

# Workshop Session 3: On Climate and Disaster Resilience (CDR) *Disaster Risk Layering and Contingent Disaster Financing*



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**Emerging Macroeconomic and Governance Challenges and Opportunities**

Workshop | 20–23 April 2026 | Manila, Philippines

# Disaster Risk Layering

**Risk Retention**

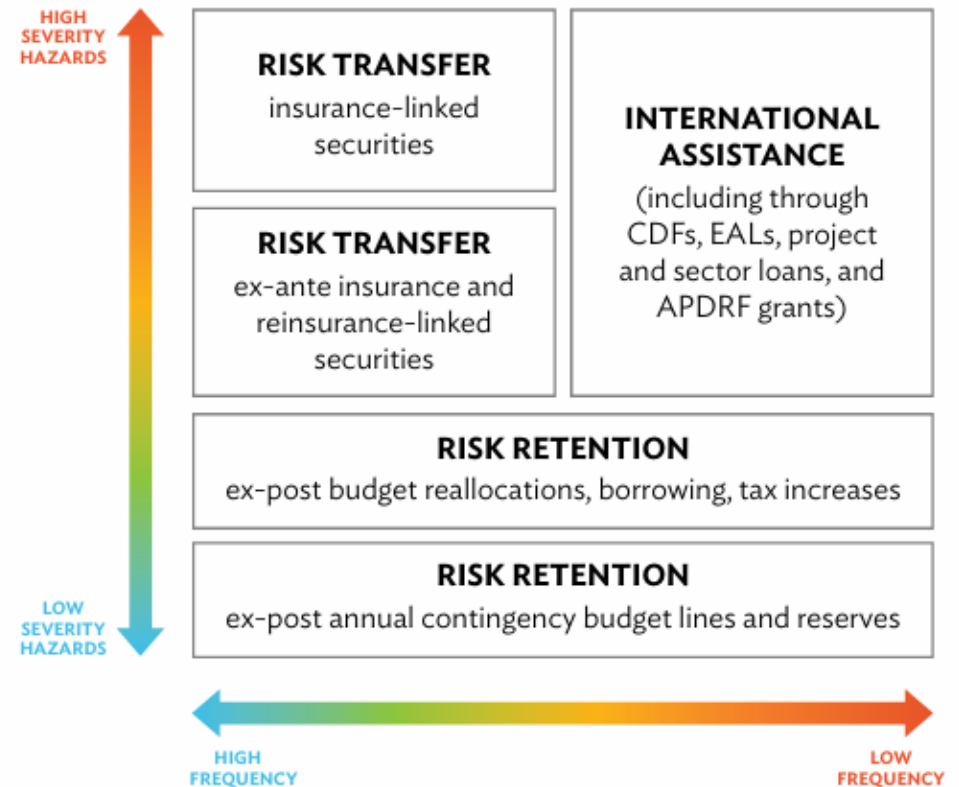
**Risk Transfer**

**International Assistance / CDF**

# Disaster Risk Layering

- Risk Layering is at the core of analyzing government liabilities and possible financial protection gaps for DRM
- Requires embedding relevant instruments in the management of public finances while enhancing ability to allocate, monitor and account of public funds
- Addresses 2 main challenges:
  - Efficient release of funds
  - Effective utilization of funds

## Layered Approach to Disaster Risk Financing

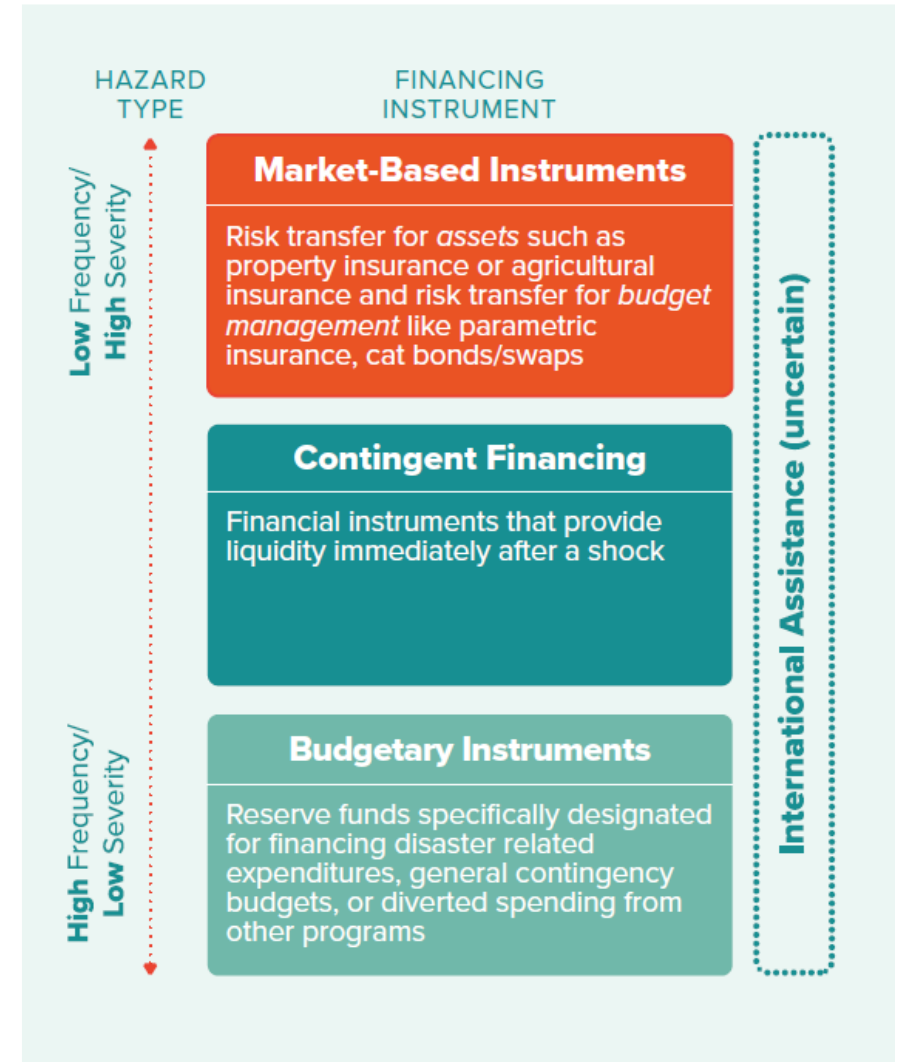


APDRF = Asia Pacific Disaster Response Fund, CDF = contingent disaster financing,  
EAL = emergency assistance loan.

Source: Asian Development Bank.

