



Helpdesk Research Report

Disaster risk financing and insurance in the Pacific

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03.12.2015

Question

What is the level of insurance availability and coverage against disaster risks at the household and business level across Pacific islands countries, and how does this compare internationally? What are the barriers to greater uptake of disaster risk insurance by households and the private sector, including small to medium enterprises (SMEs) in the Pacific? What are the best evidence-based solutions internationally, and how could these be related to the Pacific context? What other low cost business or household insurance approaches exist in Africa, Caribbean or elsewhere that provide a model for the Pacific?

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1. Overview

Many sources agree that the Pacific region has low insurance penetration¹ compared with other parts of the world. General (non-life) insurance penetration for Pacific countries ranged between 0.5% (Indonesia) and 2.5% (Samoa) in 2012. The mean penetration rate for Pacific countries for which data could be obtained was 1.6%, which is considerably less than the rate in Australia (2.2%), half the rate of the European Union (3.1%), and about one-quarter the rate of the USA (6.0%).

There are many barriers to the uptake of disaster insurance in Pacific island countries. Particularly significant barriers include affordability, inadequate disaster risk mitigation measures, insufficient baseline information for designing insurance products, limited availability of reinsurance, consumer

¹ Insurance penetration is expressed as total insurance premiums as a percentage of GDP

awareness and cultural issues, lack of trust, inadequate building codes and certification mechanisms, lack of public asset registers, aid dependence, and weak mechanisms for distributing pay-outs.

There is currently a great deal of interest in developing parametric or index-based insurance products (insurance that pays out based on objective measurements of natural phenomena like wind speed, earthquake magnitude, or rainfall amounts rather than on assessing actual losses suffered). Parametric insurance is considered useful in developing country contexts because of its low cost, transparency, and speed of disbursement of payments compared with traditional insurance products. Its effectiveness and efficiency is supported by several large-scale programmes or trials. There is also good evidence that pooling risk across multiple countries reduces costs significantly.

The Caribbean Catastrophic Risk Insurance Facility² was the first multi-national parametric catastrophe insurance instrument established in 2007. It is a not-for-profit risk pooling facility owned by and operated for Caribbean governments, offering parametric insurance against earthquakes, cyclones, and excess rainfall events. The facility has been in operation long enough to have generated significant evidence of success, and it is widely cited as a model with potential to be emulated elsewhere. The Pacific Catastrophe Risk Insurance Pilot³ and African Risk Capacity⁴ are two other widely cited examples. These programmes have only been operating for a few years, but there is some evidence that they are also broadening coverage and distributing compensation for insured risks successfully.

2. Insurance penetration

Many sources agree that the Pacific region has low insurance penetration but comprehensive, detailed, and comparable figures for Pacific island countries are not readily available. Leith & Subramanian (2013, p. 9) call the Pacific “one of the least insured regions in the world” with a *total* insurance penetration rate (including life insurance and general insurance) of 3.6%, compared with an average of 9% in OECD countries, 11.4% in the USA, and 12.4% in the UK. *Non-life* insurance penetration in the Asia/Pacific region (including mainland Asian countries as well as Pacific countries) from 1999 and 2013 ranged between 1% and 2%, compared to 3% in Europe and 4.5% in North America and Europe (UNESCAP, 2015, p. 15). The *percentage of losses insured* in Asia and Oceania ranged between approximately 5% and 20% between 2004 and 2013, compared with the global percentage of losses insured between 15% and 45% (UNESCAP, 2015, pp. 14-15).

Data from the World Bank and OECD show general (non-life) insurance penetration for Pacific countries ranging between 0.5% (Indonesia) and 2.5% (Samoa) in 2012. The (unweighted) mean of these rates is 1.6%, which is considerably less than the insurance penetration rate of Australia (2.2%), half the rate of the European Union (3.1%), and about one-quarter the rate of the USA (6.0%).

