



FORUM ECONOMIC MINISTERS MEETING: APRIL 3RD, 2017



Finance for Development: Rapid Response Financing Instruments against Climate and Disaster Risks in the Pacific

Disaster Risk Financing
& Insurance Program



PACIFIC ISLANDS FORUM SECRETARIAT

KEY MESSAGES

- FICs are offered an increasing number of financial instruments for rapid response post disaster.

- CAT-DDOs available to IDA countries from July 2017.

- Rapid response financing instruments should be structured to ensure comprehensive, cost-effective coverage.

- Distribution mechanisms such as disaster linked scalable social protection should be identified to help ensure funds can reach targeted beneficiaries efficiently.

- Public Private Partnerships are key to the development of innovative rapid response instruments.

- The World Bank Group provides financial, advisory and convening services to help countries develop cost effective financial protection strategies against climate and disaster risk.



1. Introduction

In 2016 Tropical Cyclone (TC) Winston, one of the most powerful cyclones on record, gave the Pacific a harsh reminder of its vulnerability towards natural disasters. The category five cyclone swept across Fiji affecting 62% of the population and causing over US\$900 million in estimated damage and loss (Government of Fiji, 2016). This came less than a year after TC Pam caused damage and loss equivalent to 64% of Vanuatu's gross domestic product (GDP).

Ten Forum Island Countries (FICs) belong to the 30 countries most vulnerable to natural disasters, ranked according to annual expected disaster losses scaled by GDP. On average FICs experience annual losses equivalent to almost 2% of the regional GDP (PCRAFI, 2014).

There is a growing evidence base that indicates having access to finance can result in significant savings. For example, evidence from Ethiopia shows that for every US\$1 secured in advance for timely and predictable disbursement for emergencies there will be up to US\$5 saved over the long term

Figure 1: Average Annual Losses as a percentage of GDP



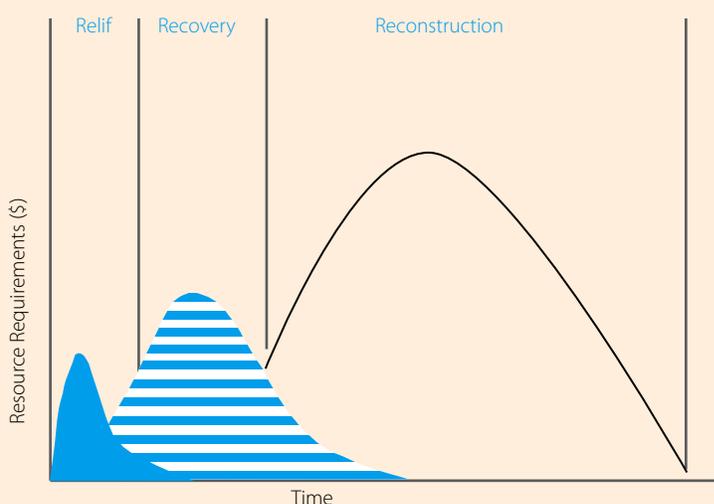
Source: PCRAFI (2014)

Figure 2: A Comprehensive Disaster Risk Management Framework



Source: World Bank

Figure 3: A Timeline of Post-Disaster Financing Needs



Source: World Bank (Forthcoming)

Different levels of post-disaster funds need to be available at the appropriate time following a disaster to cover relief, response, and reconstruction efforts. In the aftermath of a disaster, the government does not require money for the entire reconstruction program at once, while immediate liquidity is crucial to support relief and early recovery operations. Likewise, businesses and households need to have access to timely financing to ensure business continuity and avoid negative coping strategies.

Risk pools, as vehicles for quick-disbursing risk transfer solutions, play an important role in enabling rapid response.

(Wiseman and Hess, 2007). Cabot Venton et al. (2012) suggest even higher figures for Ethiopia and double the cost of a late response in Kenya compared with an early response. Similarly, lack of finance after a shock is a significant obstacle to reconstruction which slows down the return to normalcy and can result in sacrificing the asset quality for the speed of reconstruction (Hallegatte et al 2016, Benson and Clay, 2004 and Hallegatte and Dumas 2009).

Financial protection is a core component of any comprehensive disaster risk management strategy, and should be

implemented alongside the pillars of climate and disaster resilience including risk identification, disaster risk reduction, preparedness, response and post-disaster reconstruction (see Figure 2).