# Disaster Risk Layering

- No single financial instrument can address all risks
- Not all resources are needed at once, but timeliness is key!
- From a PFM perspective, it's about managing fiscal risks resulting from disasters
- Strong DRM Planning is needed for effective budget utilization



Source: World Bank

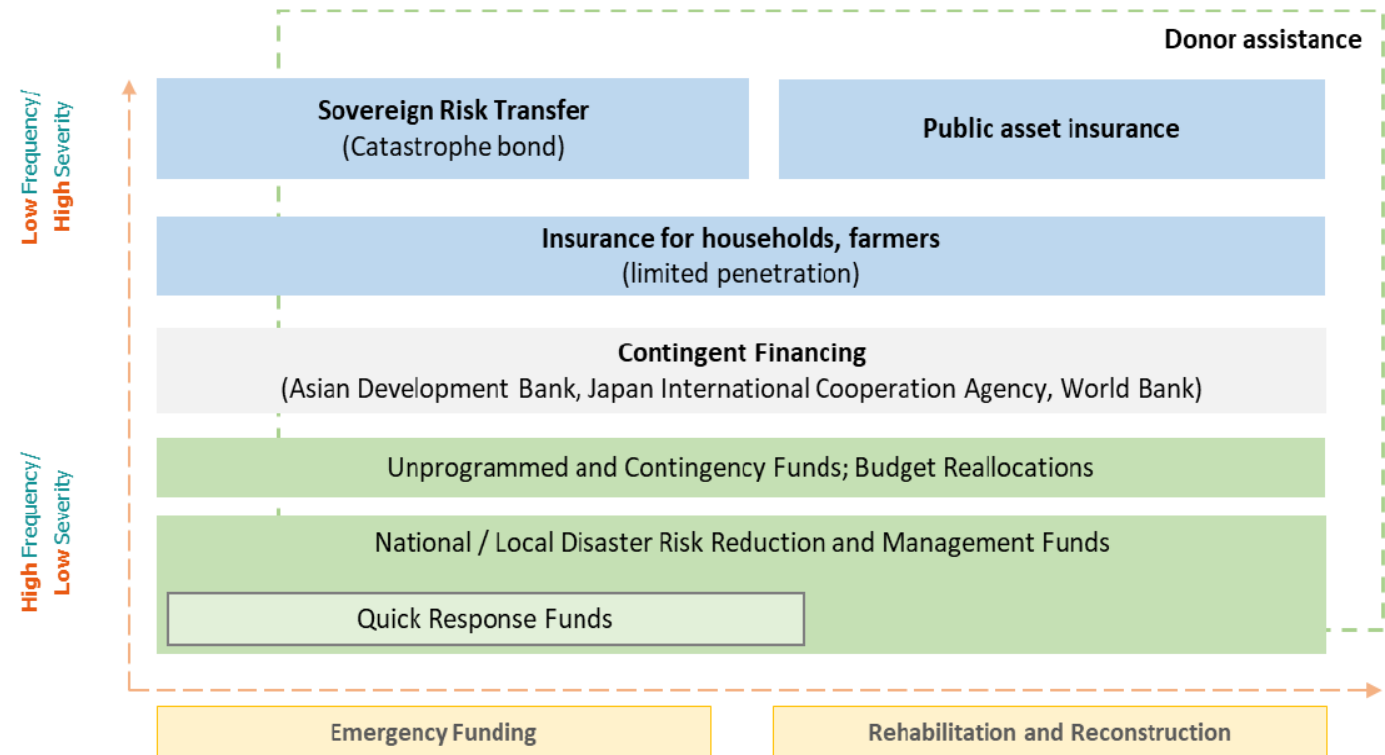
# DRFI Strategy: PHI Case Study

PH is expected to incur P177 billion per year in losses due to typhoons and earthquakes

In 2022, total DRM funds available was P138 billion – reflecting a gap of P39 billion

Gov't has been working on expanding its portfolio of disaster risk financing instruments, with focus on timely access and quick response/recovery

## Disaster Risk Financing and Insurance Strategy



Source: World Bank

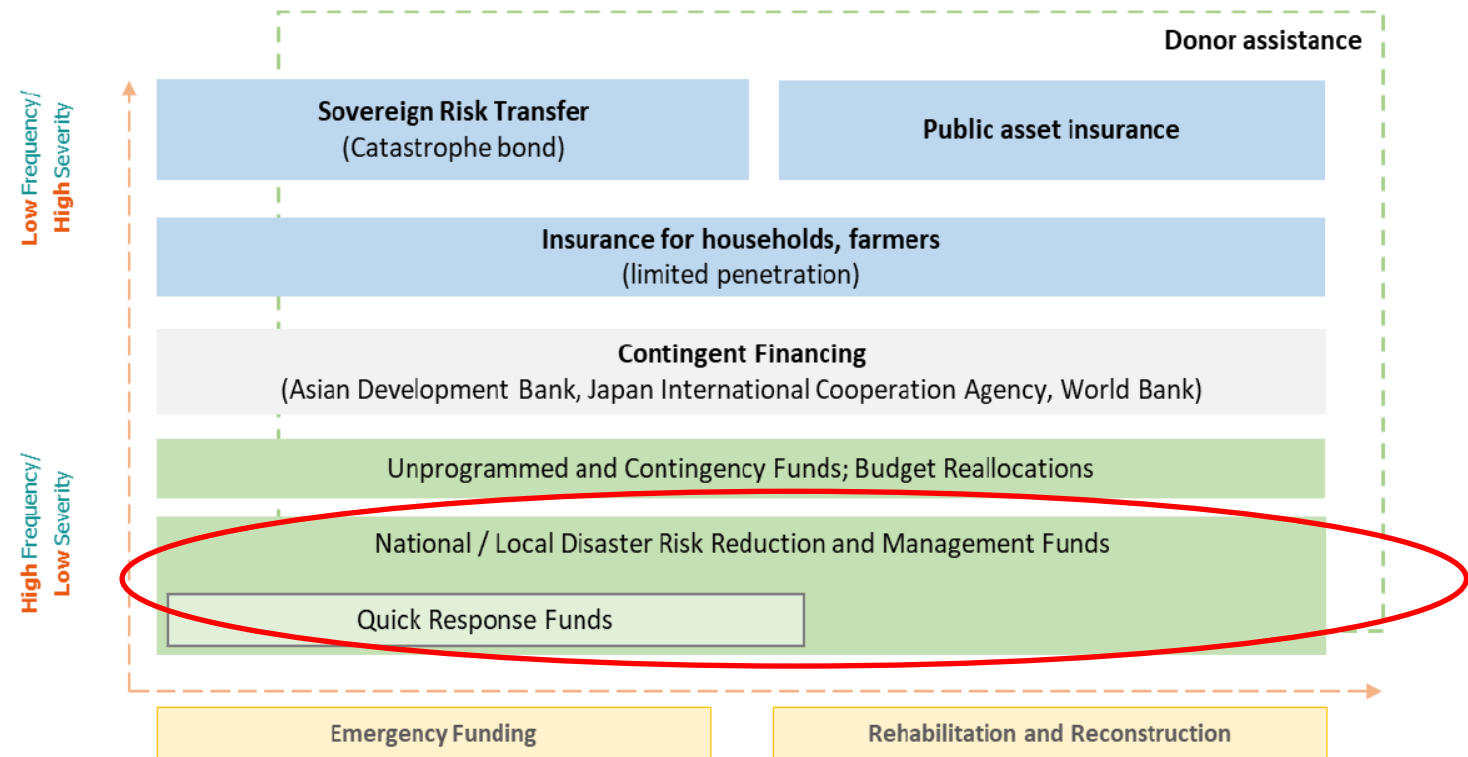
# Budgetary Instruments: PHI Case Study

Actual impact may be larger and a national study set it at 1% to 3% of GDP (Phil. Inst. for Dev't Studies)