² <http://www.ccrif.org>

³ <http://www.worldbank.org/projects/P133255/pacific-catastrophe-risk-insurance-pilot-program>

⁴ <http://www.africanriskcapacity.org>

Non-life Insurance Penetration (2012)

| | GDP (million USD) | Population | Market premium (million USD) | Insurance penetration | Data source |
|------------------|----------------------|-------------|---------------------------------|--------------------------|----------------|
| Cook Islands | 305 | 19,300 | 6.6 | 2.2% | a |
| Fiji | 3,908 | 874,700 | 97.5 | 2.5% | a |
| Indonesia | 917,869 | 248,038,000 | | 0.5% | b |
| Malaysia | 304,956 | 29,022,000 | | 1.8% | b |
| Papua New Guinea | 12,873 | 7,155,000 | 155.5 | 1.2% | c |
| Philippines | 250,240 | 96,017,000 | | 0.5% | d |
| Samoa | 683 | 188,900 | 17.0 | 2.5% | a |
| Solomon Islands | 1,008 | 549,600 | 13.0 | 1.3% | a |
| Tonga | 471 | 104,900 | 4.4 | 0.9% | a |
| Vanuatu | 781 | 247,300 | 16.5 | 2.1% | a |
| OECD total | | | | 4.1% | b |
| Australia | | | | 2.2% | b |
| European Union | | | | 3.1% | b |
| USA | | | | 6.0% | b |

Sources:

(a) Mahul, Cook, & Bailey (2015), p. 23. Data for 2012. Insurance penetration: author calculations.

(b) OECD.Stat (2015b). GDP and population from World Bank (2015a). Data for 2012.

(c) Premiums from Oxford Business Group (2014) for 2011. GDP and population from World Bank (2015a) for 2012. Insurance penetration: author calculations.

(d) Lai (2014). GDP and population from World Bank (2015a). Data for 2012.

In Fiji, 6% of households and 17% of commercial properties have property insurance, and in Samoa 10% of households and 20% of commercial properties have cyclone insurance (Mahul, Cook, & Bailey, 2015, pp. 52, 137). We have been unable to find comparable data on the proportion of households and businesses covered in other Pacific island countries.

Microinsurance providers in Oceania provide some life and accident insurance, but negligible amounts of property insurance, and only 0.6% of property insurance includes natural disaster cover (Mukherjee, Oza, Chassin, & Ruchismita, 2014, pp. 13, 30).

3. Challenges to insurance uptake in the region

Pacific island countries are limited in their options for post-disaster finance because of their small size, limited borrowing capacity, narrow revenue base, status as net importers, and reliance on aid. At the national government level, Pacific island countries find infrastructure insurance either too expensive or simply unavailable from the marketplace (Mahul, Cook, & Bailey, 2015, pp. 23-24). At the consumer level, “high transaction costs, the inability to spread risk over a large territory, and the relatively small size of the local economies keep insurance penetration in the region to a minimum” (Mahul, Cook, & Bailey, 2015, p. 8). In many Pacific island countries, disaster insurance products are underdeveloped and insurers are often unwilling to cover natural disasters (UNESCAP, 2015, pp. 15-16). Most of the sources consulted did not differentiate systematically between challenges faced by households and those faced by businesses.

Particular barriers to the uptake of insurance in the region include:

