



UNFCCC regional expert meeting on loss and damage

August 27-29, 2012

Bangkok, Thailand

# Loss and Damage Associated with Climate Change Impacts

## The (possible) role of Disaster Risk Financing and Insurance

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World Bank



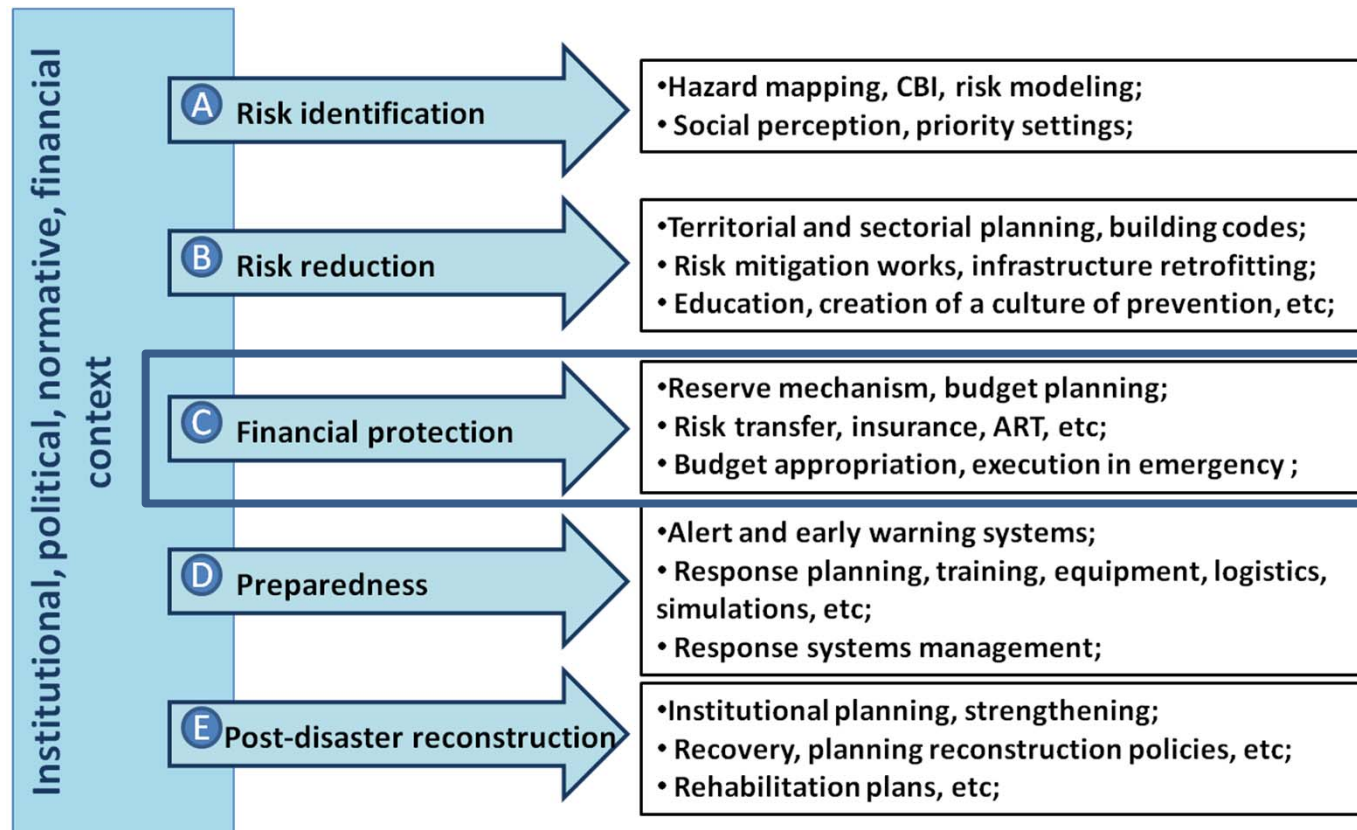
# Hazard x Exposure (Vulnerability) = Risk

- Earthquakes
- Cyclones
- Monsoon Rains
- Landslides
- Draughts
- Tsunami...
- **Population** (particularly the poor, living in risk area, and with little capacity to cope, etc.)
- **Infrastructure** (in flood plains or seismic zone, coastal area, with poor standards, etc.)
- **Economic activity** (agriculture zone, tourism area, key infrastructure, etc.)



