spending in other Pacific Island Countries (PICs); see table 1. The higher premium per capita could be driven by a number of factors, including higher market penetration by non-life insurers, higher asset concentration as a consequence of higher gross domestic product (GDP) per capita, issues with the pricing of policies arising from a lack of competition in the market, higher exposure to natural perils, or a mix of these factors. A single local insurer has the potential to restrict local competitiveness for insurance products, particularly for SMEs and personal insurance

Table A.1— Pacific Non-life Insurance Premium per Capita 2012 (US\$)

| MARKET | GDP MILLIONS | POPULATION | GDP PER CAPITA | MARKET PREMIUM | PREMIUM PER CAPITA |
|--------------|--------------|------------|----------------|----------------|--------------------|
| Cook Islands | \$305 | 19,300 | \$15,823 | \$6,600,000 | \$342 |
| Fiji | \$3,908 | 874,700 | \$4,467 | \$97,500,000 | \$111 |
| Samoa | \$683 | 188,900 | \$3,619 | \$17,000,000 | \$90 |
| Tonga | \$471 | 104,900 | \$4,495 | \$4,400,000 | \$42 |
| Vanuatu | \$781 | 247,300 | \$3,182 | \$16,500,000 | \$67 |

Source: World Bank; Cook Islands MFEM.

Table A.2— Pacific Commercial Property Insurance Rate and Deductible Comparison

| MARKET | AVERAGE EARTHQUAKE RATE | GENERAL EARTHQUAKE DEDUCTIBLES | AVERAGE CYCLONE RATE | GENERAL CYCLONE DEDUCTIBLE |
|--------------|-------------------------|---------------------------------|----------------------|---------------------------------|
| Cook Islands | 0.12% | 2% of sum insured | 0.45% | 20% of sum insured |
| Fiji | 0.08% | 10% of sum insured | 0.30% | 20% of loss |
| Samoa | 0.12% | 2% of sum insured or 5% of loss | 0.20% | 2% of sum insured or 5% of loss |
| Tonga | 0.15% | 5% of sum insured | 0.25% | 5% of sum insured |
| Vanuatu | 0.30% | 5% of loss | 0.17% | 20% of loss |

Source: World Bank 2013.

Note: Tables shows average market rate percentage of value based on insurance industry sources.

buyers who do not have the ability to access the offshore insurance market. However, this report does not seek to undertake a full quantitative analysis of the appropriateness and competitiveness of insurance pricing within the Cook Islands, and so cannot comment on the degree to which anticompetitive behavior is influencing pricing.

There are a number of variables in property insurance rating, such as location of premises, construction, occupation, fire protection, frequency of expected losses, and the amount and type of deductible on policies. It is not possible to use average rating data as an exact basis for rating a specific company, individual risk, or country. It is possible, however, to offer a general comparison of the property insurance rates in respective markets (see table 2). The analysis below should be interpreted with due consideration of the fact that corrections for differences in exposure to natural perils, building stock, occupation, and financial terms have not been made.

Local property insurance rates in the Cook Islands are higher than in other PICs. The local earthquake insurance basis rate used in the Cook Islands is 0.12 percent, which is consistent with the earthquake basis rate used in other Pacific countries; the Cook Islands risk profile (PCRAFI

2011) suggests, however, that the country's earthquake risk is extremely low. The local basis rate for cyclone extension was quoted at 0.45 percent, considerably higher than the regional range of 0.17 percent to 0.30 percent. Insurance intermediaries in the Cook Islands market advised that while 0.12 percent and 0.45 percent were the local standard rates for earthquake and cyclone perils, it was possible to negotiate for larger corporate accounts or to place the business with offshore markets. This type of negotiation would be more difficult for SMEs or domestic homeowners, making insurance products less accessible to them due to price. However, the limitations of comparing rates (explained above) should be considered when interpreting this information.

Catastrophe Risk Insurance

The main catastrophe hazard in the Cook Islands is tropical cyclone. Tower advised it was aware of the potential exposure and insured only those properties that had an engineer's certification of compliance with the cyclone (wind load) standard. The Cook Islands' primary accumulation exposure is on the main island of Rarotonga.



According to the World Bank (1999), “Catastrophic events are unique among insurance risks: while traditional insurable risks occur with predictable frequency and relatively low losses, catastrophes occur infrequently but with high losses.” For this reason, it is difficult for insurers to prepare for catastrophe losses and obtain an appropriate premium for these infrequent events. To reduce the volatility that results from catastrophe events, they undertake a mix of methods, including portfolio management, underwriting selection (e.g., declining risks in high exposure areas), and purchase of reinsurance.

While the market is constrained by its small size, some additional capacity is available offshore—though in the past, the Cook Islands’ cyclone exposure has limited the willingness of New Zealand-based insurers to provide such capacity,

as evidenced by the withdrawal of New Zealand Insurance Ltd. in 1985 (Crocombe 1992).

All insurers with catastrophe exposures need to obtain reinsurance to increase their capacity. Reinsurance is even more important when the insurer or the insurance market pool is small, such as in the Pacific. As regulators become increasingly vigilant about requiring insurers to have sufficient capital and a good solvency margin to protect their interests from catastrophic events, they are requiring adequate reinsurance programs, placed with robust reinsurers.

The non-life premium per capita comparison (table 1) demonstrates that the insuring public in the Cook Islands pays more in premiums per head than in other PICs. From the catastrophe peril rates comparison (table 2), it is clear that cyclone rates are higher in the Cook Islands than in other PICs; as a consequence, property premiums, particularly

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for cyclone, will also be higher. The need to obtain an engineer's cyclone certification for buildings before obtaining cyclone insurance presents a challenge to the insuring public. These two factors are likely to restrict the access to cyclone insurance in the Cook Islands, particularly for residential property owners and small businesses.