- **Affordability of premiums:** Insurance premiums in developing Asia-Pacific countries are lower than in wealthy countries, but are still not affordable for most income groups. High costs are driven by factors discussed below, notably high residual risks, low numbers of insured persons, and limited numbers of insurers leading to a lack of competition (Prabhakar, Rao, Cummins, Pereira & Pulhin, 2014, p. 104; Prabhakar, Rao, Fukuda & Hayashi, 2013; Legal Response Initiative, 2010). Low income communities often find insurance unappealing: “For poor households, purchasing insurance for future protection from potential natural disasters is often viewed as a luxury considering their lack of financial resources to even meet their current needs.” (UNESCAP, 2015, p. 16)
- **Inadequate disaster risk mitigation** at the national level leads to higher risks being borne by insurance, and therefore higher premium costs. Inadequate development and enforcement of building land-use planning regulations, and over-reliance on disaster response rather than mitigation, are significant problems. These are largely caused by a lack of financing for disaster mitigation (Prabhakar et al., 2013).
- **Insufficient information for designing insurance products:** Many countries have inadequate systems for collecting and managing historical data on risks, vulnerabilities and losses needed to support the design and pricing of insurance products (Prabhakar et al., 2014, p. 103; Prabhakar et al., 2013). Many insurers in the Pacific are branches of international companies which may apply risk profiles based on higher returns and less risk exposure than the Pacific region if sufficient alternative information is not available. Companies tend to adopt a conservative approach when there is a lack of market information (Leith & Subramanian, 2013, pp. 12-13).
- **Limited availability of reinsurance:** Few national and international reinsurers operate in the region (only 34 companies in 2013). These companies tend to be small and have low capital and solvency, and pass on high administrative costs to consumers in the form of higher premiums. Capacity within the reinsurance market is limited, which limits the size of risk accepted and keeps premiums high (Mahul, Cook, & Bailey, 2015, p. 23). Insurers and reinsurers cannot afford to operate in the region unless there is a sufficient enabling environment including efforts to reduce the residual risks (Prabhakar et al., 2014, p. 103; Prabhakar et al., 2013). Obtaining cover through reinsurance is restricted in the Pacific region, and developing reinsurance markets is important to encourage the involvement of private insurance companies and to transfer risk from domestic to international markets (UNESCAP, 2015, p. 24; Leith & Subramanian, 2013, p. 12). Many insurers in developing markets including the Pacific have historically refrained from buying catastrophe reinsurance, preferring instead to maximise retained premium (Leith & Subramanian, 2013, p. 31). There is also a relatively low level of capital invested in the sector compared with global markets, highlighting the lack of business interest and absence of robust capital markets for insurance companies to invest in the Pacific (Leith & Subramanian, 2013, p. 13; Legal Response Initiative, 2010).
- **Consumer awareness and cultural issues:** There is often a lack of understanding about risk and insurance, and a lack of a culture of willingness to mitigate risk through insurance (Prabhakar et al., 2014, p. 104; Prabhakar et al., 2013; Legal Response Initiative, 2010; UNESCAP, 2015, p. 23).
- **Lack of trust:** In many countries there is a general distrust of insurance, often due to experience of mismanagement. For example, in India and China, many potential customers have sufficient

savings and income, but are reluctant to invest in the financial sector because of weak institutions and high risk of fraud (UNESCAP, 2015, p. 16).

- **Inadequate building codes and certification mechanisms:** Cyclone insurance for property generally requires certification of compliance with building codes, but there is a shortage of qualified civil engineers in the region, weak enforcement of building codes, and in some countries, such as the Marshall Islands, there are no building codes in place to begin with (Mahul, Cook, & Bailey, 2015, p. 24).
- **Lack of public asset registers:** Pacific island governments often lack up-to-date asset registers. Assets could be undervalued if replacement values are out of date. Identifying public properties to insure and maintaining a centralised register could help governments attain better prices when approaching the market (Mahul, Cook, & Bailey, 2015, p. 24).
- **Aid dependence:** Developing countries often depend on government or international aid for disaster relief, which can undermine efforts to develop commercial insurance markets. “People living in disaster prone areas expect public support such as financial aid after major disasters and are thus less willing to purchase insurance schemes.” (UNESCAP, 2015, p. 16)
- **Weak mechanisms for distributing payouts:** Without efficient and transparent systems, there is a potential for leakage in the flow of payments to people. An independent evaluation of African Risk Capacity in 2013 underlined the importance of effective distribution systems to ensure that compensation reaches households (Clarke & Hill, 2013).

4. Approaches to broadening insurance coverage

Parametric or index-based insurance

Parametric or index-based insurance provides coverage against natural hazards based on independent and objective measurements such as water levels, rainfall amounts, wind speed, or earthquake magnitude. Payments to policy holders are agreed in advance for specified values of the chosen index. For example, a flood that reaches a specific water level, or a drought that lasts a particular length of time, will trigger compensation for everyone in the affected area regardless of the actual damage suffered. Insurance premiums are set based on desired levels of compensation and the expected frequency of the insured hazard. Parametric insurance contrasts with traditional (indemnity) insurance, in which payments to policy holders are based on the actual damage or financial loss suffered (Gonzalez-Pelaez & Von Dahlen, 2015, p. 8; CCRIF SPC, 2015a, p. 13; OECD, 2015a, p. 74; UNESCAP, 2015, pp. 16-17).