OECD estimates that the average fiscal cost of disasters can be around 1.6% of GDP and as high as 6% of GDP

Damage of Typhoon Haiyan in 2013 was estimated at 4.7% of GDP

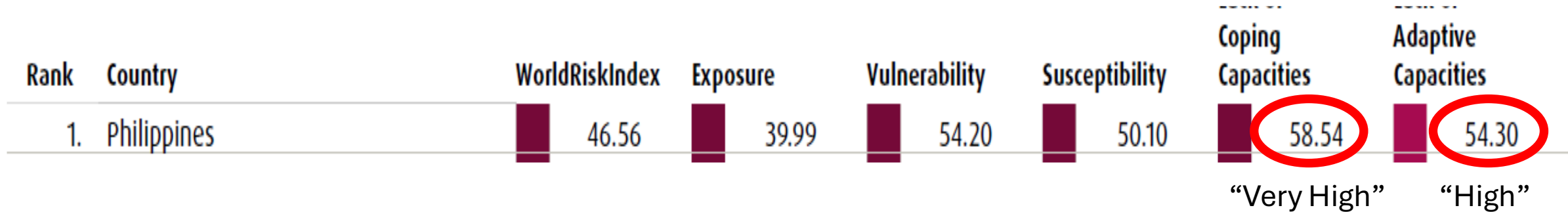
## Disaster Risk Financing and Insurance Strategy



Source: World Bank

# Budgetary Instruments: PHI Case Study

World Risk Report 2025

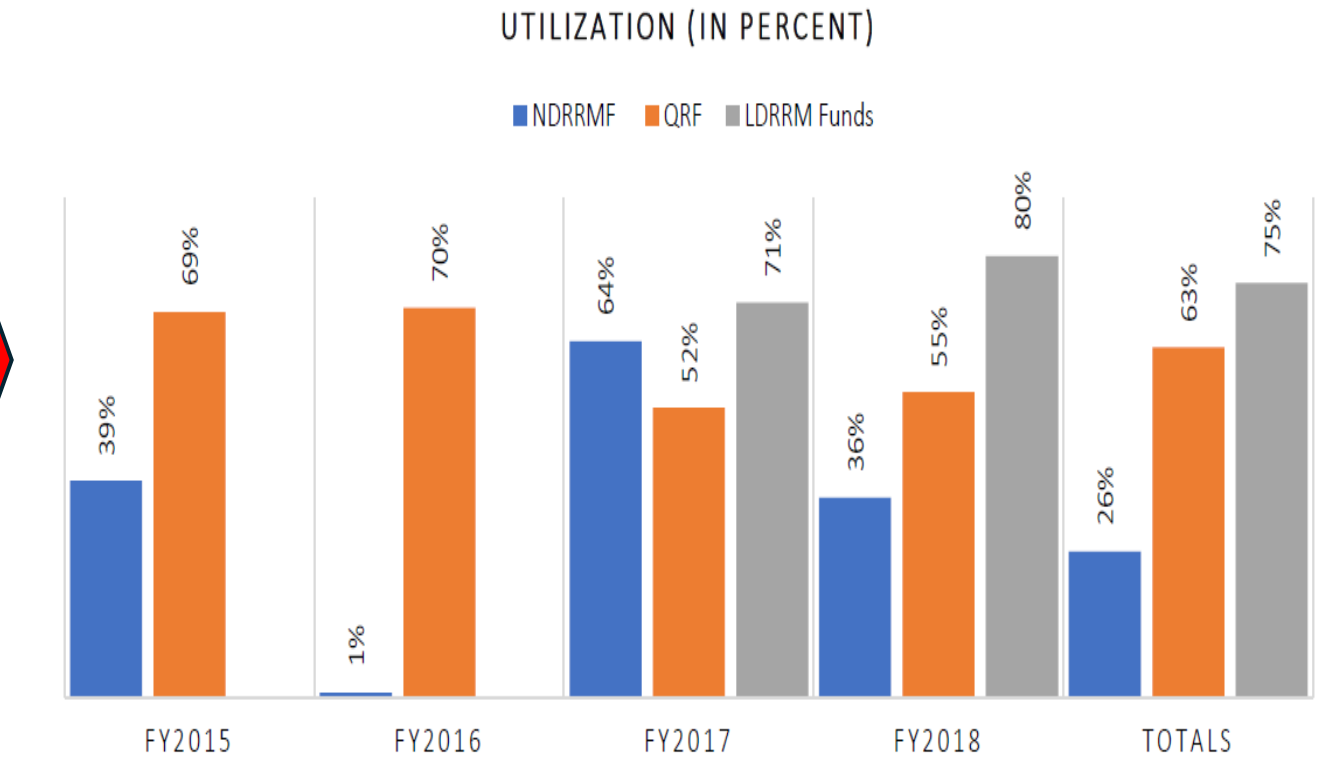
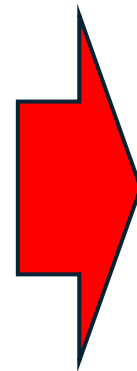


## Development Constraints

- Risks are aggravated by challenges in coping and adaptive capacities – show deficiencies in:
  - Capacity to mitigate adverse impacts of natural hazards through direct action and allocating resources
  - Country’s processes and long-term strategies to strengthen structures and systems that counteract, mitigate or prevent negative impacts of disasters

# Budgetary Instruments: PHI Case Study

- Key issues:
  - Insufficient localization of DRRM planning frameworks
  - Weak local institutional capacity for DRRM and gender mainstreaming
  - Inefficient and inadequate allocation of national funds to local governments
  - Complex approval processes that delay release of funds and implementation



World Bank, 2020

# Budgetary Instruments: PHI Case Study 2022 Utilization

- 2022 Utilization rates:

- NDRRMF (National Disaster Risk Reduction & Management Funds): 64%
- QRF (Quick Response Fund): 89%
- LDRRMF (Local DRRM Funds): 45%