Catastrophe Reinsurance

Tower advised that its operation in the Cook Islands is included in the group reinsurance program arranged by Tower Insurance Limited.

In 2011, natural catastrophe insured losses in the global reinsurance market were the second-largest ever, at over US\$110 billion (Swiss Re 2012).

What made this year significant for insurers (and reinsurers) in the Pacific was the number of events that occurred in the Asia Pacific region, including earthquakes in New Zealand and Japan, floods in

Australia and Thailand, and a cyclone in Australia. According to the Global Insurance Market Report (IAIS 2012), these Asia Pacific events accounted for 61 percent of the insured losses from natural catastrophes in 2011, compared to a 30-year average of 18 percent. As a consequence, there were adjustments in reinsurance capacity and higher risk premiums. In 2012 the natural disaster losses dropped to US\$77 million (Swiss Re 2013), but this was still the third-highest year for natural catastrophe insured losses since 1970. In the Pacific, Tropical Cyclone Evan caused insured losses of F\$57 million in Fiji (Reserve Bank of Fiji 2012) and estimated insured losses of SAT 3 million in Samoa in December 2012.

In its 2011 annual report, Tower Insurance Limited specifically advised that its event excess (net retention) had increased to NZ\$6.7 million (US\$5.5 million) and that it had protection for

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two catastrophe events within the program for the 2011–2012 period (Tower Limited/Tower Capital Limited 2011). The reinsurance program is not detailed in the 2012 report, but it would be expected to follow the previous arrangements. Tower did express concern in its annual reports at the increase in catastrophe reinsurance premiums in recent years.

Indeed, insurers throughout the Pacific have expressed concern at the recent increase in reinsurance premiums, and more particularly premiums for catastrophe reinsurance. They have limited ability to pass on the full costs of these increases to insured clients due to the small size and economic constraints in those markets.

Market Property and Catastrophe Insurance Products

Tower uses Material Damage/Business Interruption (MDBI) wordings for major commercial, government, and state-owned enterprise (SOE) insurance. The MDBI wording is based on insurance industry standard Industrial Special Risks (ISR) wordings used in many Commonwealth countries. These wordings include cover of specified natural perils, such as earthquake, but do not cover cyclone risk.

Cyclone insurance is available in the Cook Islands by extension only and is limited to those buildings with an engineering cyclone certificate that confirms the building meets the building code for cyclone. The cyclone engineer's certificates are valid for seven years.

A Business Protection Policy is used for SMEs and is taken as either Multi Risks (accidental damage including earthquake and cyclone by extension) or as Specified Risks (fire and extraneous perils). These policies generally follow the perils insured under the MDBI, although coverage may be more restricted.

Regulatory Framework

Insurance Law and Regulation

Insurance law and regulation within the Cook Islands is governed by the Insurance Act (2008), the Insurance Code (2010), and Insurance Regulations (2009). Insurance supervision is the responsibility of the FSC (Cook Islands Financial Supervisory Commission, 2014).

The Insurance Code (2010) details the requirements for registered insurance companies, including capital, solvency, and reinsurance programs. Minimum capital for a local general insurer (category A) is NZD\$200,000 (US\$163,000) and minimum solvency is 5 percent of unearned premium reserve or 10 percent of outstanding claim reserve. There is no requirement for the general insurer to hold a catastrophe reserve. A written reinsurance strategy must be submitted to the FSC each year in November. The FSC advised that it did not undertake a detailed analysis of the submitted reinsurance strategy from Tower because it lacked the necessary expertise and understanding of the reinsurance contracts.

The Cook Islands is not listed as a member of the International Association of Insurance Supervisors (IAIS). Membership in IAIS would allow the Cook Islands to access international best practice information on insurance regulation and supervision.

The Cook Islands has recently enacted the Captive Insurance Act (2013) and Captive Insurance Regulations. As of September 2013, there were no captive insurers registered under the new legislation.

Under existing insurance regulations, Tower is required to submit to the FSC its annual reinsurance management strategy, which would include risk accumulations and catastrophe

Table A.3— Property Insurance for Major Cook Island State-Owned Enterprises

| ENTITY | PROPERTY INSURANCE (MDBI/ISR) | EARTHQUAKE PERIL INCLUDED | CYCLONE PERIL INCLUDED | REPLACEMENT VALUE (LAST VALUATION DATE, WHERE KNOWN) | INFRASTRUCTURE ASSETS |
|--|-------------------------------|---------------------------|------------------------|--|--------------------------------|
| Investment corporation | Yes | Yes | No | Yes [1998] | Bridges or roads—not insured |
| Airports Authority | Yes | Yes | One building only | Yes [2012] | Runway—not insured |
| Te Aponga Uria O Tumu [Electricity provider] | Yes | Yes | No | Yes [2013] | Transmission lines—not insured |
| Bank of Cook Islands | Yes | Yes | Yes | Yes [2013] | Not applicable |
| Ports Authority | Yes | Yes | No | Yes [2013] | Wharf—not insured |

Source: SOE senior employees and insurance industry members.

exposures. The FSC advised that it did not undertake the detailed analysis of the local insurer's reinsurance program and property accumulation that would determine if these are adequate for the probable maximum loss (PML) within the Cook Islands. The FSC also advised they did not check the number of reinstatements available under the catastrophe reinsurance program.

Building Controls and Standards

The legal basis for all construction in the Cook Islands is the Building Controls and Standards Act (1991) and the building code. According to a local project manager and engineer in Rarotonga who undertook cyclone inspections for insurers, most commercial and government buildings constructed after 1991 are in accordance with the code and the wind loads for cyclones. This suggests that the building code is being followed for commercial structures. The project manager also advised that, based on inspections, many houses were not constructed to meet the wind loads in the code. This suggests that the building code is

not always adhered to for residential properties, and that these properties could not obtain cyclone insurance without upgrades.

