Understanding the Uniqueness of the

Pacific Catastrophe Risk Insurance Company (PCRIC) Parametric Risk Pool Insurance Policies

Image Supplied from Freepik

PACIFIC CATASTROPHE RISK INSURANCE COMPANY

What Type of Insurance Does PCRIC Offer?

PCRIC was established as a captive insurer[1] that would offer sovereign parametric insurance to PICs and its current policies cover (i) Tropical Cyclones (TC); and (ii) Earthquakes, which include tsunamis induced by earthquakes. These policies are targeted at Governments and member countries may choose one or both policies, with payouts being made within 10 days of an eligible disaster event occurring. Three PICs currently hold PCRIC insurance cover and these include Cook Islands, Tonga and Samoa. Since 2016, PCRIC has executed a total payout of approximately US$8m to Tonga, which comprises of US$3.5m and US$4.5m for Tropical Cyclone (TC) Gita (2008) and TC Harold (2020) respectively. This is against a total premium of USD$2.90m, which the government has paid to date. Using the above as a case study, Tonga has realized a net benefit of US$5.09m.

Policies issued by PCRIC disburse payouts based on the modelled losses associated with the above perils as calculated by a catastrophe model. As there is no loss-adjustment process, parametric insurance allows payouts to be made very quickly after a disaster event.

What Products Does PCRIC Currently Offer?

As described in the *Introduction of PCRIC*, PCRIC provides 'parametric' risk pool insurance, which disburses payouts based on the estimated emergency response cost following tropical cyclones, or earthquakes including tsunamis. The estimated costs used as the basis of the policy are calculated by a catastrophe model, with results being made available very quickly after a disaster event. Member countries may choose one or both policies, with payouts being made within 10 days of an eligible disaster event occurring.

What are the Main Advantages of the Policies that PCRIC Offers?

The main benefits of PCRIC policies are:

- Payouts can be calculated and made very quickly after a disaster event. Traditional indemnity insurance relies on loss adjusters to estimate the damage incurred after an event, a process which can take many weeks or months. As parametric insurance is based on estimated losses according to a catastrophe model, there is no loss adjust ment process. Providing countries with a rapid payout at the time it is needed most contributes to a country's financial resilience in the face of increasing disaster risk.

[1] In December 2021, the PCRIC Act was amended to convert PCRIC into a Segregated Cell entity which would allow the entity to also offer non-sovereign products.

- In addition to quicker payouts, the lower administrative cost of parametric risk pool insurance means it is generally cheaper than an equivalent indemnity insurance product.
- Typically, insurers and reinsurers also apply a lower uncertainty loading for parametric insurance compared with traditional indemnity insurance. Parametric products offer certainty in the magnitude of loss following an event to both policy holders and insurers alike, reducing reserving and valuation risk for the insurer which contributes to the lower cost of parametric insurance for the policy holder.
- Governments do not have to provide detailed asset values or other information to take out an insurance policy – there is just one form to sign.
- Calculation of payouts is totally objective, based on a few simple input parameters published widely in the public domain from the globally-mandated bodies responsible for estimating those particular parameters, and a set of formulae which form part of the policy.
- Premium finance may be available from donor partners, which increases the coverage available for any premium paid by a member country.
- By being a member of the Pacific Catastrophe Risk Insurance Foundation (PCRIF), which owns PCRIC, member countries can influence the direction and strategic goals of PCRIC, including the investments that are made in new products and models.

PCRIC's Policies Provide Payouts Based on the 'Modelled Emergency Response Cost' – What is that?

The policies offered by PCRIC are intended to cover a portion of a government's costs associated with responding to a disaster. As funds are required quickly after a disaster, the most practical solution is to use the correlation between the government's modelled emergency response cost (estimated as a percentage of total ground-up loss) and physical event severity, rather than establishing or relying on an independent third-party system to estimate the government's actual emergency post-disaster costs after a disaster event has occurred. The modelled emergency response cost is therefore an estimate of the true cost faced by a government for post-disaster response, and is calculated based on the parameters of a disaster event (for example windspeed and location of a tropical cyclone) and how this is assumed to impact a country's assets.

What is 'Basis Risk' and How can it be Mitigated?