To better manage the cost of disasters, ensure predictable and timely access to much needed financial resources, and ultimately mitigate long-term fiscal impacts, governments can adopt a strategic approach built on pre-planned financing mechanisms. This approach to financial protection needs to complement other elements of a comprehensive disaster



risk management strategy, including programs to strengthen preparedness and reduce risk. It does so by helping a government to proactively manage the residual risk which cannot be fully mitigated (either because this is not feasible or not cost effective).

2. Post Disaster Rapid Response Financing– Mapping of Financial Instruments for Governments

2.1 World Bank Group Financial Instruments

Pacific governments are confronted with the critical challenge of securing access to immediate ex-ante financing mechanisms for emergency response in the aftermath of a disaster. FICs are restricted in their options for raising quick liquidity at the onset of a disaster because of their small size, limited borrowing capacity, and limited access to international insurance markets. The small size of FICs tends to rule out geographic diversification of risk within the country: subsidizing affected regions using revenues from unaffected regions is nearly impossible. High transaction costs, the inability to spread risk over a large territory, and the relatively small size of local economies keep insurance penetration in the region to a minimum.

Between 2013 and 2017, the World Bank Group (WBG) via the International Development Association’s (IDA) Crisis Response Window (CRW) provided approximately US\$120 million to

FICs to help countries respond to a range of natural disasters. IDA’s CRW has been an important source of financing the response to natural disasters, among other types of crises.

The current suite of disaster risk financing instruments offered by the WBG and available to FICs is shown in Table 1 and the increasing trend towards the development of ex-ante financial tools can be seen.

In responding to natural disasters, the WBG has also been leading and managing designated facilities and trust funds for crisis response and recovery. The Global Facility for Disaster Reduction and Recovery (GFDRR), a trust-funded facility managed by the WBG, with an active portfolio of US\$216m, provides financing, technical assistance and knowledge for disaster and climate risk management. The in-streaming of disaster risk management into WBG operations has become a focus for WBG engagements, aligned with the Sendai Report recommendations.

2.2 Sovereign Disaster Risk Pools

Sovereign disaster risk insurance provides a mechanism for sovereign states to access rapid liquidity post-disaster in a cost-efficient and mutually supportive way when the risk is pooled across several countries. Sovereign disaster risk pools enhance financial preparedness against climate and disaster risk by (i) pooling risks into one single, more diversified, less risky portfolio, (ii) retaining some risks through joint reserves/capital; (iii) accessing the reinsurance and capital

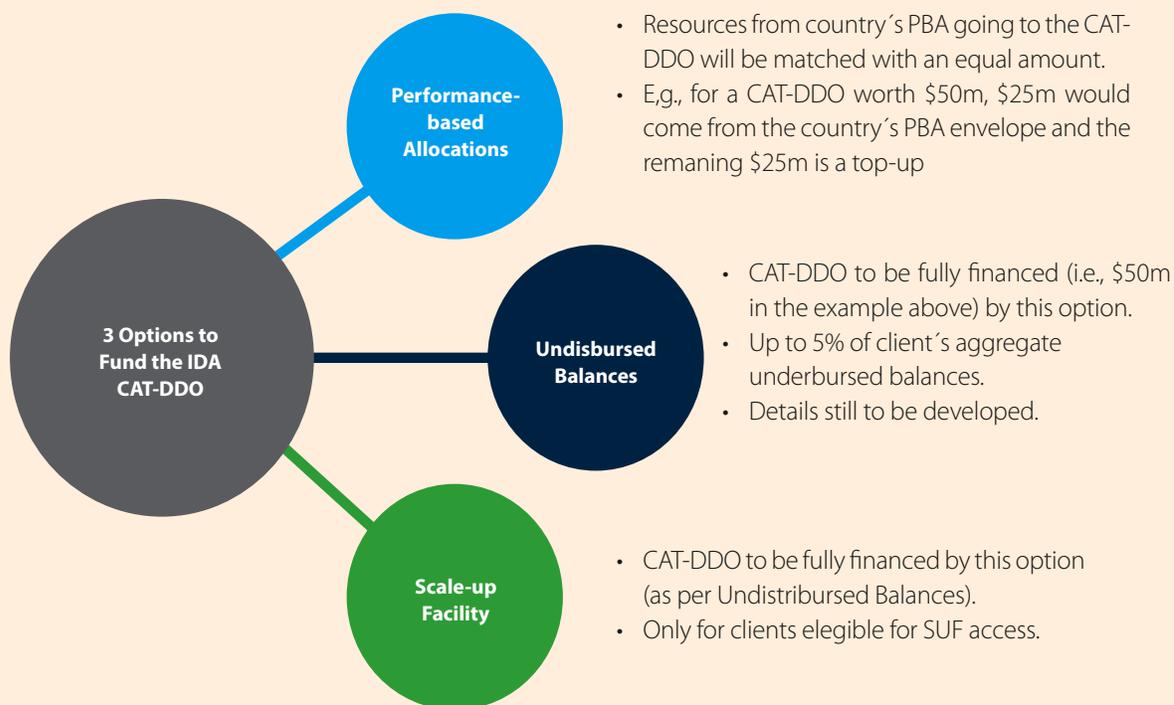
Table 1: WBG rapid response financing instruments available to Pacific Island Countries