Advantages of parametric insurance

- It is simpler and more transparent than traditional insurance. It avoids disputes that may arise in assessing damage, it is difficult to manipulate, and policyholders can directly access reliable information on when pay-outs are made and how they are calculated (UNESCAP, 2015, p. 17; Clarke & Hill, 2013, p. 4).
- There is no need for time-consuming and costly on-site assessments of damage for individual policyholders, and no need to estimate and update asset values. Processing costs are reduced

and pay-outs can be made much more quickly after a disaster event (UNESCAP, 2015, pp. 15-17; CCRIF SPC, 2015a, p. 13).

- Moral hazard is reduced. Insurance pay-outs depend entirely on external factors outside the policyholder's control, so risky behaviour cannot change the likelihood of receiving a claim, or the amount of the claim (UNESCAP, 2015, p. 17).
- Because of the advantages above, parametric insurance is generally cheaper than an equivalent amount of traditional indemnity insurance (CCRIF SPC, 2015a, p. 13).

Limitations of parametric insurance

- Parametric insurance is only useful when damage can be directly correlated with a measurable index, which means it is only appropriate for a few types of natural hazards (UNESCAP, 2015, p. 17).
- Since pay-outs are based on the index rather than being linked to actual assessed damages, policyholders may be either under-compensated or over-compensated compared with actual losses suffered, and will not be compensated at all for losses below the minimum threshold. This is known as *basis risk*. Ensuring high correlation of the index with actual damage and losses is necessary to increase confidence in the product (UNESCAP, 2015, p. 17, 23; CCRIF SPC, 2015a, p. 14).
- Parametric insurance requires considerable technical capacity to design the product, frequent adjustment to capture damage and losses accurately and incorporate changes in the environment, substantial ongoing data-collection capacity to monitor the chosen index and determine pay-outs, and reliable and fast data communications to tie the components together (UNESCAP, 2015, pp. 17-23). It also requires extensive historical data to assess the relationship between the index and damage, and to understand the frequency and severity of insured risks (Prabhakar et al., 2014, pp. 317-319).
- An effective programme of parametric insurance will require engagement with reinsurance companies to transfer disaster risk abroad, but availability of adequate disaster reinsurance in the Pacific region is still limited (UNESCAP, 2015, p. 19).

Risk pooling

The small size of Pacific island countries limits geographic diversification of risk: "subsidising affected regions using revenues from unaffected regions is nearly impossible." (Mahul, Cook, & Bailey, 2015, p. 8) Pooling risk across larger geographic regions improves access to international capital and reinsurance markets. Groups of countries can obtain better terms than individual countries on the capital markets, which lowers premiums and transaction costs. Pooling risk also facilitates sharing financial and technical capacities (UNESCAP, 2015, p. 25).

Risk pooling requires extensive coordination across participating countries as well as involving national governments, intergovernmental organisations, and local and global insurance companies. The success of CCRIF, for example, is partly attributed to good cooperation among financial institutions across many countries, including not only the Caribbean member states but also Japan, Canada, United Kingdom and France, as well as international organisations such as the World Bank (UNESCAP, 2015, p. 28).

In the Asia-Pacific region, risk pooling is expected to reduce insurance costs significantly. A UNESCAP analysis of disaster losses for 10 members of the Association of South East Asian Nations suggests that risk pooling may reduce expected long-term maximum losses by almost 50% (UNESCAP, 2015, p. 25). Experience so far with the Pacific Catastrophic Risk Insurance Pilot and the African Risk Capacity facility supports this projection, with both of these programmes showing savings of about 50% in obtaining insurance cover for pooled risks compared with purchasing comparable coverage individually (World Bank, 2014b, pp. 2-3; World Bank, 2014a; ARC, 2015).