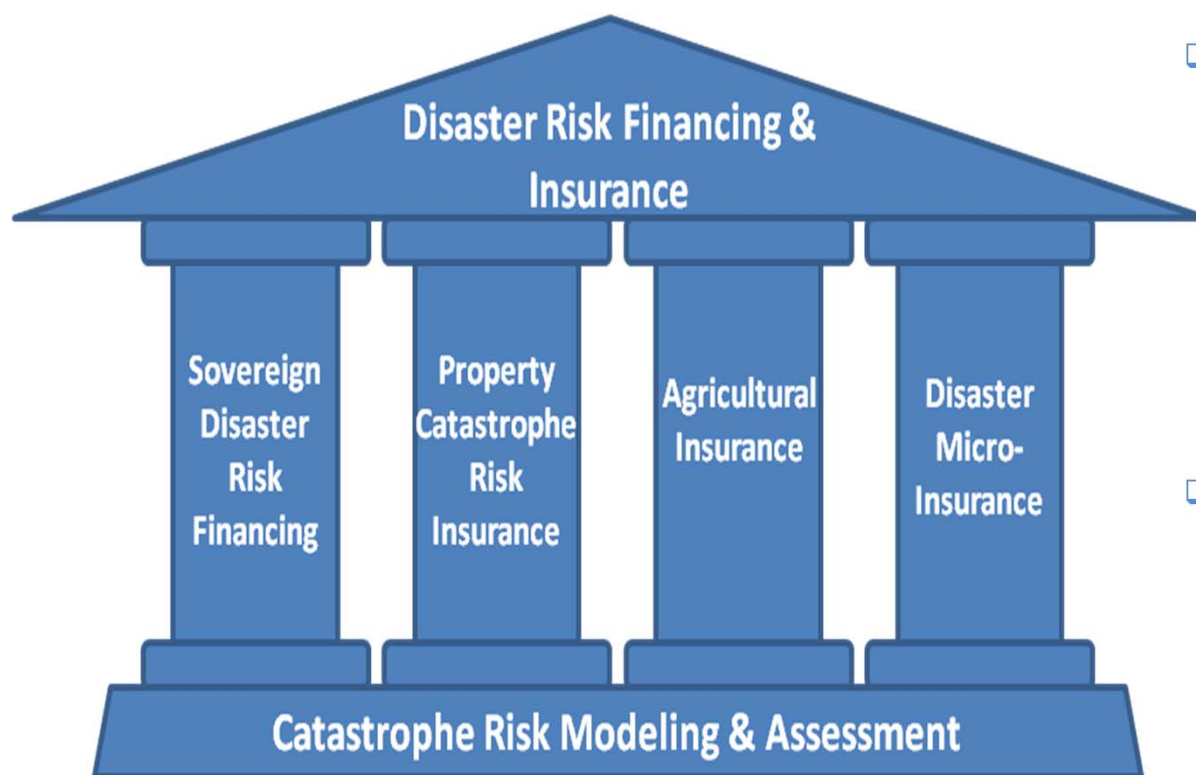


# World Bank Disaster Risk Management Framework



# World Bank Disaster Risk Financing & Insurance Program

Increasing the fiscal resilience of the states against natural disasters



**DRFI operations in more than 40 countries worldwide**

- **Mainstream disaster risk financing and insurance in national DRM strategies**
  - Policy dialogue and knowledge management
  - Technical assistance and advisory services
  - Product development
- **Partnerships**
  - Academic partners: Wharton School, NTU Singapore
  - Practitioners: Willis Research Network, Geneva Association, brokers, reinsurers
  - Regional development banks: IADB, ADB, AfDB



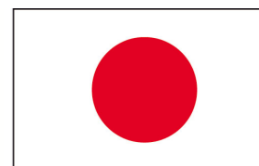
**GFDRR**  
Global Facility for Disaster Reduction and Recovery



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

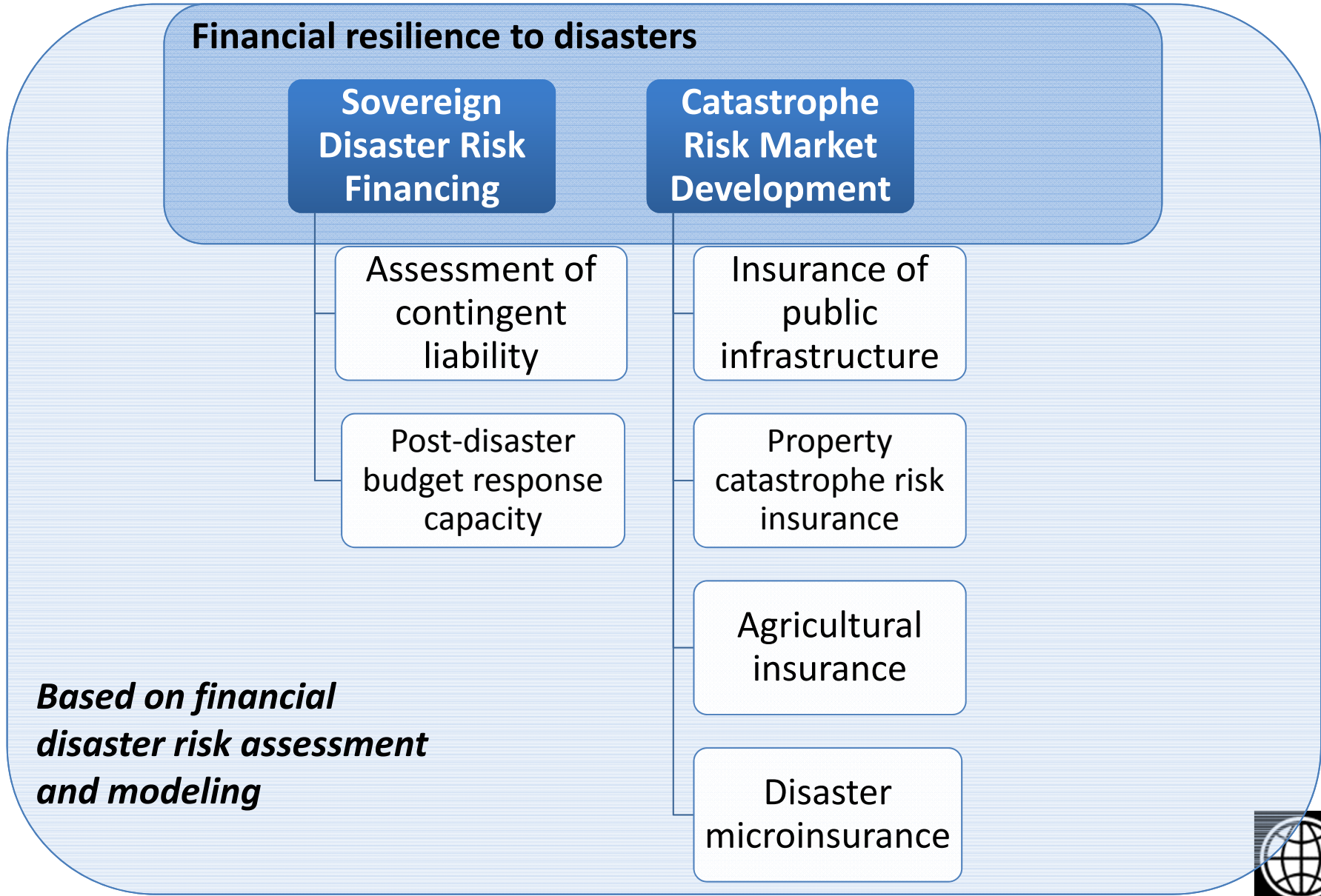
Swiss Confederation

Federal Department of Economic Affairs FDEA  
State Secretariat for Economic Affairs SECO