Particulars	<i>(in thousand Philippine pesos)</i>								
	NDRRMF (A.1)				QRF (A.2)	Agencies' Regular Budget (A.3)	LDRRMF (A.4)	Donations (A.5)	Grand Total
NDRRMP	MRRRP	CARED <sup>10</sup>	Total						
<b>Balance, Jan. 1</b>	<b>6,382,106</b>	<b>5,540,030</b>	<b>1,734,921</b>	<b>13,657,057</b>	<b>5,554,579</b>	-	<b>32,371,526</b>	<b>4,620,367</b>	<b>56,203,529</b>
NGAs	5,193,366	1,875,439	505,619	7,574,424	5,554,579	-	-	295,358	13,424,361
GOCCs	1,188,740	3,664,591	1,229,302	6,082,633	-	-	-	-	6,082,633
LGUs	-	-	-	-	-	-	32,371,526	4,325,009	36,696,535
<b>Add: Adjustments:</b>	<b>(978,744)</b>	<b>3,228,614</b>	<b>417,673</b>	<b>2,667,543</b>	<b>(4,285,406)</b>	<b>9,933,273</b>	<b>1,483,552</b>	<b>345,422</b>	<b>10,144,384</b>
NGAs	(2,365,320)	(341,437)	(87,189)	(2,793,946)	(4,285,406)	9,866,292	-	(99,561)	2,687,379
GOCCs	1,386,576	3,570,051	504,862	5,461,489	-	66,981	-	1,312	5,529,782
LGUs	-	-	-	-	-	-	1,483,552	443,671	1,927,223
<b>Adj. Balance</b>	<b>5,403,362</b>	<b>8,768,644</b>	<b>2,152,594</b>	<b>16,324,600</b>	<b>1,269,173</b>	<b>9,933,273</b>	<b>33,855,078</b>	<b>4,965,789</b>	<b>66,347,913</b>
NGAs	2,828,046	1,534,002	418,430	4,780,478	1,269,173	9,866,292	-	195,797	16,111,740
GOCCs	2,575,316	7,234,642	1,734,164	11,544,122	-	66,981	-	1,312	11,612,415
LGUs	-	-	-	-	-	-	33,855,078	4,768,680	38,623,758
<b>Add: Receipts during the year</b>	<b>17,087,273</b>	<b>805,789</b>	<b>-</b>	<b>17,893,062</b>	<b>6,350,000</b>	<b>658,182</b>	<b>43,789,356</b>	<b>3,353,591</b>	<b>72,044,191</b>
NGAs	15,393,962	586,009	-	15,979,971	6,350,000	616,030	-	40,500	22,986,501
GOCCs	1,693,311	219,780	-	1,913,091	-	42,152	-	6,601	1,961,844
LGUs	-	-	-	-	-	-	43,789,356	3,306,490	47,095,846
<b>Total Funds Available</b>	<b>22,490,635</b>	<b>9,574,433</b>	<b>2,152,594</b>	<b>34,217,662</b>	<b>7,619,173</b>	<b>10,591,455</b>	<b>77,644,434</b>	<b>8,319,380</b>	<b>138,392,104</b>
<b>Less: Utilization during the Year</b>	<b>14,169,666</b>	<b>6,482,483</b>	<b>1,090,137</b>	<b>21,742,286</b>	<b>6,773,394</b>	<b>5,967,383</b>	<b>34,474,764</b>	<b>3,819,993</b>	<b>72,777,820</b>
NGAs	12,875,686	1,907,451	397,396	15,180,533	6,773,394	5,937,937	-	101,767	27,993,631
GOCCs	1,293,980	4,575,032	692,741	6,561,753	-	29,446	-	417	6,591,616
LGUs	-	-	-	-	-	-	34,474,764	3,717,809	38,192,573
<b>Less: Reversion to BTr</b>	<b>6,506</b>	<b>341</b>	<b>-</b>	<b>6,847</b>	<b>4,699</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>11,546</b>
NGAs	6,506	341	-	6,847	4,699	-	-	-	11,546
<b>Balance, Dec. 31</b>	<b>8,314,463</b>	<b>3,091,609</b>	<b>1,062,457</b>	<b>12,468,529</b>	<b>841,080</b>	<b>4,624,072</b>	<b>43,169,670</b>	<b>4,499,387</b>	<b>65,602,738</b>
NGAs	5,339,816	212,219	21,034	5,573,069	841,080	4,544,385	-	134,530	11,093,064
GOCCs	2,974,647	2,879,390	1,041,423	6,895,460	-	79,687	-	7,496	6,982,643
LGUs	-	-	-	-	-	-	43,169,670	4,357,361	47,527,031

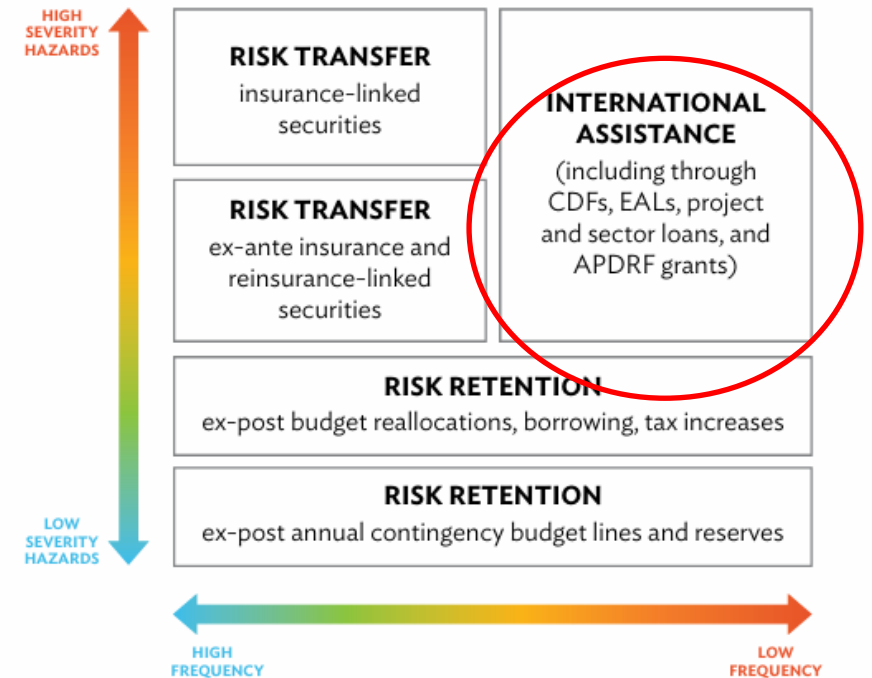
Commission on Audit



# Contingent Disaster Financing (CDF)

## Layered Approach to Disaster Risk Financing

- Provides Gov't with rapid access to resources to initiate disaster response and early recovery efforts
- Features of ADB's CDF:
  - Multi-year program option: Maximum of 2 replenishments within availability period of 3 – 5 years
  - Single tranche(OCR): May be renewed up to 4 times for an additional 3-year period each (maximum of 15 years)
  - Deferred disbursement option: if no disaster occurs, government may elect to have undisbursed CDF disbursed at the conclusion of the availability period
  - Disbursement triggers linked to eligible disaster events
  - Approved upon on meeting Policy Actions that enhance long-term disaster resilience
  - Policy Matrix – sets out prior/policy actions that are applicable for the first funding availability and subsequent replenishments



APDRF = Asia Pacific Disaster Response Fund, CDF = contingent disaster financing, EAL = emergency assistance loan.

Source: Asian Development Bank.