An important consideration of parametric insurance is 'basis risk', defined as the risk that the index the insurance is based on (in PCRIC's case this is the modelled emergency response cost) is not well correlated with the true response cost that a government actually incurs following a disaster event. Or in other words, basis risk is the risk that a payout based on modelled losses may be higher or lower than actual losses on the ground.

Although basis risk is a significant challenge in the development and use of parametric insurance policies, PCRIC makes significant investment in the careful design of input parameters and the catastrophe models used to reduce basis risk as much as possible.

How do the Policies Work and How is Payout Triggered?

The modelled emergency response cost, which determines whether a payout will be made, is based on parameters of the event (for example windspeed for tropical cyclone and magnitude for earthquake) as reported by international public reporting agencies. These agencies are the Joint Typhoon Warning Center (JTWC), and the National Earthquake Information Center (NEIC), an agency specific center of the United States Geological Survey (USGS). For both tropical cyclone and earthquake there are nominated back-up reporting agencies in the event that the nominated reporting agencies do not report on Pacific tropical cyclone or earthquake events.

If the modelled emergency response cost as calculated by PCRIC's catastrophe model exceeds a pre-defined threshold (or 'attachment point') then a payout will be made. The 'attachment point', defined as a $ value of emergency response cost, is calculated to represent the magnitude of loss that would be expected to occur once every ten years on average (i.e., a "1-in-10-year event"). This means that every year, a country has a 10% chance of a payout being due per policy held. For any modelled emergency response cost above the attachment point, the amount of the payout increases as the modelled emergency response cost increases, from a minimum of $200,000 up to a pre-defined 'exhaustion point' as shown in Figure 2 below. This means higher payouts are due for more severe events, with the maximum payout being made for any modelled emergency response cost that exceeds the exhaustion point.

Figure 2: Modelled Emergency Response Costs Beyond Attachment Point

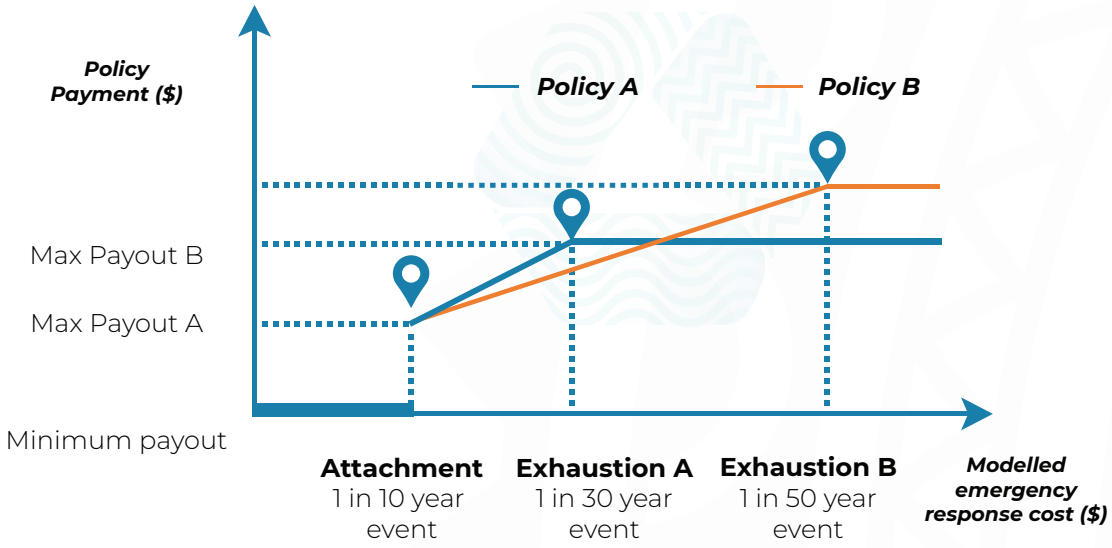
What Policy Options are Available for Countries?