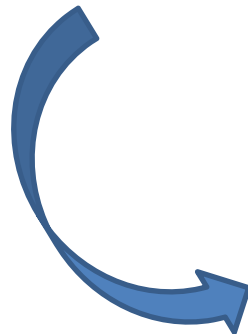
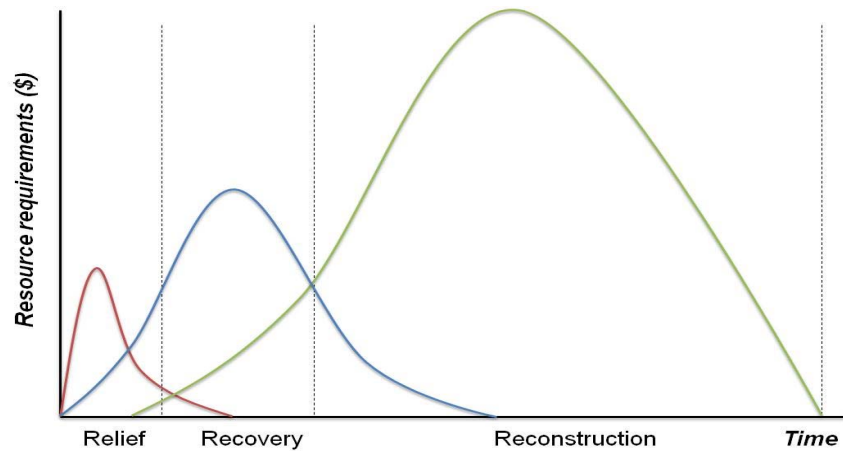


Ministry of Foreign Affairs

# World Bank DRFI Framework



# Matching the Funding Needs



	Relief phase (1-3 months)	Recovery phase (3 to 9 months)	Reconstruction phase (over 9 months)
<b>Post-disaster financing</b>			
Donor assistance (relief)	█	█	█
Budget reallocation	█	█	█
Domestic credit	█	█	█
External credit	█	█	█
Donor ass. (reconstruction)	█	█	█
Tax increase	█	█	█
<b>Ex-ante financing</b>			
Budget contingencies	█	█	█
Reserve fund	█	█	█
Contingent debt facility	█	█	█
Parametric insurance	█	█	█
Catastrophe Bonds	█	█	█
Traditional insurance	█	█	█



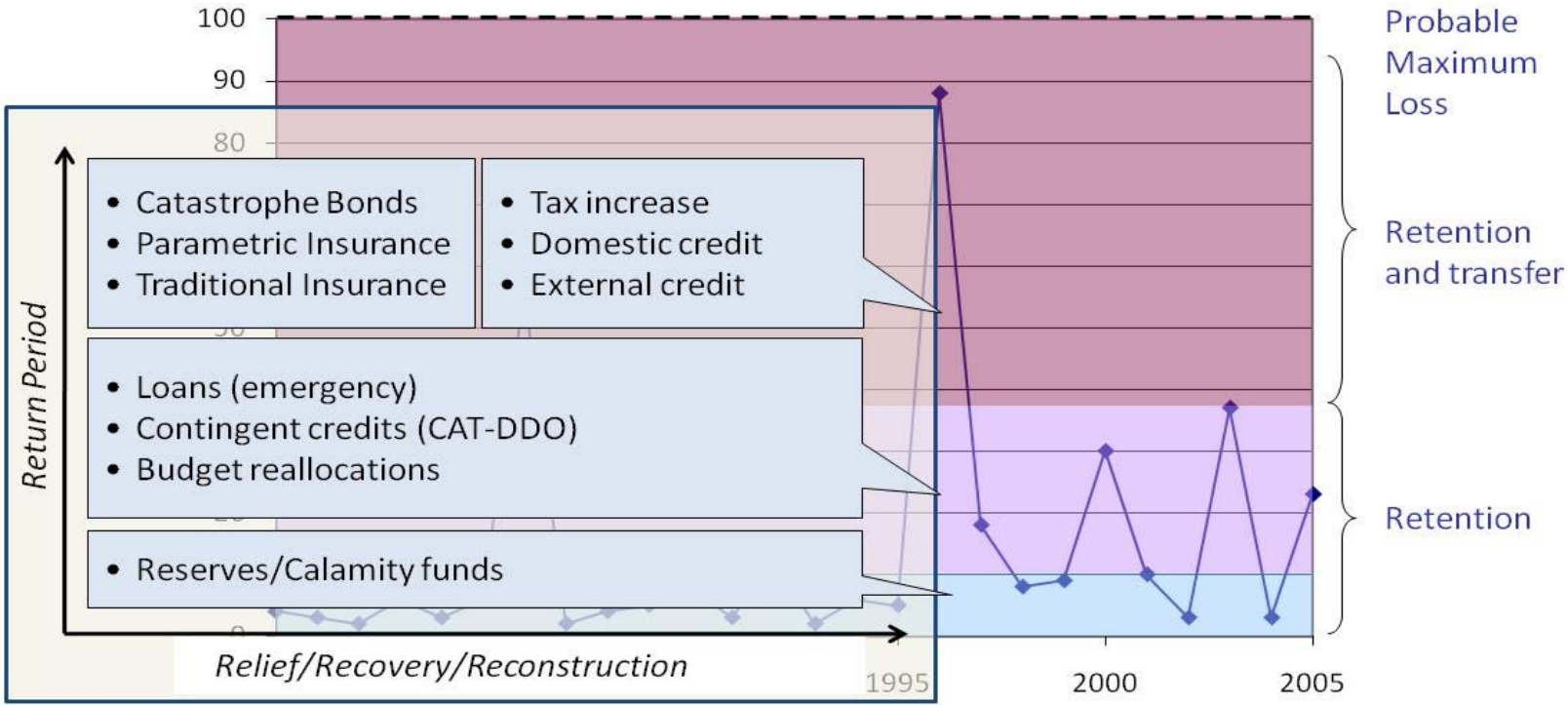
# Costs and benefits of financial instruments