Instrument	Description	Amount Available/Eligibility
Ex-Ante Instruments		
Contingent credit – Development Policy Loan with Catastrophe Deferred Draw Down Option (CAT-DDO) (IBRD)	Allows borrower to secure immediate access to budget support in the aftermath of a natural disaster.	Up to US\$500m, or 0.25 percent of GDP (whichever is lower).
Contingent credit - CAT-DDO (IDA)	As above. Will be available from July 2017 (IDA18).	Lower of \$250m or 0.5% of GDP If limits <\$20m, can go up to \$20m.
Contingency Emergency Response Component (CERC)/ Immediate Response Mechanism (IRM)	Launched in 2011. Allows a country rapid access to a portion of its undisbursed IDA balances to address immediate post-crisis financing needs to respond to natural disasters. CERC to be included in the design of exiting projects.	IDA countries to make use of US\$5m or 5 percent of undisbursed funds soon after an emergency.
Ex-Post Instruments		
Crisis Response Window	Enables rapid financing for post disaster recovery and reconstruction in the face of natural disasters	In “IDA 17” FICs received US\$63 million in total:: Vanuatu and Tuvalu received US\$50 million and US\$3 million, respectively, following TC Pam (2014); Solomon Islands received US\$10 million following the 2014 floods. Tonga received US\$12 million after TC Ian (2014). Samoa received in 2013 US\$45 million after TC Evan.
Trust Funds	Established after an event to help finance particular activities e.g. reconstruction.	Dependent on needs and ability to attract other donors.

Box 1: IDA CAT-DDO

Under IDA 18, CAT DDOs will be available for IDA countries and can be used to provide rapid response for both natural disasters and health related emergencies. The IDA CAT-DDO will be available to all IDA countries including IDA-IBRD Blend countries. It requires the preparation (or existence) of a satisfactory disaster risk management program and an appropriate macroeconomic framework. It is similar to its IBRD counterpart has the following advantages:

- **Provides rapid liquidity** – as the instrument is agreed in advance the funds can be released quickly once a disaster occurs and the drawdown triggers are met.
- **Complements the Crisis Response Window** – the provision of rapid liquidity complements the crisis response window as once the funds have been used these can be replenished from the CRW if needed.
- **Enhances the financial protection strategy** - A financial protection strategy would involve complementing the CAT DDO with disaster risk transfer instruments (such as catastrophe risk insurance) for higher risk layers. Governments determine the mix of disaster risk financing instruments based on an assessment of risks, desired coverage, available budget, and cost efficiency.
- **Enables more cost-effective sovereign catastrophe risk insurance** - by having pre-agreed credit available for drawdown, disaster countries are able to increase the attachment point of their insurance policies and therefore only insure the most severe events faced as the less severe events are covered by the CAT-DDO or other financing instruments.
- **Size limits:** Lower of US\$250m or 0.5% of GDP. If this limit is less than US\$20m, countries can borrow up to US\$20m. Funding options: there are three potential sources of finance that countries can use towards an IDA CAT-DDO, these are shown in the below.



An IDA CAT-DDO can be renewed once to give a total drawdown period of six years. The PBA portion of any undisbursed IDA CAT-DDO balances can be recommitted towards other purposes upon the expiration of the CAT-DDO.



markets when it is the most cost-effective. Those pools however require significant technical and political support and time to be established, and even longer time to become sustainable.

Following a key decision at the Forum Economic Ministers Meeting (FEMM) in 2015 a sovereign disaster risk pool, the PCRAFI Facility, was established to provide climate and disaster risk insurance to its member countries. The PCRAFI Facility builds upon the PCRAFI insurance program which commenced with a pilot scheme in 2013. The PCRAFI Facility was established by its Technical Working Group comprised of the Secretaries of Finance from the five participating FICs (Cook Islands, Marshall Islands, Samoa, Tonga and Vanuatu) with technical support from the WBG and the Pacific Islands Forum Secretariat with financial support from Germany, Japan, the United Kingdom and United States. The PCRAFI Facility issued its first insurance policies in November 2016, see Box 2 for more information.