A country purchasing risk pool insurance from PCRIC has three main decisions to make, which impact the coverage offered:

- The **total annual premium**. The premium paid for a policy is directly proportional to the potential payouts made after an eligible event, meaning a higher premium will provide higher potential payouts after an eligible event. While the premium paid can be any amount, PCRIC encourages countries to pay a level of premium that is sufficient to provide meaningful payouts after an eligible disaster event. Currently the minimum annual premium paid by a member country is US$100,000.
  Countries may also be able to access premium finance from donor or development partners, which can increase the total potential payouts following an eligible disaster event.
- The **split of annual premium between policies**. PCRIC currently offers policies for responding to either i) tropical cyclones; or ii) earthquakes including tsunamis induced by an earthquake. A country can opt to purchase just one of these policies, or both. If both policies are purchased, then the country must decide how much of the total premium will be used for each policy.
- The **exhaustion point of each policy**. While the attachment point of each policy is fixed at the modelled emergency response cost equivalent to a 1-in-10-year event (the threshold beyond which the policy will provide a payout), the exhaustion point (the threshold at which the maximum payout for the policy is made) is selected by the country. The exhaustion point can be selected as any event between a 1-in-30-year event and a 1-in-150-year event.

The figure below provides an indication of the payout structure for two alternative exhaustion points, A and B, which represent exhaustion points of a 1-in-30-year (3.33% chance) and 1-in-50-year (2% chance) event respectively. Note that while the figure illustrates policies with exhaustion points of 1-in-30 and 1-in-50, countries may select an exhaustion point up to 1-in-150.

Figure 3: Modelled Emergency Response Costs with Varied Exhaustion Points



As Figure 3 indicates, a policy with a higher exhaustion point (e.g. Policy B) will provide lower payouts for less severe events, but will provide higher payouts for more severe events. A policy with a higher exhaustion point will have a higher maximum payout (e.g., Max Payout B), although to receive this maximum the country must suffer a more extreme disaster event compared with the maximum payout under a policy with a lower exhaustion point (e.g. Policy A).

Why Does PCRIC Allow Countries to Select the Exhaustion Point?

PCRIC allows countries to select the exhaustion point to ensure countries can select a policy which meets their objectives for financial protection to disasters bearing in mind both the risk they face and their other sources of available finance. For example, Policy A in the diagram above may be more appropriate for a country concerned with receiving the highest possible payout for events up to a 1-in-30-year event, whereas Policy B may be more appropriate for a country concerned with receiving the highest possible payout for more severe disaster events.

How are the Premium and the Potential Payout Amounts Calculated?

As noted above, member countries are able to select the amount they will pay in annual premium for each policy they wish to purchase. From the annual premium amount and the other policy selections (see above 'What policy options are available for countries?'), PCRIC will calculate the maximum payout amount for a policy taking into account i) the expected loss of the policy; and ii) a contribution towards PCRIC's expenses, including the cost of PCRIC's reinsurance protection. As PCRIC is a regional entity created for the benefit of member countries, PCRIC does not apply any loading for profit, and aims to keep expenses as low as possible in order to provide the maximum coverage possible for any selected premium amount.

How Can Countries be Confident that PCRIC will Make a Payout After a Disaster?

It is ensured that PCRIC can make payouts for a series of events (e.g. several cylones or earthquake / tsunami events) that occur in any given year due to the Company's strong capital base, which is supplemented by reinsurance. PCRIC has done an extensive amount of financial modelling and analysis to ensure all claims can be met even in extreme scenarios. Further, PCRIC is required to meet the solvency regulation imposed by the Cook Islands Financial Supervisory Commission (FSC), which gives further comfort to PCRIF member countries and donors that PCRIC will be able to meet all of its liabilities as they fall due.

New Products in the Pipeline

Given the demand from PICs, PCRIC is also developing new products. Excess rainfall and drought products are currently being developed, with the former scheduled to be released before Season 11, which runs from November 2022 to October 2023. The release of the two new products is envisaged to increase the uptake of PCRICs products by other PICs who would view the products to be more attractive and relevant to the disasters and risks that they encounter. For example, the Republic of Marshall Islands (RMI), which is more vulnerable to drought than a TC.

It is critical for PICs to thoroughly understand the value preposition of the insurance cover available under the respective products offered by PCRIC. All products correlates to the risk exposure that has material impact on PICs and for this, PCRIC has taken an agile and innovative approach to constantly revamp and expand the suite of insurance products tailored to the needs of client countries.

PACIFIC CATASTROPHE RISK INSURANCE COMPANY

For more information contact:
Aholotu Palu, Chief Executive - aholotupalu@yahoo.co.uk | ceo@pcric.org

Bermuda House, Tutakimoa Road, Rarotonga, Cook Islands
www.pcric.org

Image Supplied from Freepik