Instruments	Indicative Cost (multiplier)	Disbursement (months)	Amount of funds available
Donor support (relief)	0-1	1-6	Uncertain
Donor support (recovery & reconstruction)	0-2	4-9	Uncertain
Budget contingencies	1-2	0-9	Small
Reserves	1-2	0-1	Small
Budget reallocations	1-2	0-1	Small
Contingent debt facility (e.g., CAT DDO)	1-2	0-1	Medium
Domestic credit (bond issue)	1-2	3-9	Medium
External credit (e.g. emergency loans, bond issue)	1-2	3-6	Large
Parametric insurance	2 & up	1-2	Large
ART (e.g., CAT bonds, weather derivatives)	2 & up	1-2	Large

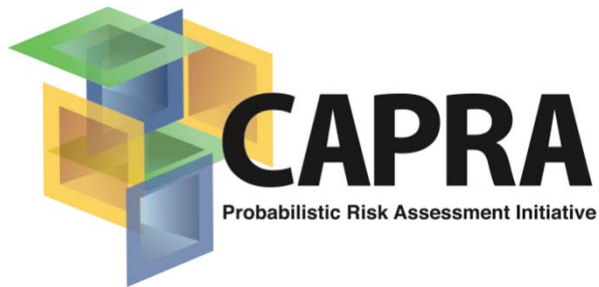




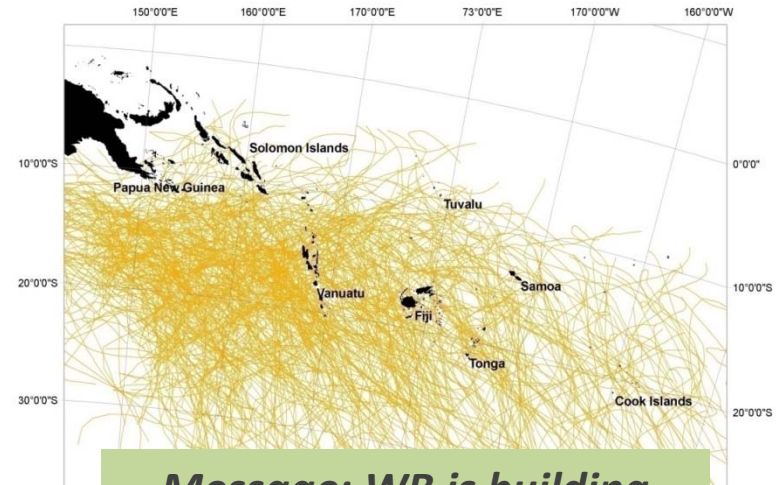
# Three-tiered risk layering approach



# Understanding Risk for Better Decision Making



**WCDIS** Weather and Climate Information  
and Decision-Support Systems

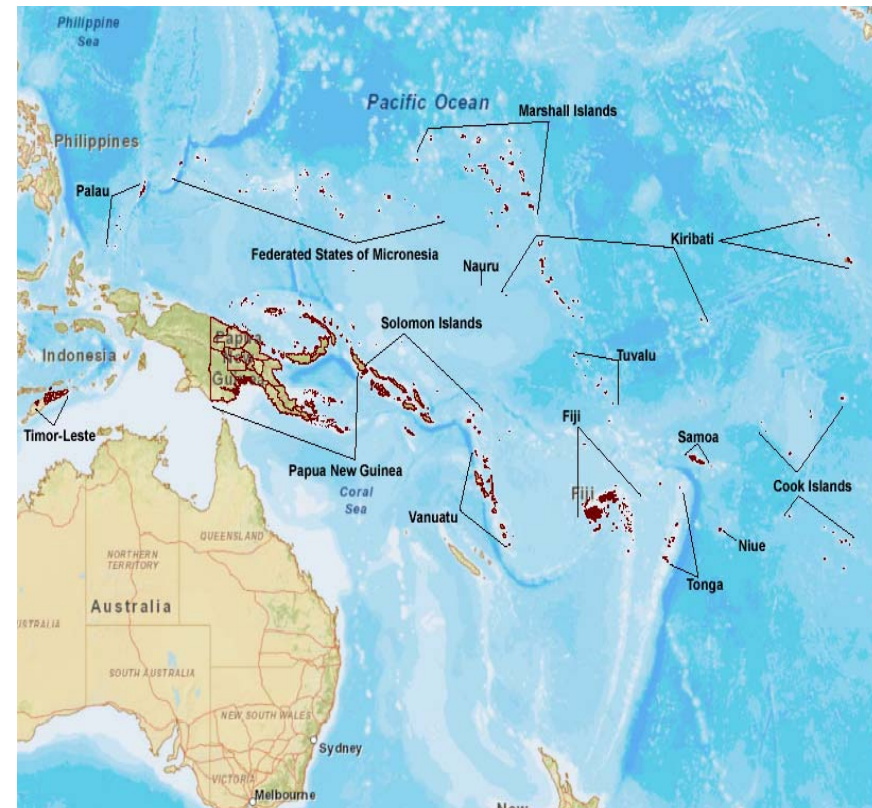


*Message: WB is building tools to enable informed decision-making about complex dynamic systems in a changing climate.*