# CDF Resource Commitment and Pricing Options (ADB)

## • Option 1: Committed Capital

- Upon loan effectiveness, committed CDF amount is available for disbursement immediately after a disaster occurs.
- No annual commitment charge, but government will pay a front-end fee of 0.25% of committed loan amount (may be financed from loan proceeds)
- For each renewal: Fee of 0.25% of the renewal amount (up to the undisbursed loan balance)

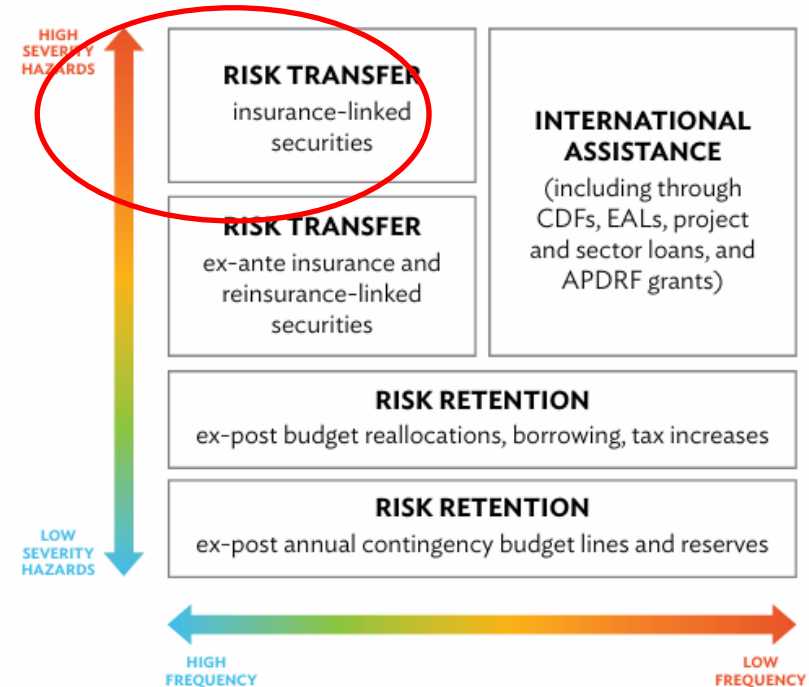
## • Option 2: Unallocated Capital

- ADB will approve a maximum CDF amount from resources available for commitment (RAC) but will not allocate it. If disaster occurs, government will allocate resources from within existing available resources for that year.
  - If RAC is fully allocated, government may elect to delay projects under preparation but not yet approved
- A front-end fee of 0.10% of the committed loan amount (may be financed from loan proceeds)
- For each renewal: Fee of 0.25% of the renewal amount (up to the undisbursed loan balance)

# Parametric Disaster Insurance

- Intends to provide rapid post-disaster financing for early recovery in a cost-efficient manner
- Provides payouts based upon a trigger event
  - Pay-outs are determined based on the physical features of a natural hazard event, e.g., wind speed for typhoons or ground-shaking for earthquakes, rather than on actual losses
- Different from traditional insurance



## Layered Approach to Disaster Risk Financing



APDRF = Asia Pacific Disaster Response Fund, CDF = contingent disaster financing, EAL = emergency assistance loan.

Source: Asian Development Bank.

# Parametric insurance vs Traditional (indemnity) insurance

	Indemnity insurance	Parametric insurance
		
Trigger for payout	Actual loss incurred	Natural hazard event exceeding a defined threshold (i.e., windspeed or ground shaking magnitude)
Speed of payout	Slower	Faster
Use of payout	Intended to cover the loss sustained	Mainly for post-disaster relief, early recovery, and reconstruction
Risk of payout not covering losses	No risk as payout is based on loss	Risk that the index used is not well-correlated with the actual losses sustained
Pricing flexibility	Few policy options	Very flexible structure – premium and cover can be determined by the policyholder

Photos:

Car cartoon from: <https://in.pinterest.com/pin/568649890448529024/>

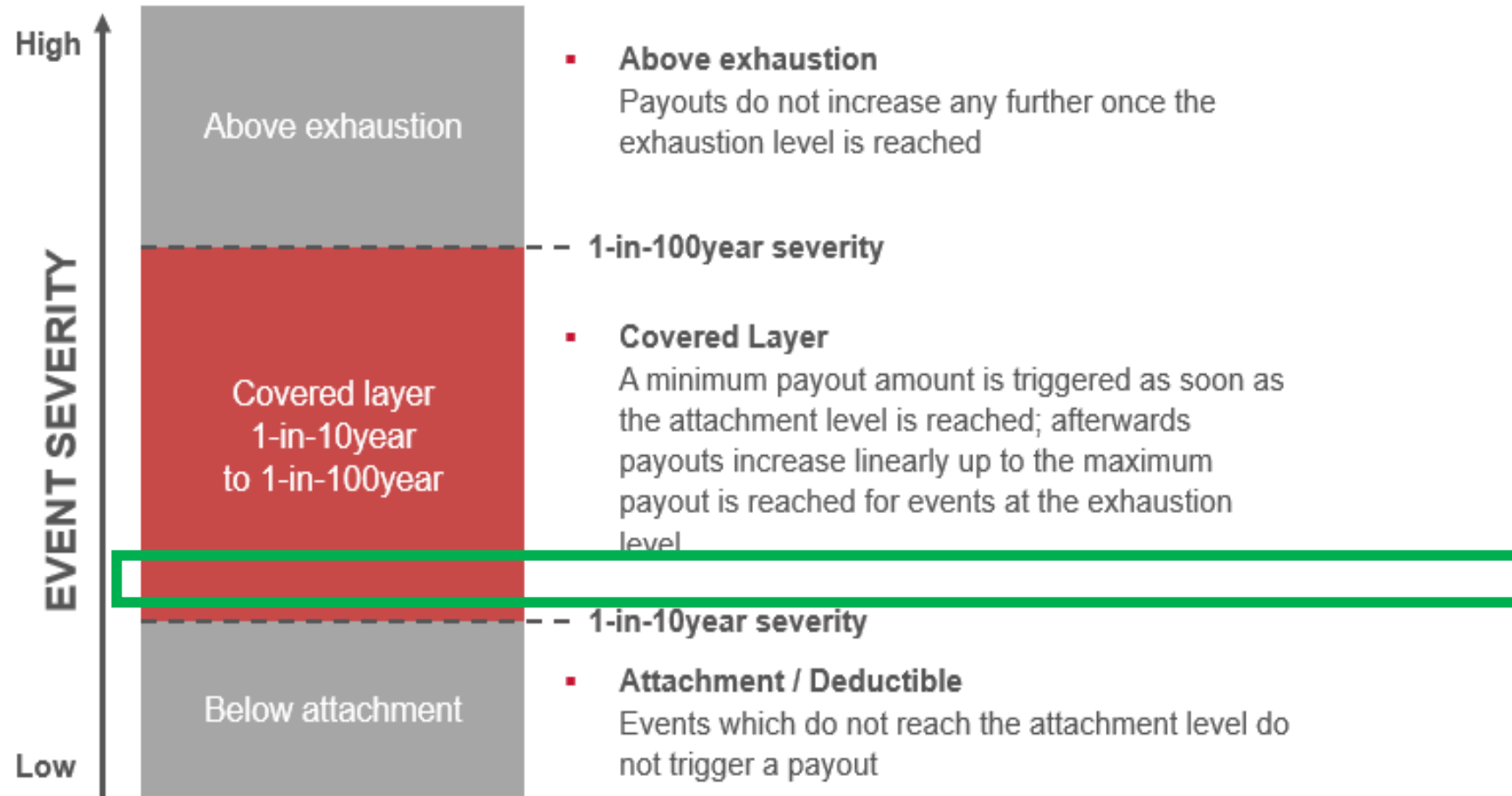
Earthquake cartoon from: <https://www.vecteezy.com/vector-art/3129121-earthquake-in-city-cartoon-vector-illustration>