Insurers have taken proactive steps to ensure compliance with the cyclone building standard by requiring engineering certificates for insured properties, rather than relying on government enforcement of the building code.

Financial Security of Onshore Insurers

Tower Insurance Cook Islands Limited is a wholly owned subsidiary of Tower Insurance Limited, a New Zealand-registered company listed on the New Zealand and Australian stock exchanges. As a subsidiary whose parent company has a security rating of A- (excellent),¹ Tower Cook Islands is not required to provide additional security in accordance with the New Zealand Insurance Prudential Supervision Act (2010).

Financial Security of Known Offshore Insurers

The main offshore insurer used in the market is Lloyd's, which is regulated by the UK Financial Conduct Authority and the Prudential Regulation Authority under the Financial Services and Markets Act (2000). As of August 2013, Lloyd's had confirmed security ratings of A (excellent) from A. M. Best and A+ (strong) from Fitch Ratings and Standard & Poor's.

The New India Insurance Company Limited is used as a coinsurer on some local property insurance programs. It is registered in India and operates branches in New Zealand, Fiji, and London. Its financial strength rating, issued by A. M. Best in January 2013, is A- (excellent).

Insurance of Public Assets

Insurance of government properties is arranged either by Cook Islands Investment Corporation (CIIC) or by the individual public authorities, with many policies excluding the tropical cyclone peril. CIIC manages the government insurance program, although some public authorities—i.e., SOEs—make their own independent arrangements. As a result SOEs have

their assets revalued on average every three years, whereas the CIIC relies on an asset register that uses property valuations from 1998. This practice generates a risk of underinsurance. Insurance professionals recommend that individual buildings should be revalued at best every three years and certainly no longer than five years apart. CIIC should consider engaging an independent valuer to provide updated valuations as soon as possible. CIIC has made a decision not to insure any property under NZ\$50,000 in value.

The provision of cyclone insurance requires an engineer's certificate to verify that properties comply with the building code, and it is often expensive. As a result the majority of government and SOE assets are not insured for the main catastrophic peril in the Cook Islands.

The insurance broker used for SOE programs is Willis New Zealand; the program uses various insurers, including Tower. Findings on existing property insurance arrangements for SOEs are summarized in table 3.

Government infrastructure assets are not insured in the Cook Islands, due either to property exclusions under existing market insurance policy wordings or to high premium cost. Uninsured property includes wharves,

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bridges, roads, power transmission and distribution lines, and airport runways (see table 3).

With the passage of the Captive Insurance Act (2013), the Cook Islands government can consider setting up of a captive insurer,

as a subsidiary of CIIC, to act as an alternative risk financing facility for property assets. A feasibility study would be necessary to explore this option, taking into account the volume of risk to transfer and the consequent economics, capital, captive management, claims management, and reinsurance. This option has some advantages for the government and SOEs, such as the possibility of wider coverage, the inclusion of infrastructure assets in a program, and premium savings from risk pooling. The captive would need to reinsure the total accumulated catastrophe exposures once a pre-agreed upon level was reached that exceeded its capacity.

The Cook Islands government has been included in the Pacific Catastrophe Risk Insurance Pilot since 2013.

The government should include this program in any disaster risk financing and insurance strategy that is developed, and should also provide input on ways to expand the program.

There is no up-to-date government central asset register for public assets. While the CIIC has an asset register, it uses 1998 data. Some government departments, public authorities, and state-owned enterprises hold asset registers, but these are not looked at collectively. The result is a piecemeal approach to insuring assets. Should a centralized asset register be developed, there may be potential for premium reduction.

The government keeps no centralized register of insurance arrangements for public assets that have been made by individual government departments, public authorities, or SOEs. This may

in part be linked to the uncoordinated approach toward an asset register.

Past Catastrophe Events

The major reported damaging cyclones within the Cook Islands have been Cyclone Sally (1987) and Cyclone Pat (2011).

Damage from Cyclone Sally was estimated at NZ\$30 million (US\$24.6 million) in 1987 prices (Fiji Meteorological Service 1987) across all islands in the group, but the cyclone was reported to be at its strongest when passing by Rarotonga (the most populated island in the group and the government and commercial center). The main non-life insurer at the time, Cook Islands Insurance Limited, is reported as incurring claims that exceeded NZ\$4 million (US\$3.3 million) in value on a premium base of NZ\$400,000 (US\$328,000) (Crocombe 1992). This would suggest an insurance penetration of around 13 percent at that time.

Damage from Cyclone Pat, which impacted Aitutaki, was estimated at NZ\$9.5 million (US\$7.8 million); there was damage to 436 homes, and 68 homes were totally destroyed. Tower advised that there were minimal insured losses from Cyclone Pat because most damaged properties on Aitutaki were not insured for cyclone. This suggests a current low property insurance penetration on Aitutaki.

There have been no reported earthquakes or tsunami events in the Cook Islands.

Options for Consideration

Recommendation 1: Develop an insurance program for key public assets to be included in a broader disaster risk financing and insurance strategy. This approach would include establishment of a centralized asset register with up-to-date valuations in conjunction with the Cook Islands Investment Corporation, assessment of probable losses, and a review of existing indemnity insurance to ensure that the major perils of cyclone and sea surge are included, and that the government and SOEs are getting the best available terms and conditions for the premiums paid.

Recommendation 2: Develop a program of technical development for the Financial Supervisory Commission and consider applying for membership in the International Association of Insurance Supervisors. This program should focus on building the capacity of those responsible for risk-based supervision. Membership in IAIS would allow the Cook Islands to access international best practice information on regulation and supervision of insurance companies.

Endnotes

¹ A. M. Best rating, July 26, 2013.