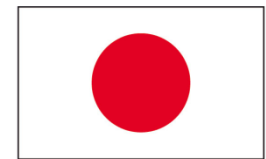


# Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI)

- Pacific Risk Information System
  - Regional exposure database
  - Probabilistic assessment of major perils
  - Risk based framework to direct resources of countries and development partners
- Pacific Disaster Risk Financing and Insurance
  - Fiscal risk exposure against natural disasters
  - Financial disaster risk management
  - Catastrophe risk insurance program

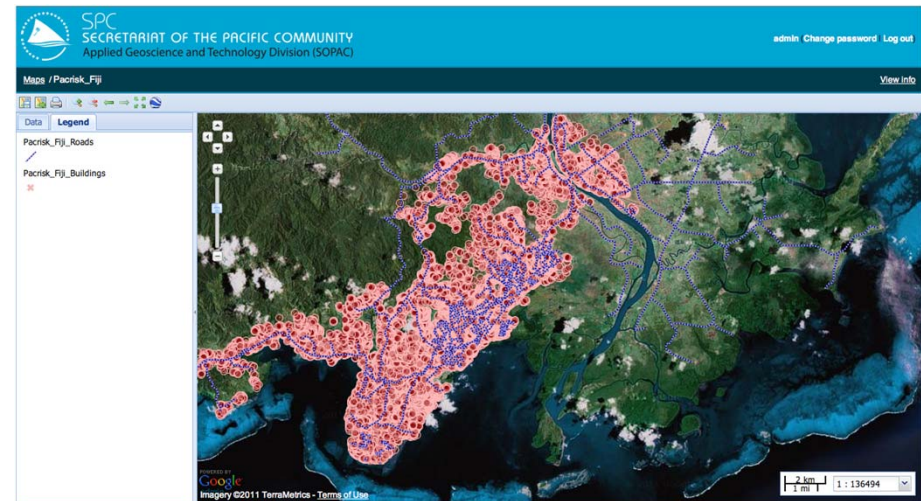
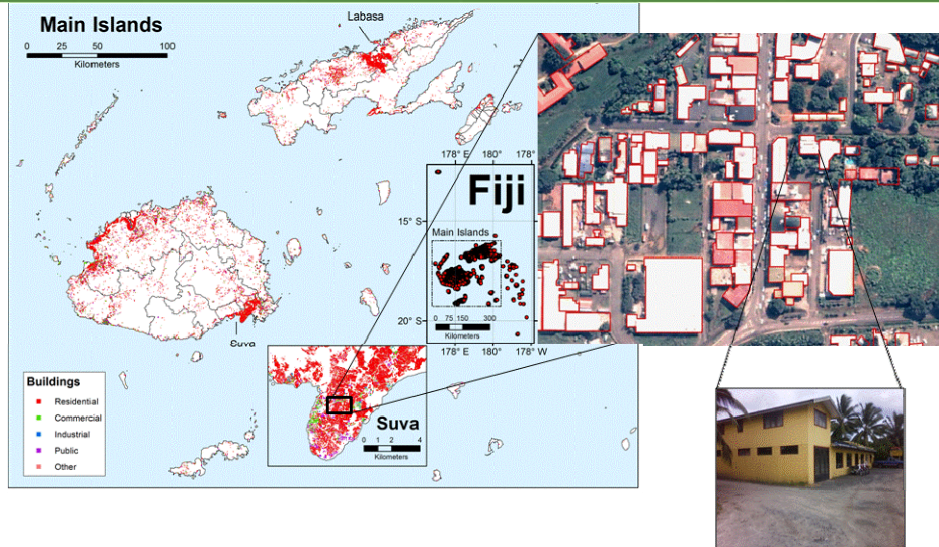