Improving regulation and coordination across the region

There have been calls to strengthen and harmonise regulation for insurers across the Pacific region, and to improve reporting and sharing of information to encourage growth and expansion in the industry (Leith & Subramanian, 2013, p. 31; Mahul, Cook, & Bailey, 2015, p. 24). A common regulatory environment would better support sharing of risk as well as technical assistance. The insurance industry is considered to be in its infancy in many Pacific island countries, and it is expected that regulation will improve over time (Mahul, Cook, & Bailey, 2015, p. 24).

State-sponsored insurance

Reinsurance is an important mechanism for transferring risk, but reinsurance capacity is limited in many Pacific island countries. In some countries, governments support the insurance industry by providing reinsurance support, limiting exposure to peak risks to encourage private coverage of those risks. Government-sponsored reinsurance may be either mandatory or optional (OECD, 2015a, p. 68).

State subsidies or direct provision of insurance

In some cases, governments have subsidised insurance premiums to keep the price affordable. In Korea, subsidies are offered by the Government to support insurance schemes for storms and flooding, including subsidies of up to 50% for crop and fisheries disaster insurance. In Japan, tax deductions are available for earthquake insurance premiums (OECD, 2015a, p. 64).

In some countries, direct insurance is provided by governments to cover disaster risks. In Spain, the CCS, created in 1941, is the oldest example of a natural disaster insurance regime created by a government to insure catastrophic risks. It is a state-owned institution that provides coverage for natural catastrophes through private insurance companies which act as resellers (OECD, 2015a, p. 65).

Bundling insurance products and strengthening requirements for coverage

In some economies, disaster insurance coverage has been expanded by combining it with other products, such as adding it to fire insurance policies (OECD, 2015a, p. 62; Tigre, 2013, p. 38). Requiring insurance coverage or risk mitigation for certain kinds of transactions can also broaden coverage. For example, in Fiji, banks require insurance against specific hazards before lending, and insurance is only available when building standards have been certified by an insurance industry-approved engineer. This strengthens coverage, although loopholes do exist, such as developers securing insurance offshore without a local engineering certification (Wright, 2013). In areas more prone to disasters, governments may even require mandatory insurance and work with industry to develop appropriate products for such circumstances (Tigre, 2013, p. 41). There is also evidence that disaster losses may be reduced when insurance premiums

are reduced to reward voluntary mitigation measures, but few such incentives are currently offered and voluntary actions by business owners are uncommon (Wright, 2013).

5. Selected examples of disaster risk insurance programmes

Caribbean Catastrophic Risk Insurance Facility (CCRIF)

CCRIF was the first multi-national parametric catastrophe insurance instrument, established in 2007, and it is widely cited as a successful model with potential to be emulated elsewhere. It is a not-for-profit risk pooling facility owned by and operated for Caribbean governments (CCRIF SPC, 2015a, p. 1). CCRIF offers parametric insurance against earthquakes, cyclones, and excess rainfall events to Caribbean governments (CCRIF SPC, 2015a, p. 4). Participating countries pay an annual premium to purchase coverage of up to approximately USD 100 million for each insured hazard (CCRIF SPC, 2015a, p. 6). Pay-outs are based on a loss model and are triggered when the magnitude of a hazard equals or exceeds predefined levels (CCRIF SPC, 2015c, p. 29). CCRIF models the damage to physical infrastructure and damage estimates incorporate the effects of wind, storm surge and wave action, making it particularly relevant to tourism infrastructure located in the coastal zone (Wright, 2013, p. 16). Plans are in place to extend some services to financial institutions in Caribbean countries and to Central American governments (CCRIF SPC, 2015a, p. 4).

CCRIF was set up with technical assistance from the World Bank and financial support from the Government of Japan. It was initially capitalised through a Multi-Donor Trust Fund with contributions from several other donor governments and intergovernmental agencies, and from membership fees paid by Caribbean member states (CCRIF SPC, 2015a, p. 10). CCRIF is intending to expand to Central America and create a segregated risk pool for these countries (CCRIF SPC, 2015a, p. 7).