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| | |
|-----------------------------|--|
| Agent | Someone who acts for the insurance company in arranging insurance contracts. There are two main types of agents: tied agents, who act for one insurer only, and general agents, who act for multiple insurance companies. |
| Broker | Someone who acts as an agent for the insured in arranging an insurance or reinsurance program with a provider of capacity. |
| Capacity | The ability of an insurance company to provide insurance protection to clients, which is limited by its own financial strength and the reinsurance protection it has in place. |
| Captive insurer | An insurance company wholly owned by a company or entity that insures the risks of the parent entity and subsidiaries. |
| Indemnity insurance | Insurance that reimburses individuals or entities for loss or damage to a financial position as close as possible to the position they were in prior to the event, in the context of the financial terms of the coverage [such as deductible/excess and limit]. |
| Intermediaries | The general term given to insurance agents and brokers. |
| Net retention | The amount that an insurance company retains on a reinsurance contract and in particular an excess of loss of contract. |
| Parametric insurance | A type of insurance that is triggered by the occurrence of a specific measured hazard event, such as a certain magnitude of earthquake or category of cyclone. |
| Probable maximum loss [PML] | The maximum value of a claim from a large or catastrophe event. May also be called MPL. |
| Property insurance | The insurance of physical assets such as buildings, plant and equipment, stock, and machinery. The products used for this insurance are variously named as fire and perils, commercial or business package, industrial special risks, or material damage insurance. |
| Reinsurance | A risk transfer method used by insurance companies to transfer part of a single large risk or an accumulation of similar risks and so increase their capacity. Reinsurance helps to smooth the extreme results and effects of specific perils [such as catastrophe events] and therefore to reduce the volatility of an insurance portfolio. |
| Solvency margin | The extent by which an insurer's assets exceed its liabilities. Minimum statutory solvency requirements are normally included in insurance acts or regulations. |

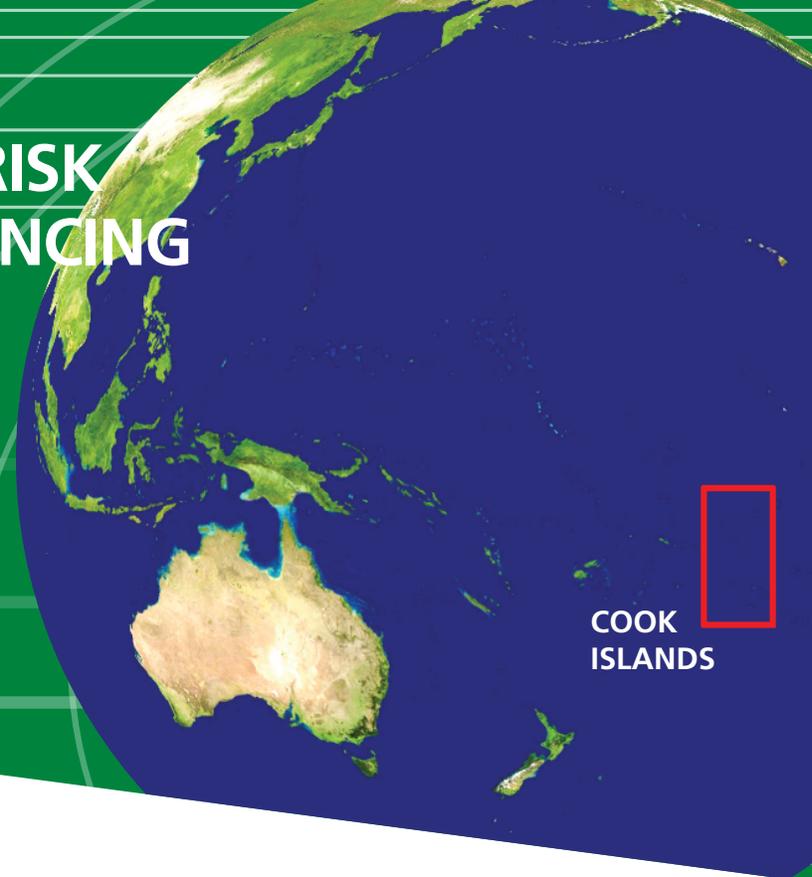
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Annex 4

Country Risk Profile

PACIFIC CATASTROPHE RISK ASSESSMENT AND FINANCING INITIATIVE



COOK
ISLANDS

SEPTEMBER 2011

COUNTRY RISK PROFILE: COOK ISLANDS

The Cook Islands are expected to incur, on average, about 5 million USD per year in losses due to earthquakes and tropical cyclones. In the next 50 years, the Cook Islands have a 50% chance of experiencing a loss exceeding 75 million USD and casualties larger than 130 people, and a 10% chance of experiencing a loss exceeding 270 million USD and casualties larger than 200 people.

POPULATION, BUILDINGS, INFRASTRUCTURE AND CROPS EXPOSED TO NATURAL PERILS

An extensive study has been conducted to assemble a comprehensive inventory of population and properties at risk. Properties include residential, commercial, public and industrial buildings; infrastructure assets such as major ports, airports, power plants, bridges, and roads; and major crops, such as coconut, palm oil, taro and many others.

| TABLE 1: Summary of Exposure in Cook Islands (2010) | |
|--|--------|
| General Information: | |
| Total Population: | 19,800 |
| GDP Per Capita (USD): | 12,330 |
| Total GDP (million USD): | 244.1 |
| Asset Counts: | |
| Residential Buildings: | 8,357 |
| Public Buildings: | 503 |
| Commercial, Industrial, and Other Buildings: | 1,742 |
| All Buildings: | 10,602 |
| Hectares of Major Crops: | 6,390 |
| Cost of Replacing Assets (million USD): | |
| Buildings: | 1,296 |
| Infrastructure: | 118 |
| Crops: | 8 |
| Total: | 1,422 |
| Government Revenue and Expenditure: | |
| Total Government Revenue | |
| (Million USD): | 86.9 |
| (% GDP): | 35.6% |
| Total Government Expenditure | |
| (Million USD): | 77.9 |
| (% GDP): | 31.9% |

¹ Data assembled from various references including WB, ADB, IMF and The Secretariat of the Pacific Community (SPC).