**GFDRR**  
Global Facility for Disaster Reduction and Recovery

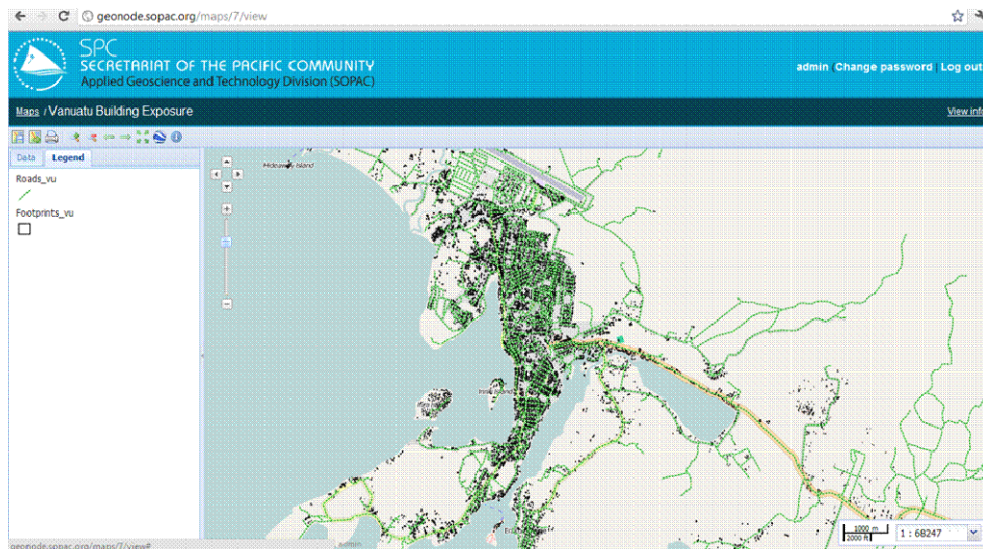


# Pacific Risk Information System

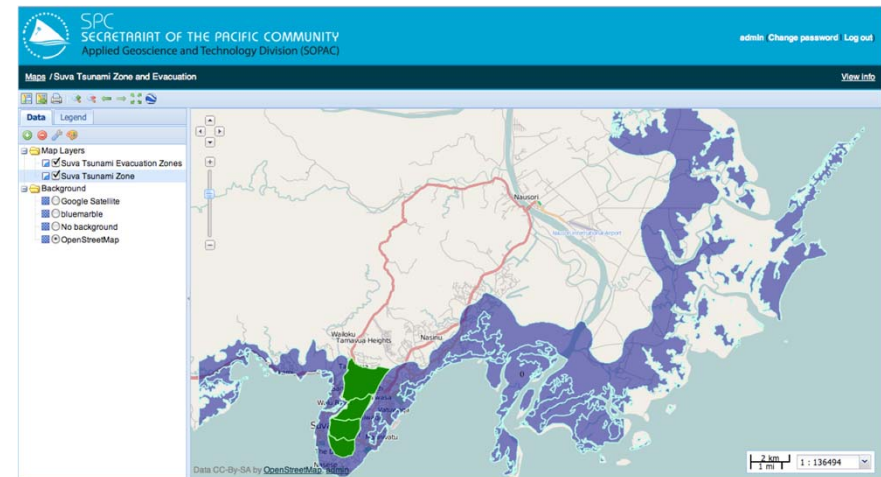
Open-source, web-mapping technology to share risk assessment results for more effective Disaster Risk Management in the Pacific



Building and Road Exposure in Fiji



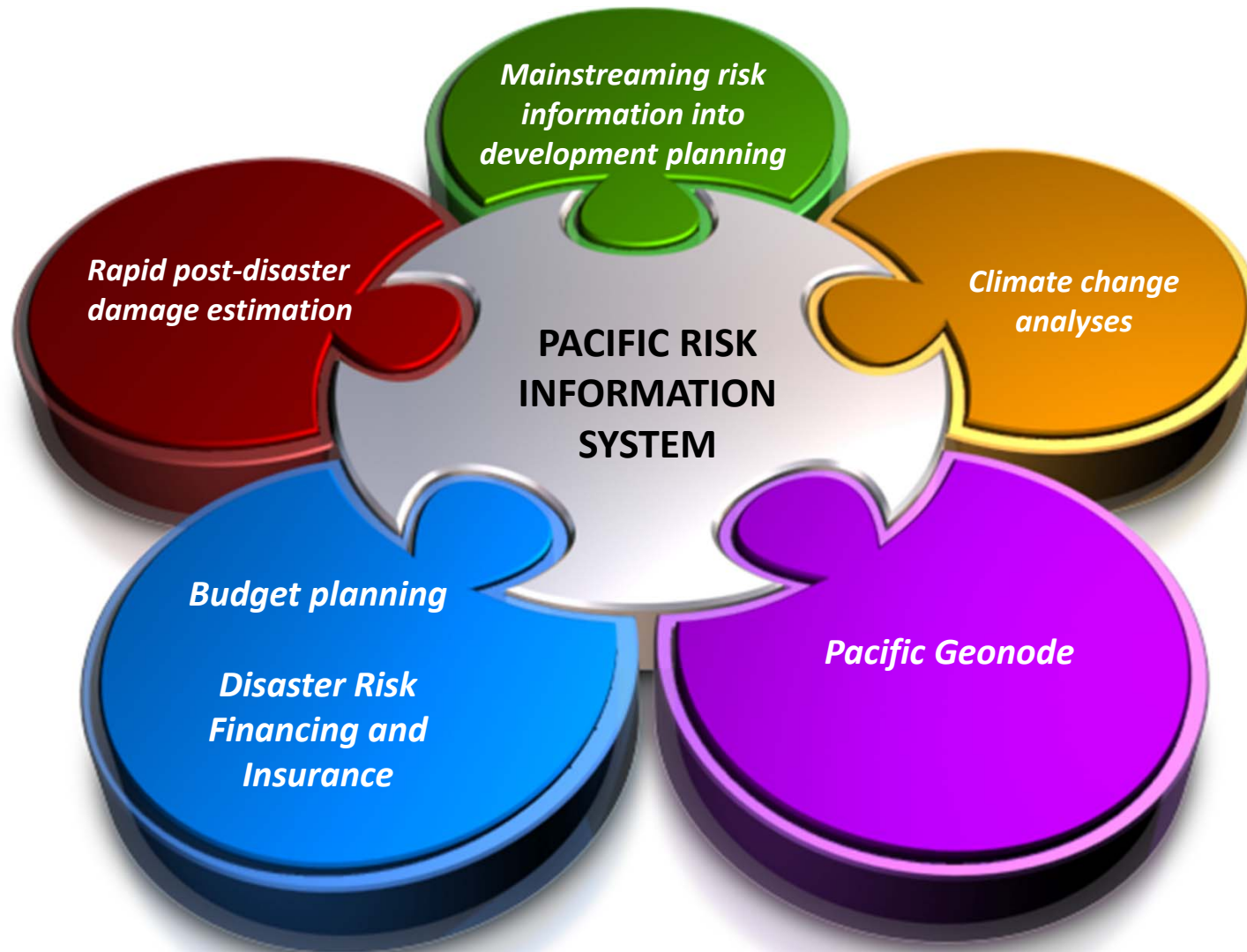
Building and road exposure, Port Vila, Vanuatu