The PCRAFI Insurance program has progressed from an initial model of fully subsidized premiums, to a model of co-financing from countries. For the 2016-2017 season, participating countries take on full responsibility for payment of premiums, some of them using IDA loans and grants to finance their insurance premiums through the Pacific Resilience Program (PREP). The willingness of countries to move away from fully subsidized premiums, and the decision of the Cook Islands to join without any premium support, has been a strong indicator of the value of the program to countries.

To meet the varied post-disaster financial needs of FICs, the PCRAFI Facility will seek to develop additional financial products for protection against disaster risks. These products could be focused on excess rainfall, drought, insuring assets such as public utilities that cannot be insured in the market place at present. There is even the potential to include something akin to a mutual insurance fund for more frequent less severe events or even potentially fisheries as has recently been done by the Caribbean Catastrophe Risk Insurance Facility. Choices will need to be made by FICs in order for the Facility to prioritize the development of products.

2.3 PCRAFI Multi-Donor Trust Fund

The PCRAFI MDTF supports the PCRAFI Program with the World Bank as trustee. In direct response to a request by the PICs at the 2015 FEMM the World Bank collaborated with donor partners to secure funds and to establish the PCRAFI MDTF. Germany, Japan, the United Kingdom, and the United States have provided US\$40 million in grant funding towards the PCRAFI following discussions at COP21 as part of the In-Resilience initiative championed by the G7.

Box 2: PCRAFI – Pacific Catastrophe Risk Insurance Program

- **The PCRAFI Facility, comprised of two separate legal entities, the Pacific Catastrophe Risk Insurance Foundation (PCRIF) and the Pacific Catastrophe Risk Insurance Company (PCRIC) were established by legal statute in the Cook Islands on June 10th, 2016.** This structure was decided upon to ensure high ownership by the FICs. The PCRIC issued its first insurance policies on November 1st, 2016 for the fifth season of PCRAFI insurance program.
- **Since its inception, the PCRAFI insurance program has made two payouts for an aggregate amount of US\$3.2 million within 10 days of the disasters.** Tonga received a payout of US\$1.3 million within 10 days of being affected by Tropical Cyclone Ian in 2014. The funds were mainly used to purchase fuel for the boats to bring emergency goods to the affected islands. Vanuatu received a payout of US\$1.9 million within 7 days of being affected by Tropical Cyclone Pam in 2015; the funds were mainly used to bring nurses to the affected areas in order to provide emergency care.
- **The PCRAFI insurance program was launched on January 17, 2013, and is designed to provide the FICs with parametric insurance as a mechanism for rapid response financing through an immediate injection of cash following a major tropical cyclone and/or earthquake/tsunami.** Unlike a conventional insurance scheme, where a payout would be assessed against actual incurred costs, this scheme pays out on the results of a modeled representation of the event. The advantage of this approach is that it results in a much faster payout. The payout acts as a form of budget support to help cover the costs incurred by the government in the aftermath of a severe natural disaster.

The PCRAFI Program has two core components; (i) support to the PCRAFI project to establish the PCRAFI Facility; and, (ii) PCRAFI Technical Assistance (TA) Program. The Facility has been established as an insurance captive and designed to provide the PICs with catastrophe risk insurance coverage on competitive terms. While the TA Program provides the PICs, regional organizations, and the PCRAFI Facility with technical assistance and capacity building on disaster risk finance and insurance and on public financial management of natural disasters.

As the PCRAFI Facility becomes fully operational the role of the WBG will focus on the provision of technical

assistance to assist countries in developing comprehensive and cost effective financial protection against disasters. In particular, the WBG is able to help structure IBRD and IDA loans to include elements of both contingent credit and financing for insurance premiums should countries request this. In addition, the WBG can provide technical assistance to countries to develop cost effective combinations of different financial instruments (see Section 3 for details).

2.4 IMF Financial Instruments

The international Monetary Fund (IMF) have developed several rapid response instruments to assist their member countries respond to the liquidity requirements faced in the aftermath of a disaster. The following information on their current financing instruments is taken from the IMF Policy Paper, Small States Resilience to Natural Disasters and Climate Change – Role for the IMF (2016).

Box 3: Additional WBG Rapid Response Instruments Under Development

While there are many instruments offered by the WBG currently, there is a need to develop additional tools in recognition of the fact that each country and each hazard will have different financing requirements.