² The projected 2010 population was trended from the 2006 census using estimated growth rates provided by SPC.

Table 1 summarizes population and the inventory of buildings, infrastructure assets, and major crops (or "exposure") at risk as well as key economic values for the Cook Islands. It is estimated that the **replacement value of all the assets in the Cook Islands is 1.4 billion USD** of which about 91% represents buildings and 8% represents infrastructure.

Figures 1 and 2 illustrate the building exposure location and replacement cost distribution, respectively. The footprints of almost 10,000 of the approximately 11,000 buildings shown in Figure 1 were digitized from high-resolution satellite imagery. More than 5,000 of such buildings, almost all in the main

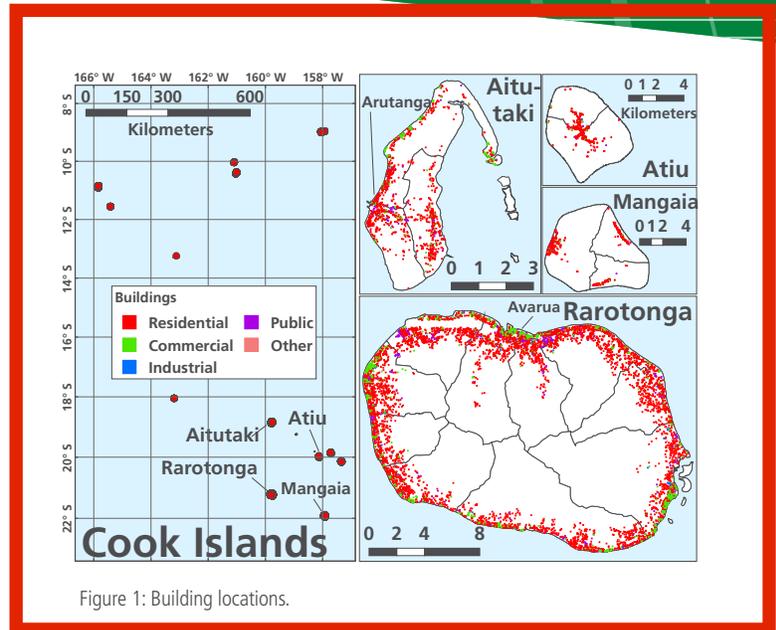


Figure 1: Building locations.

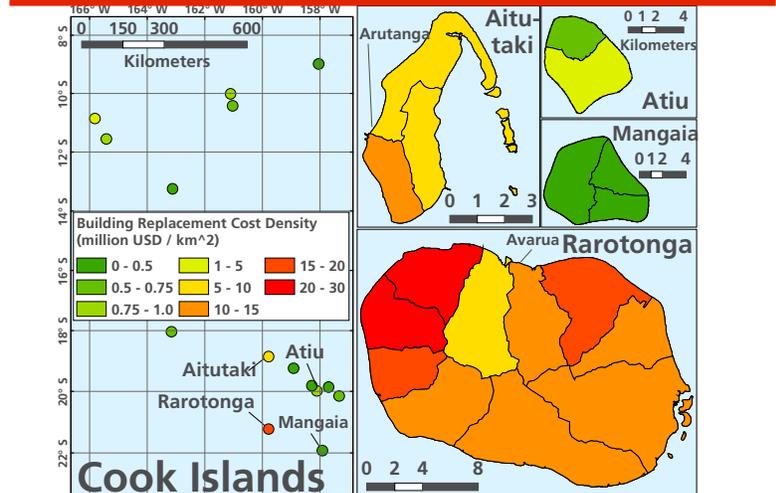


Figure 2: Building replacement cost density by district.

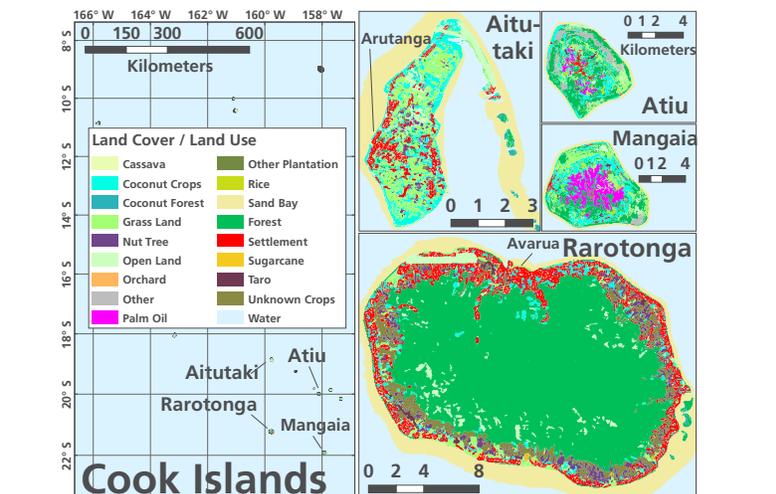


Figure 3: Land cover/land use map.

island of Rarotonga and the rest in the island of Aitutaki, were also field surveyed and photographed by a team of inspectors deployed for this purpose. Figure 3 displays the land cover/land use map that includes the location of major crops. The data utilized for these exhibits was assembled, organized and, when unavailable, produced in this study.