Tsunami Hazard and Evacuation Zones in Fiji



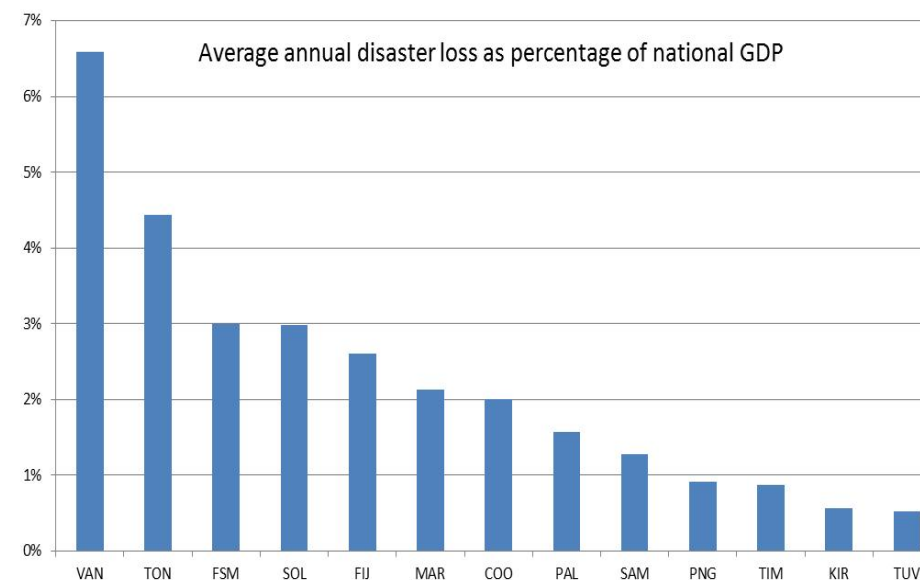
# Moving towards applications



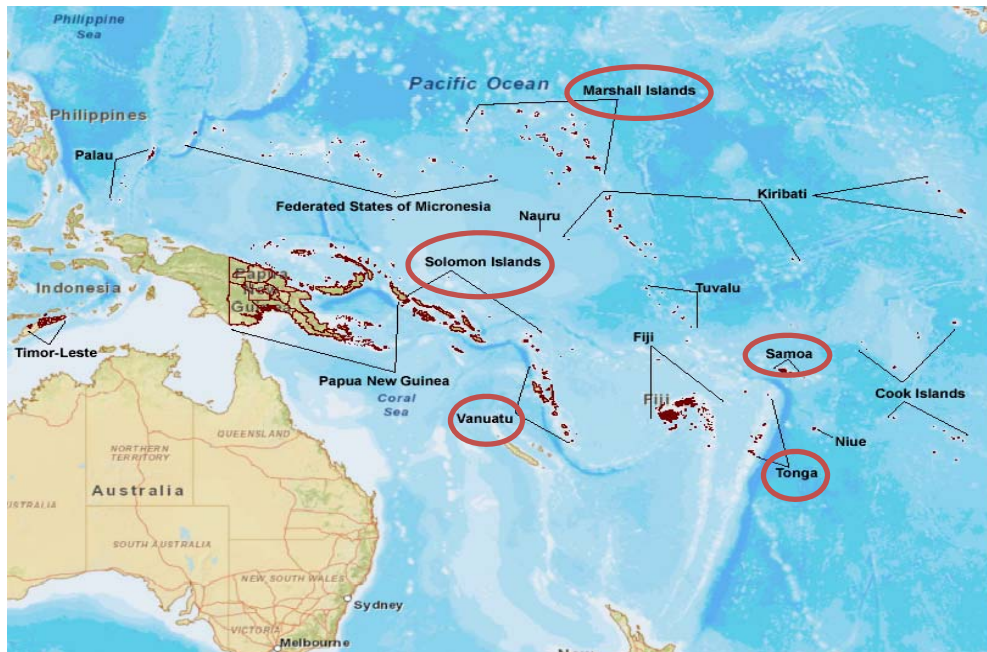
# Pacific Disaster Risk Financing and Insurance