By pooling risk, CCRIF enables participating countries to purchase insurance collectively for about half the cost of equivalent coverage individually (CCRIF SPC, 2015a, p. 6). Since 2007, the facility has made 13 pay-outs to eight member governments totalling approximately USD 38 million (CCRIF SPC, 2015b). All pay-outs were transferred within two weeks after the event and in three cases, interim payments were made within one week of the event (CCRIF SPC, 2015c, p. 32).

CCRIF payouts 2007-2015

| Event | Country Affected | Payouts (USD) |
|---|-----------------------------------|----------------------|
| Earthquake, 29 November 2007 | Dominica | 528,021 |
| Earthquake, 29 November 2007 | Saint Lucia | 418,976 |
| Tropical Cyclone Ike, September 2008 | Turks and Caicos Islands | 6,303,913 |
| Earthquake, 12 January 2010 | Haiti | 7,753,579 |
| Tropical Cyclone Earl, August 2010 | Anguilla | 4,282,733 |
| Tropical Cyclone Tomas, October 2010 | Barbados | 8,560,247 |
| Tropical Cyclone Tomas, October 2010 | Saint Lucia | 3,241,613 |
| Tropical Cyclone Tomas, October 2010 | St Vincent & the Grenadines | 1,090,388 |
| Tropical Cyclone Gonzalo, October 2014 | Anguilla - Excess Rainfall Policy | 493,465 |
| Trough System, 7-8 November 2014 | Anguilla | 559,249 |
| Trough System, 7-8 November 2014 | St. Kitts & Nevis | 1,055,408 |
| Trough System, 21 November 2014 | Barbados | 1,284,882 |
| Tropical Storm Erika, 27 August 2015 | Dominica - Excess Rainfall policy | 2,400,000 |
| Total for the Period 2007 - 2015 | | 37,972,474 |

Source: CCRIF SPC, 2015b

In 2007 and 2012, the World Bank studied whether sovereign disaster insurance purchased through the CCRIF was cheaper than (i) individual countries purchasing comparable insurance policies on their own and (ii) countries self-retained the resources (such as reserves). Insurance policies offered by the CCRIF outperformed both individual market-based options and self-retention schemes as presented in the following table.

| <i>CCRIF savings in comparison to other means in 2007 and in 2012</i> | | |
|---|----------------------------------|------------------------|
| Comparisons | 2007 appraisal estimation | 2012 estimation |
| Hurricane | | |
| CCRIF savings vs Market | 48-56% | 54-59% |
| CCRIF savings vs Self-retention | 65-71% | 57-75% |
| Earthquakes | | |
| CCRIF savings vs Market | 42-47% | 54-62% |
| CCRIF savings vs Self-retention | 49-53% | 58-85% |

Source: UNESCAP 2015, p. 27

For more information: <http://www.ccrif.org>

Pacific Catastrophe Risk Insurance Pilot (PCRI)

PCRI is a pilot programme providing parametric catastrophe insurance against tropical cyclones and earthquakes. Countries can choose varying levels of coverage (against events with 10-year, 15-year, or 20-year return periods) and in the event of a disaster of sufficient magnitude, receive a rapid pay-out based on modelled physical damage (Mahul, Cook, & Bailey, 2015, p. 20).

The pilot programme is part of the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) and currently involves five Pacific island countries: the Cook Islands, the Marshall Islands, Samoa, Tonga, and Vanuatu. Support for the programme comes from the World Bank, Government of Japan, the Secretariat of the Pacific Community (SPC), the Asian Development Bank, Global Facility for Disaster Reduction and Recovery (GFDRR) and the European Union (Tigre, 2013, pp. 41-42).

During the first season of the programme, five countries (Vanuatu, Tonga, Marshall Islands, Solomon Islands and Samoa) purchased tropical cyclone and/or earthquake catastrophe risk insurance. An

insurance pay-out was made to Tonga within two weeks of Tropical Cyclone Ian in January 2014 (Mahul, Cook, & Bailey, 2015, p. 20). In the second season, the Solomon Islands discontinued its insurance in part because neither the Santa Cruz earthquake nor the 2014 flash floods had been eligible under the terms of the insurance (the earthquake was not severe enough to be covered, and flooding caused by a tropical depression was not covered) (Mahul, Cook, & Bailey, 2015, p. 21). The Cook Islands joined the pilot in its second season (World Bank, 2014b). The second pay-out made by the programme came in March 2015 when Vanuatu received USD 1.9 million in compensation for damage caused by Tropical Cyclone Pam (World Bank, 2015b).