TROPICAL CYCLONE AND EARTHQUAKE HAZARDS IN COOK ISLANDS

The Pacific islands region is prone to natural hazards. The Cook Islands are located south of the equator in an area known for the frequent occurrence of tropical cyclones with damaging winds, rains and storm surge between the months of October and May. In the South Pacific region from the equator to New Zealand in latitude and from Indonesia to east of Hawaii in longitude, almost 1,000 tropical cyclones with hurricane-force winds spawned in the last 60 years, with an average of about 16 tropical storms each year. The Cook Islands affected by devastating cyclones multiple times in the last few decades. For example, in 1997, tropical cyclones Martin and Pam caused 22 fatalities, 19 of which were on Manihiki Atoll alone, where wind and storm surge destroyed essentially every building on the island, incurring about 48 million USD in losses that crippled the local economy. More recently, in 2010, tropical cyclone Pat wrought widespread damage on the island of Aitutaki. Figure 4 shows the levels of wind speed due to tropical cyclones that have about a 40% chance to be exceeded at least once in the next 50 years (100-year mean return period). These wind speeds, if they were to occur, are capable of generating severe damage to buildings, infrastructure and crops with consequent large economic losses.

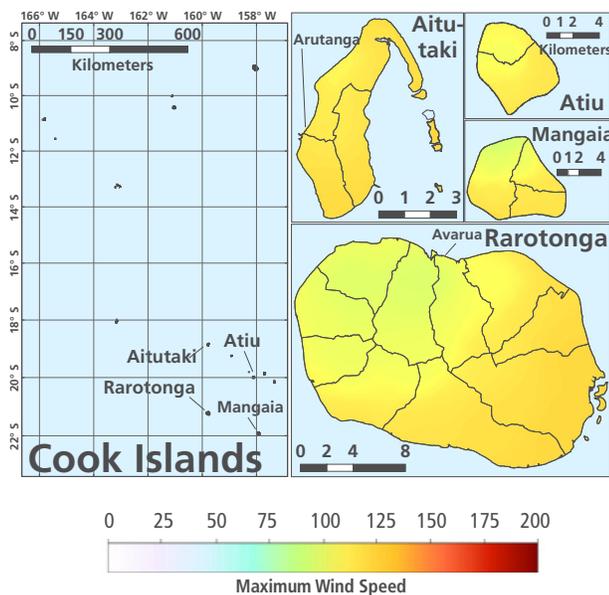
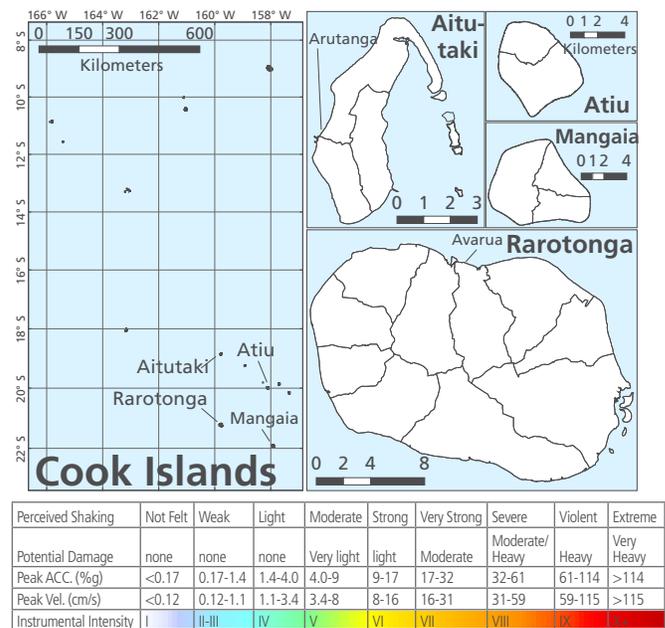


Figure 4: Maximum 1-minute sustained wind speed (in miles per hour) with a 40% chance to be exceeded at least once in the next 50 years. (100-year mean return period).

The Cook Islands are situated in a relatively quiet seismic area, but is surrounded by the Pacific “ring of fire,” which aligns with the boundaries of the tectonic plates. These boundaries are extremely active seismic zones capable of generating large earthquakes and, in some cases, major tsunamis that can travel great distances. No significant earthquakes have been reported in recent times. However, in 1909, a tsunami with waves up to three meters damaged bridges and crop fields in Rarotonga. Figure 5 shows that the Cook Islands have a 40% chance in the next 50 years of experiencing, at least once, very weak levels of ground shaking. These levels of shaking are not expected to cause any damage to well-engineered buildings and infrastructure assets.



Scale based upon Wald, et al: 1999

Figure 5: Peak horizontal acceleration of the ground (Note: 1g is equal to the acceleration of gravity) that has about a 40% chance to be exceeded at least once in the next 50 years. (100-year mean return period).

RISK ANALYSIS RESULTS

To estimate the risk profile for the Cook Islands posed by tropical cyclones and earthquakes, a simulation model of potential storms and earthquakes that may affect the country in the future was constructed. This model, based on historical data, simulates more than 400,000 tropical cyclones and about 7.6 million earthquakes, grouped in 10,000 potential realizations of the next year’s activity in the entire Pacific Basin. The catalog of simulated earthquakes also includes large magnitude events in South and North America, Japan and the Philippines, which could generate tsunamis that may affect the Cook Islands’ shores.

The country's earthquake and tropical cyclone risk profiles are derived from an estimation of the direct losses to buildings, infrastructure assets and major crops that are caused by all the simulated potential future events. The direct losses include the cost of repairing or replacing the damaged assets, but do not include other losses such as contents losses, business interruption losses and losses to primary industries other than agriculture. The direct losses for tropical cyclones are caused by wind and flooding due to rain and storm surge, while losses for earthquakes are caused by ground shaking and tsunami inundation. After assessing the cost of repairing or rebuilding the damaged assets due to the impact of all the simulated potential future events, it is possible to estimate in a probabilistic sense the severity of losses for future catastrophes.