# Parametric Disaster Insurance

- **Attachment Return Period**

- ✓ Return period at which the insurance coverage starts to make the pay-out
- ✓ Amount of recovery might vary depending on the severity of the event causing the recovery, and could fall anywhere between the specified minimum amount (a percentage of the sum insured) and the full maximum recovery amount (equal to the full sum insured)

# Parametric Disaster Insurance

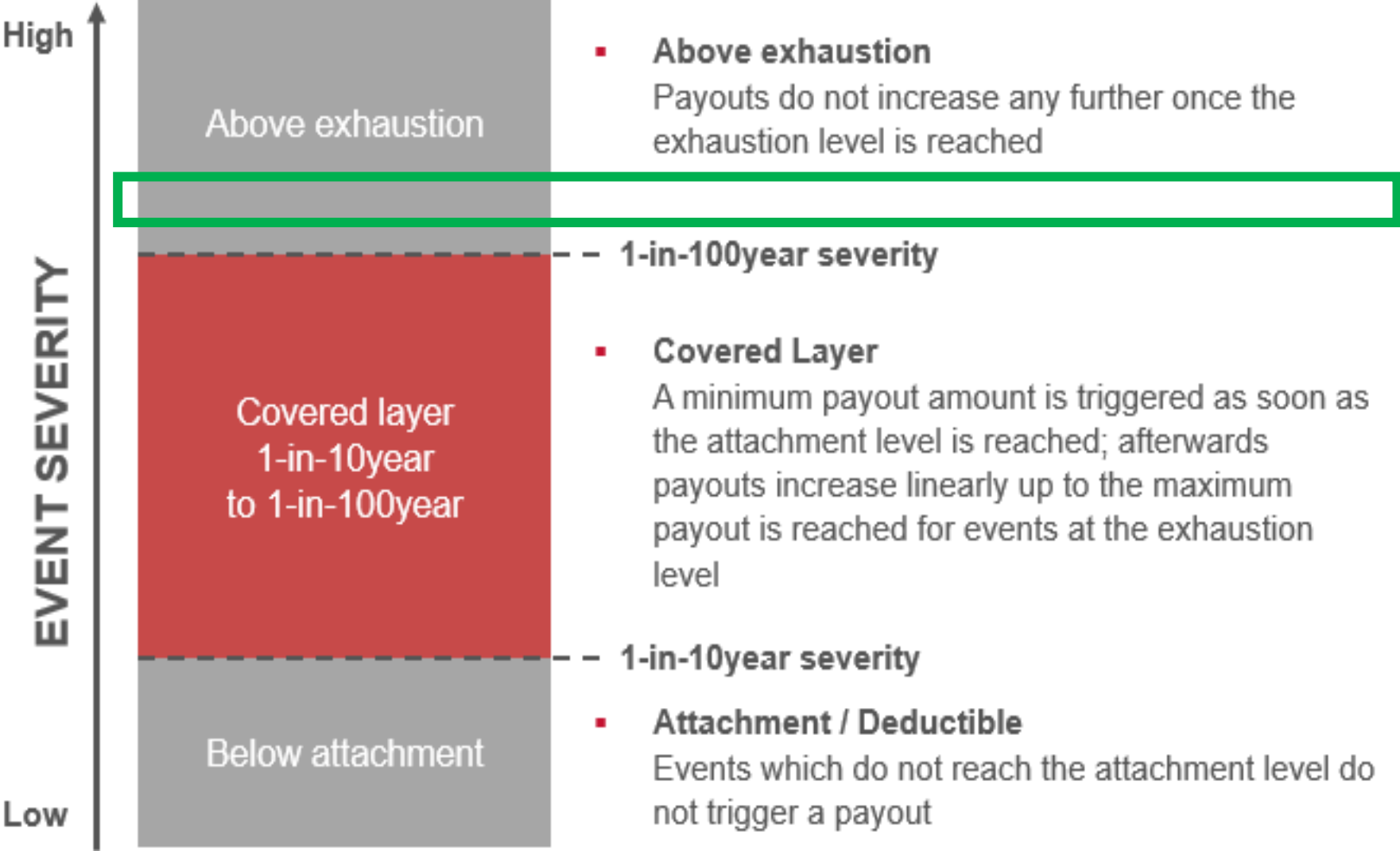


# Parametric Disaster Insurance

- **Exhaustion Return Period**

- ✓ Return period at which the insurance coverage starts to pay-out the full policy limit, i.e., the total sum insured under the policy
- ✓ e.g., if an attachment period of 100 years is chosen, the insured can be expected a recovery of the full sum insured for an event once in every 100 years, on average

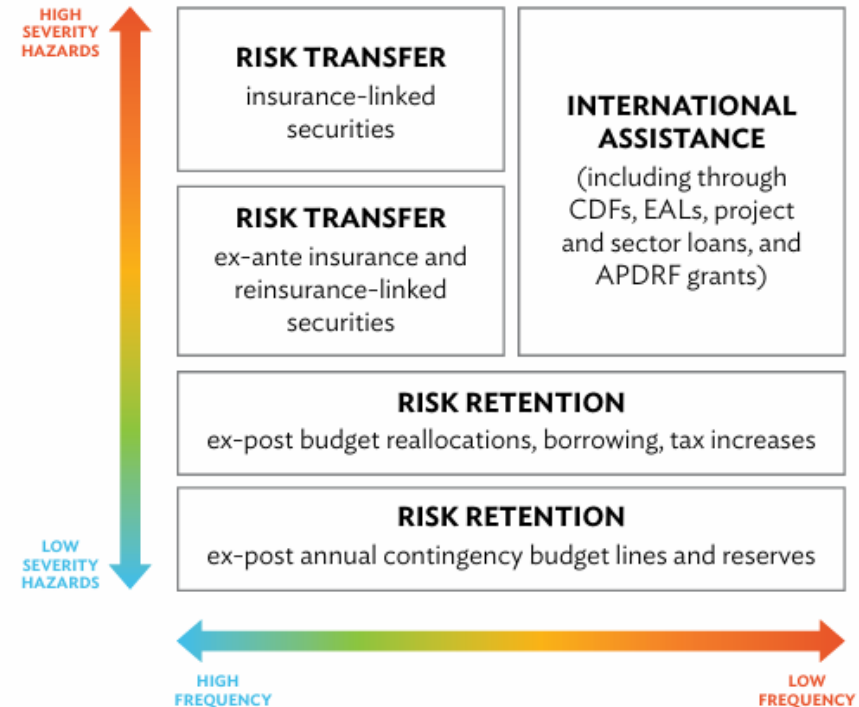
# Parametric Disaster Insurance



# Sovereign Catastrophe Bonds

- **What it is:** Catastrophe bonds are a type of financial instrument where investors provide capital upfront that governments can draw on if a major disaster occurs. In exchange, investors receive interest payments. If the trigger event happens, they lose some or all of their principal - which flows to the government as disaster financing.
- **Trigger:** Typically, parametric for sovereign cat bonds
- **Risk level:** Designed for rare, severe events that are typically uncovered by other instruments
- **Coverage:** +\$50m
- **Speed:** Typically, within a few weeks of the disaster event