The pilot programme has shown that pooling risk across multiple Pacific island countries can reduce the cost of reinsurance by up to 50% compared with purchasing comparable coverage individually, due to risk diversification and economies of scale (World Bank, 2014b, pp. 2-3; World Bank, 2014a). Capacity building activities undertaken as part of the pilot have also strengthened institutional capacity on public financial management of natural disasters (World Bank, 2014b, p. 3; World Bank, 2014a).

For more information: <http://pcrafi.sopac.org/>

African Risk Capacity (ARC)

ARC was established in 2012 as a continent-wide mechanism for pooling risk following similar principles to CCRIF (CCRIF SPC, 2015a, p. 51). ARC aims to take advantage of the variability of weather patterns across Africa to manage risk. It provides parametric insurance against drought, although there is an intention to extend coverage to other hazards in the future (ARC, 2015). Members of the ARC risk pool receive a pay-out at the end of the rainfall season when rainfall deviations cross a pre-defined threshold selected by each country. Countries can select the level of risk desired, the maximum pay-out, and the percentage of risk to be covered; these parameters then determine the premium amount and pay-out levels. The ARC offers a maximum coverage of USD 30 million per country per season for drought events that occur with a frequency of 1 in 5 years or less (ARC, 2015).

The operation is structured as two entities. ARC is a specialised agency of the African Union which provides a mechanism for coordination, monitoring, oversight, and capacity building. A financial affiliate, ARC Insurance Company Limited, carries out commercial insurance functions of risk pooling and risk transfer. The Company is incorporated in Bermuda until a suitable legal and regulatory regime can exist in an African Union (AU) member state. The initial capital came from participating countries' premiums and from one-time contributions from international agencies (ARC, 2015).

In ARC's first year of operation (2014-2015), four countries (Kenya, Mauritania, Niger and Senegal) subscribed and three (Mauritania, Niger and Senegal) received combined payouts of USD 26 million. Five additional countries have subscribed for 2015-2016 (Burkina Faso, Gambia, Malawi, Mali and Zimbabwe). ARC reports that pay-outs are made within two to four weeks of the end of the rainfall season, and claims a benefit:cost ratio 4.4 times as great as traditional emergency appeals for assistance. Pooling risk across member countries reduces the amount of contingency funds required by 50% compared with each country bearing risk individually (ARC, 2015).

For more information: <http://www.africanriskcapacity.org>

PT Asuransi MAIPARK, Indonesia

In Indonesia, the government has legislated to require industry cooperation in a reinsurance scheme for earthquake risk. Concerns about whether insurers would be able to pay claims in the event of a large earthquake led to the creation of a national reinsurance company, PT Asuransi MAIPARK, in 2003. All non-life insurance and reinsurance companies operating in Indonesia are shareholders of the company, which is operated by the industry. Premiums are charged based on property type and location. Insurance cover is provided as an extension of standard fire policies. MAIPARK also supports research, public education, and risk mitigation activities such as supporting work towards safer construction standards and building codes (OECD, 2015a, p. 63; MAIPARK, 2015).

MAIPARK is currently working with IFC to develop and distribute an index-based insurance product for earthquakes which is expected to launch this year (IFC, 2015).

For more information: <http://www.maipark.com>

Index Based Flood Insurance Pilot, Bangladesh

A pilot project launched in 2013 in one district in Bangladesh provides flood insurance based on water levels and a hydrodynamic model. Households pay a premium of BDT 824 (USD 10) plus VAT. Floods above predetermined water levels lasting more than 10 days trigger compensation payments of BDT 2,800 (USD 36) per household, increasing to a maximum of BDT 8,000 (USD 100) for floods of 26 or more days. The pilot programme covers 1,661 households in 14 villages. The programme is designed to distribute payments quickly and to reduce the possibility of human error or tampering (Oxfam, 2013; Oxfam Bangladesh, 2013; Swiss Re, 2013).