As part of IDA 18 several new initiatives have been developed that will strengthen the WBG’s crisis response, recovery and reconstruction capacity. The Eighteenth Replenishment of IDA (IDA18) is the largest replenishment in IDA’s 56-year history and has secured over US\$75 billion in funds. This has enabled the Crises Response Window to be increased to US\$3 billion and the allocation for small states has increased from US\$4 million to approximately US\$15 million. There will also be an increased focus on pandemic financing including the development of pandemic preparedness instrument.

Over the medium term, a new flexible funding mechanism for risk mitigation and crisis management support to IBRD countries is being considered. This mechanism could complement IDA’s CRW, and serve as a substitute for the variety of individual country and regional trust funds that tend to be established in the wake of a crisis. It could draw on donor resources with the possibility of an IBRD net income transfer, and could also provide support through a variety of means, for example, insurance premiums, debt buy-downs, concessional funds to co-finance IBRD loans, etc.

Efforts will be made to build on the WBG’s successes in intermediating products financed by the markets, including issuing catastrophe bonds, facilitating the regional pooling of risk, or accessing insurance markets. This can take the form of purely technical assistance with product design and/or transactions, or the Bank can play a more activist role, helping to develop a private sector market for a new product, as it is doing with the Pandemic Emergency Financing Facility. More can also be done to develop new private sector-based risk markets to cover emerging risks.

Table 2: IMF rapid response financing instruments

Instrument	Description	Amount Available/Eligibility
Rapid Financing Instrument (RFI).	Designed for a transitory or shock of limited nature, situation of urgent need or policy implementation capacity is limited.	RFI is available on non-concessional GRA terms, and is repayable within 3¼ to 5 years.
Rapid Credit Facility (RCF).	Established in 2009, provides rapid financial support in a single, upfront loan disbursement to low-income countries eligible for concessional borrowing through the Poverty Reduction and Growth Trust.	RCF financing carries a zero interest rate, has a grace period of 5½ years, and a final maturity of 10 years.
Augmentation of an existing program	Augmented financing under the existing program can provide additional financial support	
Catastrophe Containment and Relief (CCR) Trust	Established in 2015, allows the Fund to free up resources to meet exceptional balance of payments needs created by the disaster, rather than having to assign those resources to debt service.	Available to 38 low-income countries eligible for concessional borrowing through the PRGT with either a per capita income below US\$1,215—or, a population below 1.5 million and a per capita income below US\$2,430.2. A disaster affects at least one third of population and destruction of more than a quarter of the country’s productive capacity or damage >100% of GDP.



Instrument	Description	Amount Available/Eligibility
Asia-Pacific Disaster Response Fund (ADF)	Quick disbursing instrument that provides grants within a week for the humanitarian response phase after a major natural disaster.	Grants of up to US\$3 million per event. All ADB DMCs are eligible.
Disaster Response Facility (DRF)	Supports Asian Development Fund (ADF) countries to cover early recovery, rehabilitation and reconstruction financing needs that may arise after a natural disaster of sudden and unusual proportions.	ADF countries can access ≤100% of their annual performance based allocation from the facility. Can be delivered as additional financing through existing projects, stand-alone investments, or emergency assistance loans.
Emergency Assistance Loans/Grants	Enables the approval of fast-tracked emergency assistance loans for early recovery purposes.	Has extended grace and repayment periods, increased retroactive financing, an interest rate of 1% p.a. for ADF countries and abbreviated processing requirements.
Trust Funds	Established after an event to support reconstruction	Dependent on scale of damage and ability to attract contributions from other development partners.

2.5 ADB Financial Instruments

The Asian Development Bank (ADB) have developed several rapid response instruments to assist their member countries respond to the liquidity requirements faced in the aftermath of a disaster. The following information on their current financing instruments is taken from Disaster Risk Financing in the Pacific (ADB, 2017).

Climate and disaster resilience is expected to receive significant emphasis in ADB’s Strategy 2030, leading to further efforts to strengthen ADB support in this area. The ADF Contingent Savings Facility could be scaled up to cover more countries if proven to be successful; further donor funds would also be sought to expand the resources available post-disaster; and the associated DRR mechanism could make more funds available to support priority activities. The country DRR allocations, introduced as part of the 12th ADF replenishment, have been welcomed by countries and will be used to mainstream DRR into projects, as well as having the potential to finance standalone DRR activities.