The simulations of possible next-year tropical cyclone and earthquake activity show that some years will see no storms or earthquakes affecting the Cook Islands, while other years may see one or more events affecting the islands, similar to what has happened historically. The annual losses averaged over the many realizations of next-year activity are shown in Figure 6 separately for tropical cyclone and for earthquake and tsunami, while the contributions to the average annual loss from the different electoral boundaries are displayed in absolute terms in Figure 7 and normalized by the total asset values in each electoral boundary in Figure 8. Figure 8 shows how the relative risk varies by electoral boundary across the country.

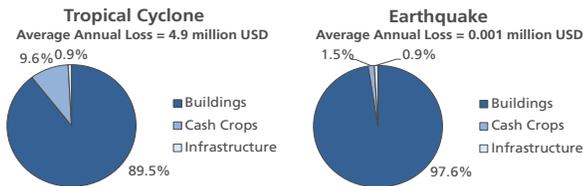


Figure 6: Average annual loss due to tropical cyclones and earthquakes (ground shaking and tsunami) and its contribution from the three types of assets.

The same risk assessment carried out for the Cook Islands was also performed for the 14 other Pacific Island Countries. The values of the average annual loss of the Cook Islands and of the other 14 countries are compared in Figure 9.

In addition to estimating average risk per calendar year, another way of assessing risk is to examine large and rather infrequent, but possible, future tropical cyclone and earthquake losses. Table 2 summarizes the risk profile for the Cook Islands in terms of both direct losses and emergency losses. The former are the expenditures needed to repair or replace the damaged assets while the latter are the expenditures that the Cook Islands government may need to incur in the aftermath of a natural catastrophe to provide necessary relief and conduct activities such as debris removal,

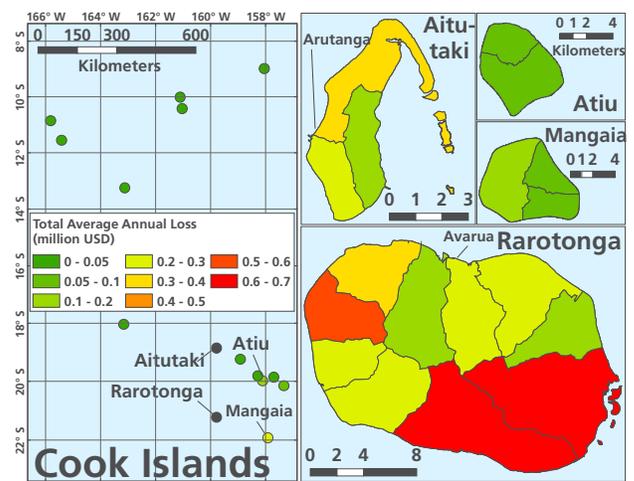


Figure 7: Contribution from the different districts to the average annual loss for tropical cyclone and earthquake (ground shaking and tsunami).

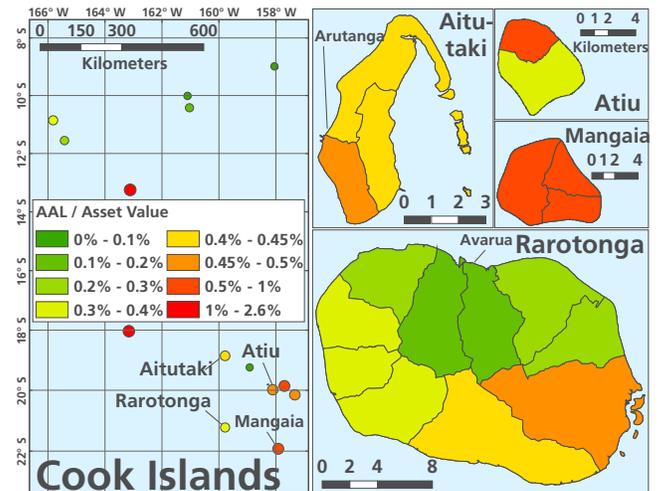


Figure 8: Contribution from the different districts to the tropical cyclone and earthquake (ground shaking and tsunami) average annual loss divided by the replacement cost of the assets in each district.

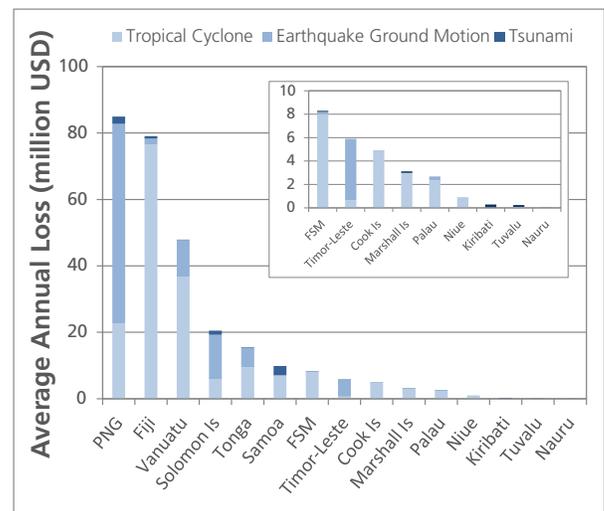


Figure 9: Average annual loss for all the 15 Pacific Island Countries considered in this study.

setting up shelters for homeless or supplying medicine and food. The emergency losses are estimated as a percentage of the direct losses.

Table 2 includes the losses that are expected to be exceeded, on average, once every 50, 100, and 250 years. For example, **a tropical cyclone loss exceeding 103 million USD, which is equivalent to about 42% of the Cook Islands' GDP, is to be expected on average once every 100 years.** In the Cook Islands, tropical cyclone losses are clearly prominent in the risk profile although earthquakes and earthquake-induced tsunamis are also capable of generating losses.