The programme was initiated by Oxfam, funded by the Swiss Agency for Development and Cooperation, and is jointly implemented by CIRM Advisory Services (India), Institute of Water Modelling (Bangladesh), Pragati Insurance Ltd. (Bangladesh), Swiss Re, Manab Mukti Sangstha (Bangladesh) and Palli Karma Sahayak Foundation (Bangladesh) (Oxfam Bangladesh, 2013).

In 2014, the first pay-out from the programme was made to 700 households. Floods in August and September 2014 caused significant damage in several villages, and compensation was paid on 31 October (Swiss Re, 2014; Oxfam, 2014).

Weather Index Insurance, North-Eastern Thailand

A weather-indexed drought insurance fund for rice crops was piloted in 2008 in Khon Kaen province, North-East Thailand. Crop yields are highly correlated to rainfall and there was a lack of irrigation infrastructure in the region. Three different thresholds for drought severity were established, with payouts occurring throughout the growing season in the event of reduced rainfall (UNESCAP, 2015, p. 22).

The Japanese insurance company Sompo designed the product, the public Bank for Agriculture and Agricultural Co-operatives (BAAC) provided local information and acted as a distributor, the Thai Meteorological Department provided weather data, and the National Institute for Agro-Environmental Science (NIAES) of Japan provided technical support (UNESCAP, 2015, p. 23).

The project has suffered from low penetration rates, which is attributed to insufficient awareness and knowledge of weather-indexed insurance: farmers generally considered the product as simply an additional cost (UNESCAP, 2015, p. 23).

Europa Re, South-Eastern Europe

Europa Re is a private reinsurance company established in 2010 to increase access to catastrophe insurance for households and small and medium enterprises in southeastern Europe. It aims to provide reinsurance for both indemnity and parametric insurance products as well as technical assistance to insurance companies in the region (Europa Re, 2015a). In November 2015, the company launched online sales of earthquake insurance in Albania through a local insurance partner, with expansion to Serbia and Macedonia planned (Europa Re, 2015b).

Europa Re is owned by the governments of Albania, Serbia, and the Former Yugoslav Republic of Macedonia. It was established with support from the World Bank, the Global Environment Facility, the Swiss Secretariat for Economic Affairs, and UNISDR Europe (OECD, 2015a, p. 72). The company is based in Switzerland (Europa Re, 2015a).

For more information: <http://www.europa-re.com/>

Flood Re, United Kingdom

In the UK between 2000 and 2013, flood insurance has been available to households in high-risk areas due to voluntary agreements negotiated between the government and insurance providers, under which, at-risk properties could be insured as long as the government's Environment Agency had plans in place to defend vulnerable areas (OECD, 2015a, p. 65; Flood Re, 2015). These voluntary agreements will be replaced by a reinsurance scheme which is to begin operating in April 2016. Flood Re is a not-for-profit flood reinsurance fund managed by the insurance industry. It will have statutory powers intended to help improve affordability of flood insurance in areas at risk. It will impose an industry-wide levy of GBP 180 million (USD 270 million) per year and provide reinsurance cover to the industry. However, over the next 25 years it is intended that risk mitigation measures be strengthened and that the industry should transition to fully risk reflective pricing for flood insurance (Flood Re, 2015).

For more information: <http://www.floodre.co.uk>

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We gratefully acknowledge advice and suggestions for this report offered by the following experts:

- Isaac Anthony, Caribbean Catastrophic Risk Insurance Facility (CCRIF SPC)
- Michael Carr, Pacific Financial Inclusion Programme, United Nations Capital Development Fund
- Craig Churchill, Chief, Social Finance Programme, International Labour Organization
- Véronique Faber, Microinsurance Network

Suggested citation

Lucas, B. (2015). *Disaster risk financing and insurance in the Pacific* (GSDRC Helpdesk Research Report 1314). Birmingham, UK: University of Birmingham.

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