ADB is currently preparing a Regional Contingency Savings Facility to provide its ADF countries with a source of near-immediate financing for early recovery activities from disaster events. The proposed contingent savings facility would comprise additional resources from the ADF sub-regional pool, with two-thirds coming from the sub regional pool and one-third from countries’ PBA. To incentivize Pacific DMCs to develop effective DRM strategies and programs, the Facility is built upon a foundation of national PBLs which have DRM requirements. Each country would invest a PBL in a Trust Fund, where the funds are safeguarded and earn interest, until a country suffers a disaster event. The establishment of prior policy actions and indicators on DRM will help ensure that broader long-term disaster resilience is achieved.

ADB wide disaster risk management work assessing the existing enabling environment for disaster risk finance instruments, in particular insurance, and measures to enhance financial preparedness, will include at least one Pacific country, thus providing lessons for other Pacific islands.

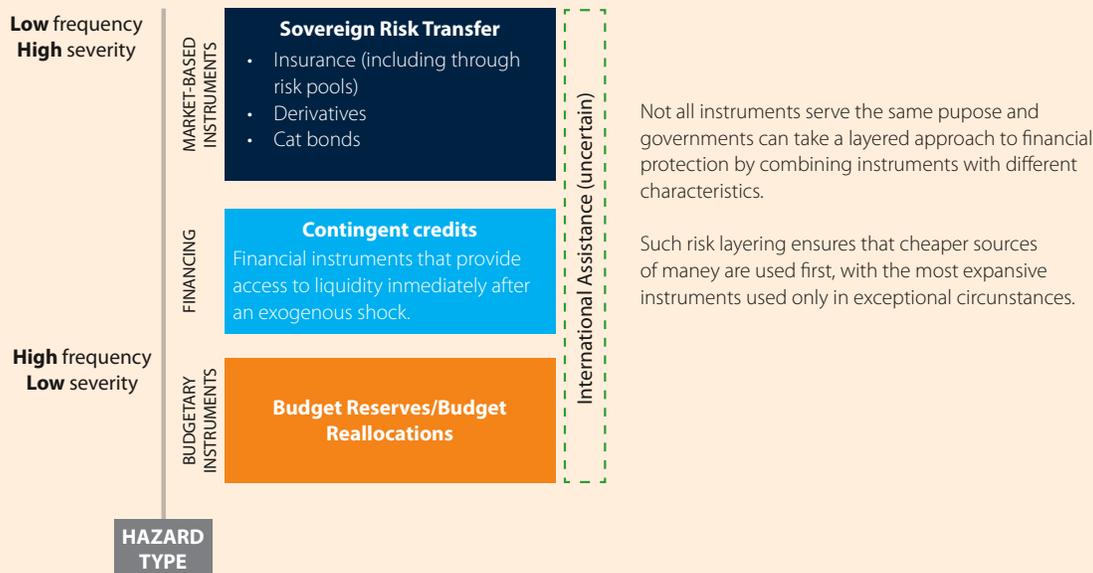
3. Finding the Right Mix of Disaster Risk Financing Instruments

Depending on the frequency and severity of risks to be managed, governments can combine (or layer) financing instruments that address different needs and have different cost implications. Such an approach prioritizes cheaper sources of funding, ensuring that the most expensive instruments are only used in exceptional circumstances. For example, sovereign insurance may provide cost-effective cover against extreme events, but it may be inefficient and costly to protect against low intensity and recurrent events. For such events, a dedicated contingency fund that ‘retains’ this lowest layer of risk may be a more appropriate solution. Figure 4 provides a graphic representation of this risk layering approach.

Combining instruments also enables governments to take into account the evolving needs for funds from emergency response to long term reconstruction. For example, a government could decide to purchase (ex-ante) quick-disbursing risk transfer instruments such as parametric insurance to ensure immediate liquidity in the aftermath of extreme events, but it will raise the much larger sums required to finance reconstruction efforts through (ex-post) budget reallocations, by issuing bonds, and through recoveries from traditional indemnity insurance.

With a growing number of financial instruments available to governments for financing rapid disaster response, there is a growing need to explore how these instruments can best be

Figure 4 – Sovereign disaster risk layering



Source: World Bank (Forthcoming)

Not all instruments serve the same purpose and governments can take a layered approach to financial protection by combining instruments with different characteristics.

Such risk layering ensures that cheaper sources of money are used first, with the most expensive instruments used only in exceptional circumstances.

combined for a country to be better protected against disaster and climate risks. For example, with the World Bank now offering contingent credit to countries eligible for financing through the International Development Association (IDA)¹ an increasing number of countries are becoming interested in understanding how contingent credit arrangements can be combined with sovereign parametric insurance to achieve cost-effective financial protection against disaster events.