A more complete picture of the risk can be found in Figure 10, which shows the mean return period of direct losses in million USD generated by earthquake, tsunami and tropical cyclones combined. The 50-, 100-, and 250-year mean return period losses in Table 2 can also be determined from the curves in this figure. The direct losses are expressed both in absolute terms and as a percent of the national GDP.

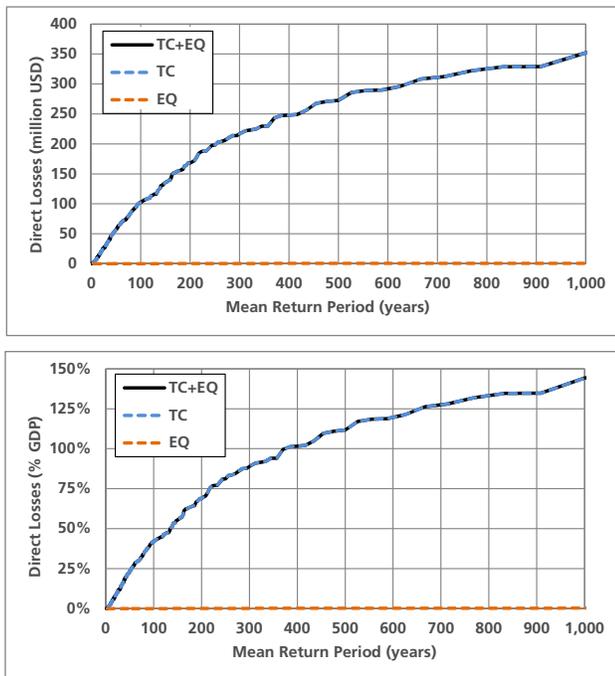


Figure 10: Direct losses (in absolute terms and normalized by GDP) caused by either tropical storms or earthquakes that are expected to be exceeded, on average, once in the time period indicated.

In addition to causing damage and losses to the built environment and crops, future earthquakes and tropical cyclones will also have an impact on population. The same probabilistic procedure described above for losses has been adopted to estimate the likelihood that different levels of casualties (i.e., fatalities and injuries) may result from the future occurrence of these events. As shown in Table 2, our model estimates, for example, that there is a **40% chance in the next fifty years (100 year mean return period) that one or more events in a calendar year will cause casualties exceeding 145 people in the Cook Islands.** Events causing 300 or more casualties are also possible but have much lower likelihood of occurring.

| TABLE 2: Estimated Losses and Casualties Caused by Natural Perils | | | | |
|---|------|-------|-------|-------|
| Mean Return Period (years) | AAL | 50 | 100 | 250 |
| Risk Profile: Tropical Cyclone | | | | |
| Direct Losses | | | | |
| (Million USD) | 4.9 | 56.8 | 103.0 | 198.1 |
| (% GDP) | 2.0% | 23.3% | 42.2% | 81.2% |
| Emergency Losses | | | | |
| (Million USD) | 1.1 | 13.1 | 23.6 | 45.5 |
| (% of total government expenditures) | 1.4% | 16.8% | 30.3% | 58.4% |
| Casualties | 9 | 112 | 145 | 183 |
| Risk Profile: Earthquake and Tsunami | | | | |
| Direct Losses | | | | |
| (Million USD) | 0.0 | 0.0 | 0.0 | 0.0 |
| (% GDP) | 0.0% | 0.0% | 0.0% | 0.0% |
| Emergency Losses | | | | |
| (Million USD) | 0.0 | 0.0 | 0.0 | 0.0 |
| (% of total government expenditures) | 0.0% | 0.0% | 0.0% | 0.0% |
| Casualties | 0 | 0 | 0 | 0 |
| Risk Profile: Tropical Cyclone, Earthquake, and Tsunami | | | | |
| Direct Losses | | | | |
| (Million USD) | 4.9 | 56.8 | 103.0 | 198.1 |
| (% GDP) | 2.0% | 23.3% | 42.2% | 81.2% |
| Emergency Losses | | | | |
| (Million USD) | 1.1 | 13.1 | 23.6 | 45.5 |
| (% of total government expenditures) | 1.4% | 16.8% | 30.3% | 58.4% |
| Casualties | 9 | 112 | 145 | 183 |

¹Casualties include fatalities and injuries.



Country Note

THE COOK ISLANDS

This note on the Cook Islands forms part of a series of country Disaster Risk Finance and Insurance (DRFI) notes that were developed to build understanding of the existing DRFI tools in use in each country and to identify gaps future engagements in DRFI that could further improve financial resilience. These notes were developed as part of the technical assistance provided to countries under the Pacific DRFI program jointly implemented by the World Bank and the Secretariat of the Pacific Community financed by the Government of Japan. The technical assistance builds on the underlying principles of the three-tiered disaster risk financing strategy and focuses on three core aspects: (i) the development of a public financial management strategy for natural disasters, recognizing the need for ex-ante and ex-post financial tools; (ii) the post-disaster budget execution process, to ensure that funds can be accessed and disbursed easily post-disaster; and (iii) the insurance of key public assets, to resource the much larger funding requirements of recovery and reconstruction needs. The Pacific DRFI Program is one of the many applications of PCRAFI. It is designed to increase the financial resilience of PICs by improving their capacity to meet post-disaster financing needs without compromising their fiscal balance.

The Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) is a joint initiative of SOPAC/SPC, World Bank, and the Asian Development Bank with the financial support of the Government of Japan, the Global Facility for Disaster Reduction and Recovery (GFDRR) and the ACP-EU Natural Disaster Risk Reduction Programme, and technical support from AIR Worldwide, New Zealand GNS Science, Geoscience Australia, Pacific Disaster Center (PDC), OpenGeo and GFDRR Labs.