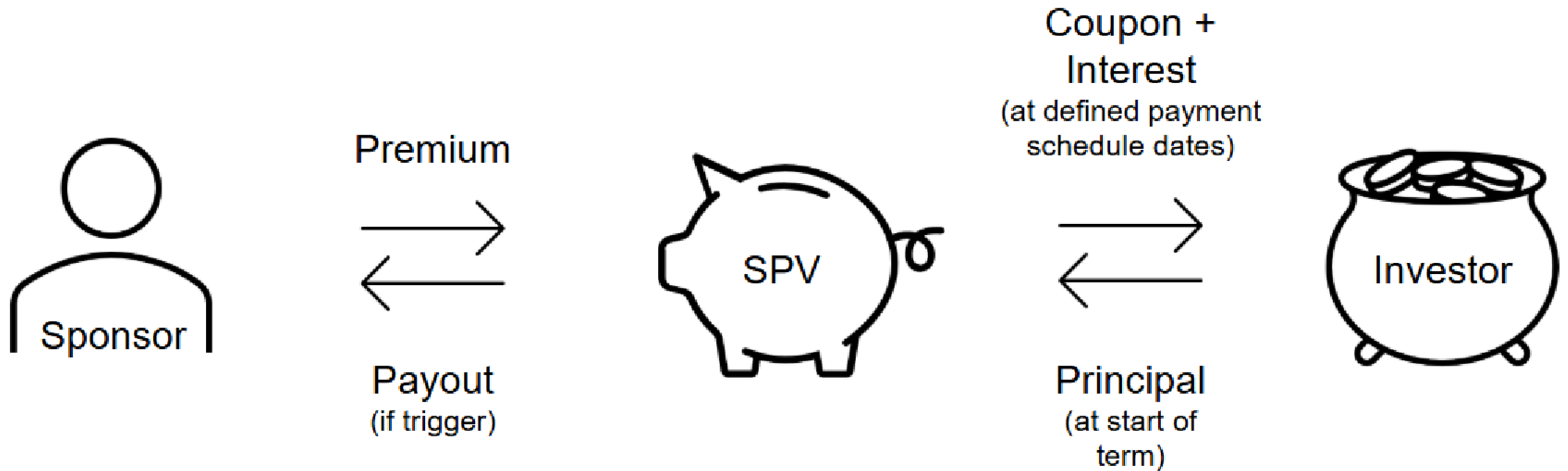
## Layered Approach to Disaster Risk Financing



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Source: Asian Development Bank.

# How does it work?



# Catastrophe bonds: Practical considerations

## Pros:

- Rapid, automatic payout
- Large capacity – can provide cover where insurance cannot
- Increasingly accessible via multilateral intermediaries
- CAT bond transactions can improve the credit rating of a sovereign sponsor

## Cons:

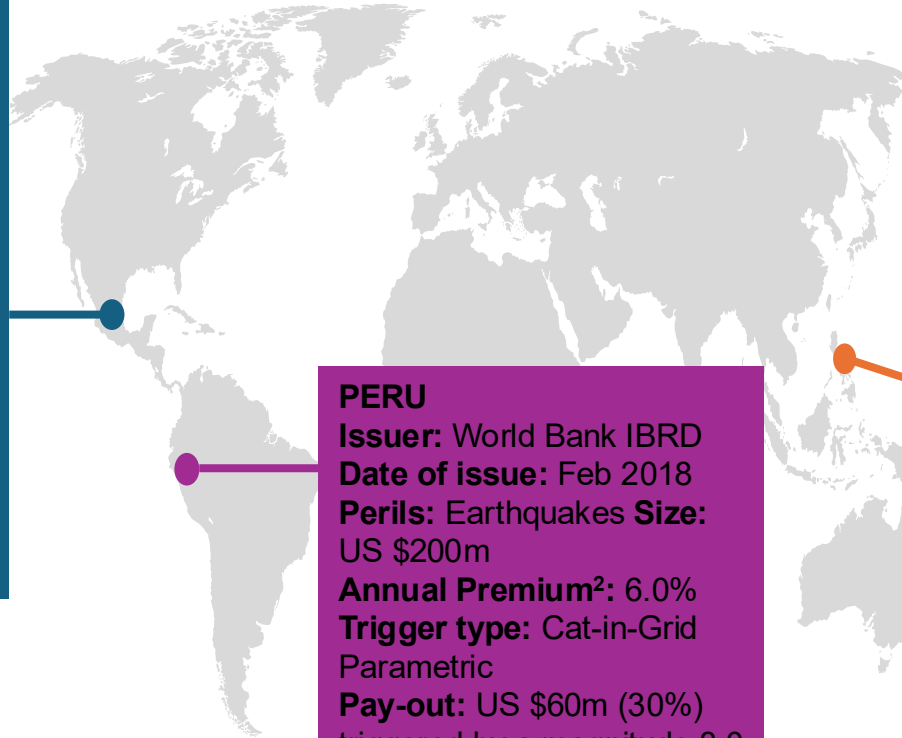
- Basis risk –parametric triggers are unlikely to perfectly match actual losses
- Cost - cat bonds carry a premium over conventional debt; the coupon rate reflects the probability of loss, plus investor risk premium
- Capacity and expertise - structuring a cat bond is complicated, it requires actuarial, legal, and financial market expertise - that most finance ministries don't have in-house.

Cat bonds are most effective when they are part of an integrated disaster risk financing strategy

# Experience around the world

## MEXICO

**Issuer:** World Bank IBRD  
**Date of issue:** Aug 2017  
**Perils:** Earthquakes and named storms  
**Size:** US \$360m total (US \$150m earthquake / US \$210m storms)  
**Annual Premium<sup>1</sup>:** 4.5%  
**Trigger type:** Cat-in-Grid Parametric  
**Pay-out:** US \$150m (100%) of the earthquake bond following a magnitude 8.1 earthquake in September 2017.



## PERU

**Issuer:** World Bank IBRD  
**Date of issue:** Feb 2018  
**Perils:** Earthquakes  
**Size:** US \$200m  
**Annual Premium<sup>2</sup>:** 6.0%  
**Trigger type:** Cat-in-Grid Parametric  
**Pay-out:** US \$60m (30%) triggered by a magnitude 8.0 earthquake in May 2019.