A simple illustration is developed below to discuss the key factors that determine the optimal (least expensive) combination of contingent credit and insurance for financing rapid response post disaster losses. Consider a government who has identified the following post-disaster rapid response financing needs, that is, the funding they need to mobilize in the first weeks after a disaster:

- US\$15m is required following a **small disaster event**, expected to occur with annual probability 33% (i.e. once every three years)
- US\$40m is required following a **medium disaster event**, expected to occur with annual probability 10% (i.e. once every ten years)
- US\$100m is required following a **severe disaster event**, expected to occur with annual probability 3.3% (i.e. once every thirty years)

The government is able to secure a line of contingent credit for any amount up to the full US\$100m required following a severe disaster. To ensure the financing needs are met in full, the government is able to also purchase a (parametric) insurance policy with payouts covering the remaining financing needs after taking into account the selected amount of contingent credit. For the sake of simplicity, these instruments are designed to provide coverage for one year (although note that a multi-year approach would not change the reasoning). The two instruments are assumed to have the following cost:

- **Contingent credit:** there is an opportunity cost of securing a line of contingent credit as the government will have less financing available for immediate investments in other projects. This opportunity cost is applied to the selected amount of contingent credit.
- **Insurance:** an insurance premium is charged, based on a defined multiple of the expected losses from the insurance policy. In addition, the country must borrow to pay the premium, and so the opportunity cost of borrowing is also applied to the premium amount.

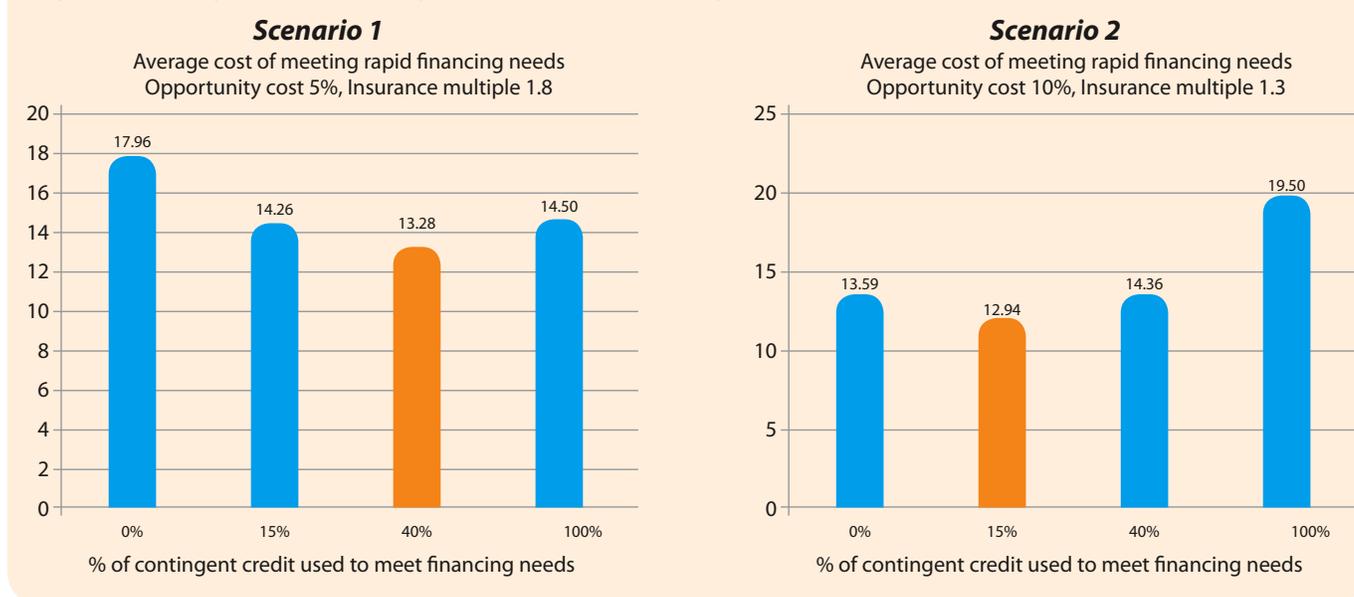
The relative costs of rapid response financing is calculated under two scenarios:

- **Scenario 1:** the opportunity cost of contingent credit is relatively low (5%) and the cost of insurance relatively high (a multiple of 1.8).

¹ For more information see World Bank (2016), Annex 8:



Figure 5: Average cost of meeting rapid response financing needs



- **Scenario 2:** the opportunity cost of contingent credit is higher (10%) and insurance cheaper (multiple of 1.3).

Figures below consider the total average cost of securing this rapid financing for various mixtures of contingent credit and insurance. The government selects the mix of financial products that minimizes the average cost.

Under Scenario 1 (Figure 5), the optimal strategy is to secure a line of contingent credit equal to 40% of the total needs, or US\$40m, to finance small and medium disasters and to purchase an insurance policy with maximum payout US\$60m in excess of US\$40m. This strategy is 8% less expensive than securing US\$100m contingent credit.

Under Scenario 2 (Figure 5), the least expensive strategy is to secure contingent credit for just 15% of the total need, or US\$15m, to finance small disasters and to purchase a larger insurance policy to finance medium and severe disasters (US\$85m in excess of US\$15m). This strategy is 34% less expensive than securing US\$100m contingent credit.

Other scenarios could be considered. The main message is that, except for extreme values of cost of capital and/or insurance premium, it is always optimal to combine contingent credit and insurance.

The government may have other objectives in selecting its mix of contingent credit and insurance. For example, the government may wish to minimize the cost of the financial strategy assuming either a severe disaster will occur, or no disaster event will occur. In the former, it is optimal to only purchase insurance to finance the full amount. In the latter, it depends on the assumptions regarding the relative costs of the two instruments. Under Scenario 1, the optimal solution is to secure a contingent credit line of US\$100m, whereas under Scenario 2, it is optimal to secure a contingent credit line of US\$40m and purchase insurance.

While this analysis is useful in highlighting the tradeoffs between contingent credit and insurance, it only includes these two possible financing instruments. In practice a government will be able to finance post-disaster needs in several other ways, for example by setting up a reserve fund, reallocating funds away from pre-programmed expenditures, and borrowing in the commercial market. A more complex analysis of the cost implications of different risk financing strategies is possible, such as that proposed by Clarke et al. (2016) which proposes a framework for evaluating the cost of comprehensive risk financing strategies. Further extensions of this analysis could also include considering the cost implications of a multi-year time horizon, or considering the relative tradeoffs between investments in financial protection and overall disaster risk reduction or mitigation measures.

4. Moving forward

Contingency plans enhance the ability of rapid response instruments to reach targeted beneficiaries and lead to quicker recovery. For example, it was found that the recipients of the scale up of the social protection scheme in Fiji following TC Winston experienced a faster recovery than those who did not receive the additional assistance. The beneficiaries were more likely to have recovered from sickness or injury, repaired their dwelling, replenished their food stocks, remedied the damage to their agricultural land, and be benefiting from repaired village or neighborhood infrastructure, compared to those that had not received the additional assistance (World Bank, 2016b.). In addition, contingency plans can reduce political economy biases by predefining payout rules for post disaster expenditures (Clarke and Dercon 2016).

Capacity building to support decision making on rapid response financing instruments remains key. Countries should decide in advance what expenditures they will finance in the aftermath of a disaster whether that's relief, recovery or reconstruction. Country specific solutions should be developed to address the bespoke post disaster financial needs faced by each country. This will be dependent on their size, location, hazard and exposure profile, access to international markets and their ability to finance risk from their own budget. Once a country has an idea of their risk profile it is possible to combine financial tools from those listed above such as insurance, a CAT DDO etc. The cost for these financial instruments can be estimated and compared to develop

a comprehensive and cost effective financial strategy for financing disaster losses.

Rapid response financing instruments are complementary not substitutes. Hallegatte et al (2016) found that there was a complementary relationship between the development of insurance for the middle class and adaptive social protection that targets the poor. This coupled with political economy effect cited by Clarke and Dercon suggests that the two measures should be combined as it ensures that the government can target post disaster financial resources to assist the poor as the middle class will be covered by their insurance policies.

The private sector plays an essential role in developing additional financial tools for disaster risk finance. Public private partnerships are key to developing products that that may not be always be commercially viable. To ensure that the catastrophe risk products offered both adequately price the risk and will payout in the aftermath of a disaster requires further capacity building within the Pacific and the WBG can assist with this. Similarly, governments can support the private market via better regulation and supervision. In addition, there may be a role for some mandatory level of catastrophe risk insurance, IMF (2016).

CONTACTS

Olivier Mahul

Global Lead and Program Manager
Disaster Risk Financing and Insurance Program
Global Practice – Finance & Markets
The World Bank Group
omahul@worldbank.org

Samantha Cook

Senior Disaster Risk Finance Specialist
Disaster Risk Financing and Insurance Program
Global Practice – Finance & Markets
The World Bank Group
scook@worldbank.org



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