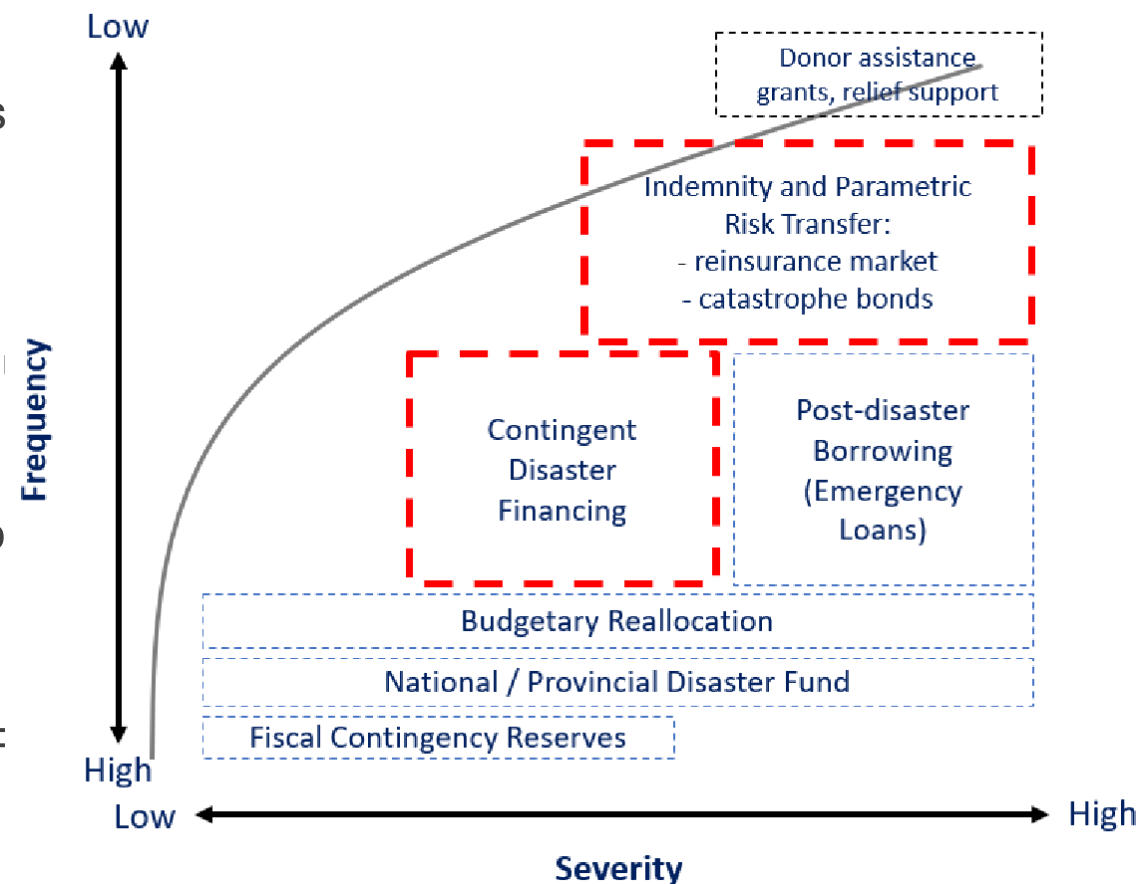
## PHILIPPINES

**Issuer:** World Bank IBRD  
**Date of issue:** Nov 2019  
**Perils:** Earthquakes and tropical cyclones  
**Size:** US \$225m total (US \$75m EQ / US \$150m TC)  
**Annual Premium<sup>2</sup>:** 5.50% EQ 5.65% TC  
**Trigger type:** Modelled Loss Parametric  
**Pay-out:** US \$52.5m (35%) of the tropical cyclone tranche after super typhoon Rai (locally known as Odette) breached the parametric trigger for wind in late 2021.

# ADB's Disaster Relief Bond (DRB)

In 2026, ADB piloted its first cat bond – known as

- **Countries:** Kyrgyz Republic and Tajikistan
- **Coverage:** Up to \$90m per country
- **Risks:** Earthquake and flood, the first MDB-issued
- **Period:** Three years
- **Use of funds:** Channels through adaptive social housing for households who have been impacted by the disaster
- **DRF instruments:**
  - DRB + Contingent Disaster Financing (CDF)

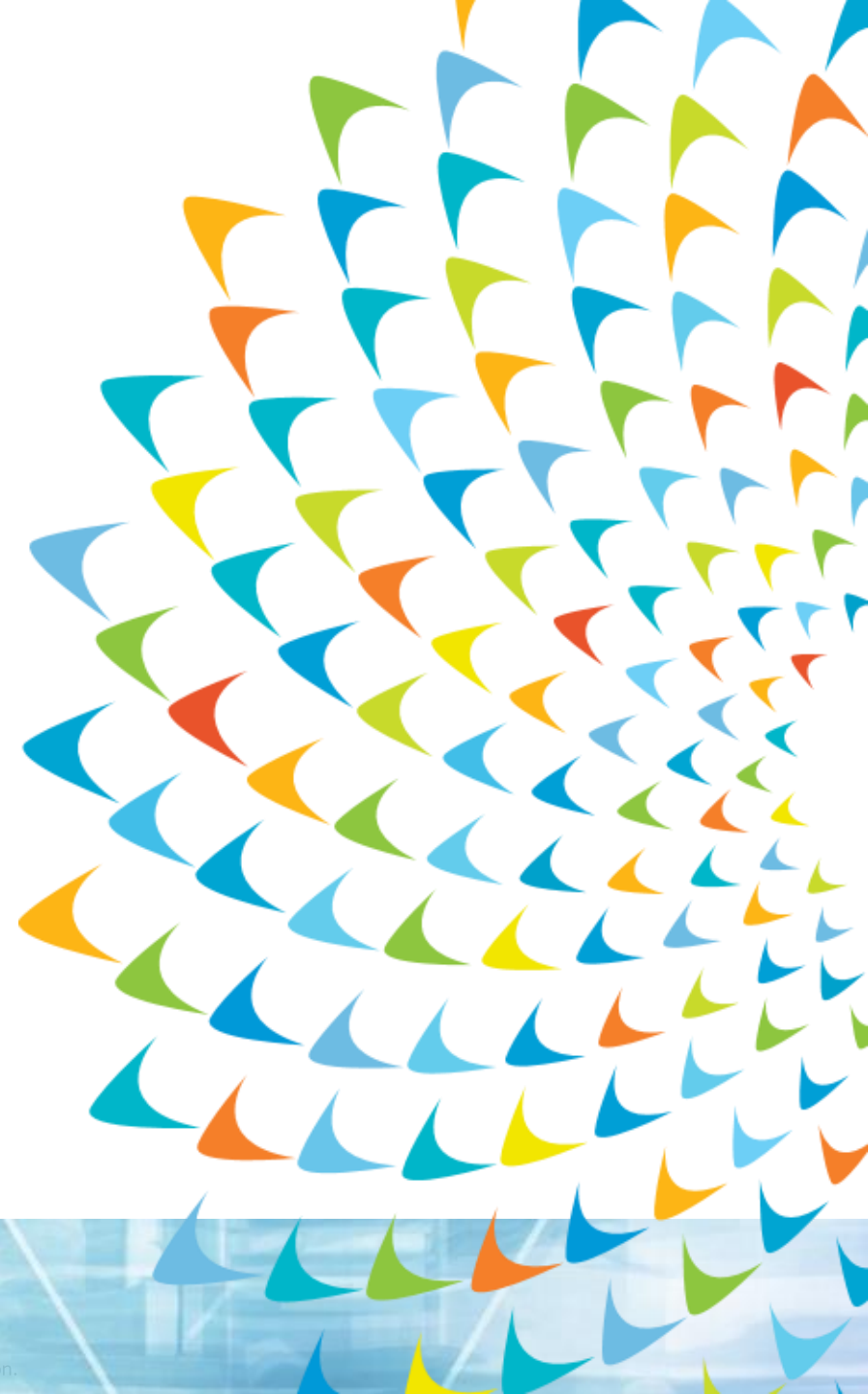


**A risk layered approach to disaster risk financing provides complementing instruments according to frequency / severity / response time**



**THANK YOU**

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Workshop | 20–23 April 2026 | Manila, Philippines

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