Increasing financial resilience against natural disasters

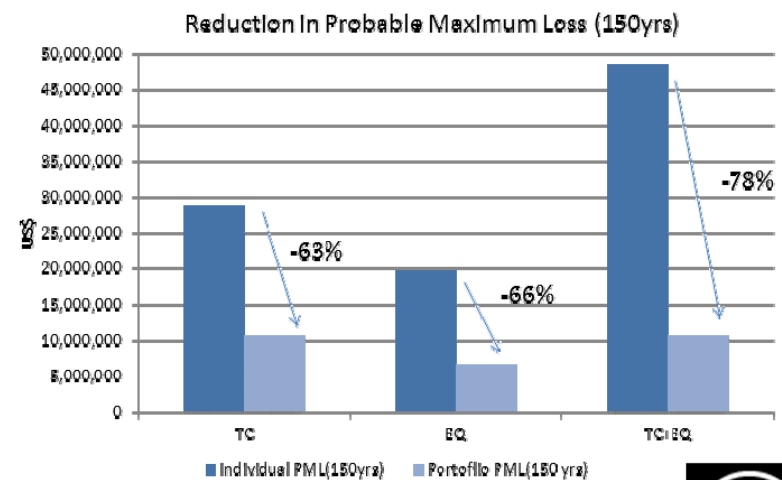
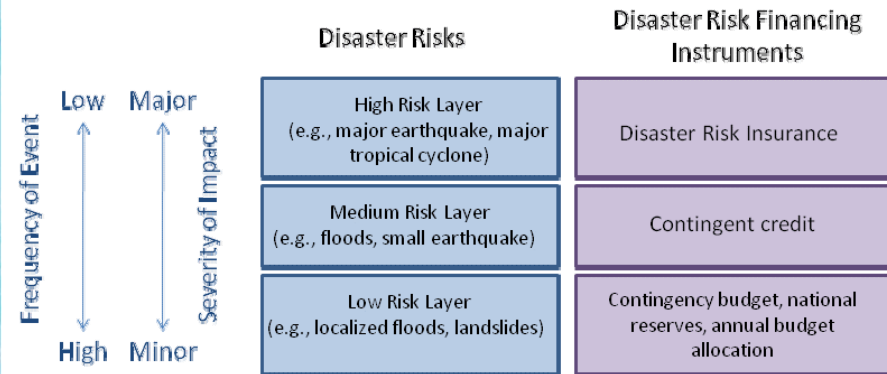
- **Development Objective**
  - Reducing the financial vulnerability of the Pacific Island States to natural disasters by improving their financial response capacity in the aftermath of natural disasters
  - Providing the Pacific island states with immediate liquidity in the aftermath of a disaster
- **Project Components**
  - Integrated disaster risk financing strategy for governments
  - Development of private catastrophe risk insurance markets
  - Pacific catastrophe risk insurance pilot program for governments



# Pacific Catastrophe Risk Insurance Pilot Program



 Pacific Island Countries joining the 2012-2013 Pacific catastrophe risk insurance pilot





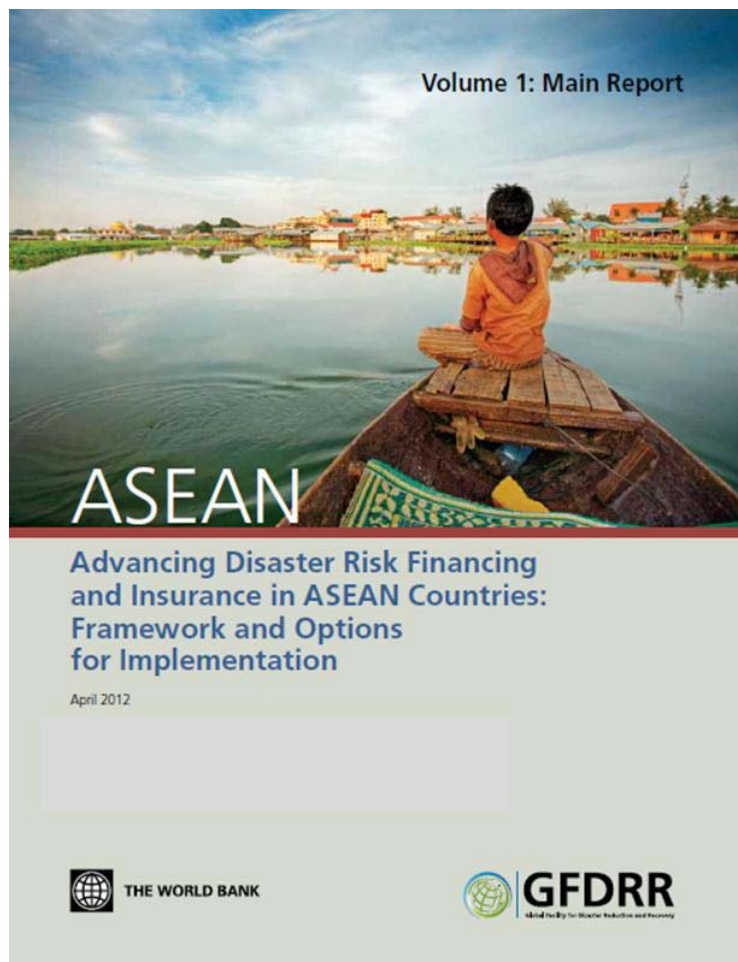
# World Bank DRFI products and services

Low ↑ ↓ High	Major	<b>Insurance-Linked Securities</b>	<b>Catastrophe Bond (CAT Bond)</b>	<ul style="list-style-type: none"> <li>➤ Recently launched a multi-country, multi-peril catastrophe bond platform to pool and transfer risks to the capital markets. Mexico has issued a USD 290 million bond to protect against earthquake and hurricane risk.</li> </ul>	Risk Transfer
		<b>Weather Derivatives</b>	<b>Malawi Drought Hedge</b>	<ul style="list-style-type: none"> <li>➤ Insurance against weather-related losses, based on an index</li> <li>➤ WBG provided Malawi its first-ever weather risk management contract to protect against the risk of severe drought</li> </ul>	
		<b>Insurance Pools</b>	<b>Caribbean Catastrophe Risk Insurance Facility (CCRIF)</b>	<ul style="list-style-type: none"> <li>➤ Parametric insurance against natural disasters</li> <li>➤ WBG Assisted 16 Caribbean Countries in establishing CCRIF against hurricanes and earthquakes</li> </ul>	
	High	Minor	<b>Contingent Loans</b>	<b>Catastrophe Risk Deferred Drawdown Option (CAT DDO)</b>	<ul style="list-style-type: none"> <li>➤ Provides immediate liquidity following a natural disaster, in the form of a contingent loan with associated risk framework reforms</li> </ul>





# ASEAN Disaster Risk Financing and Insurance Forum, Jakarta, November 2011

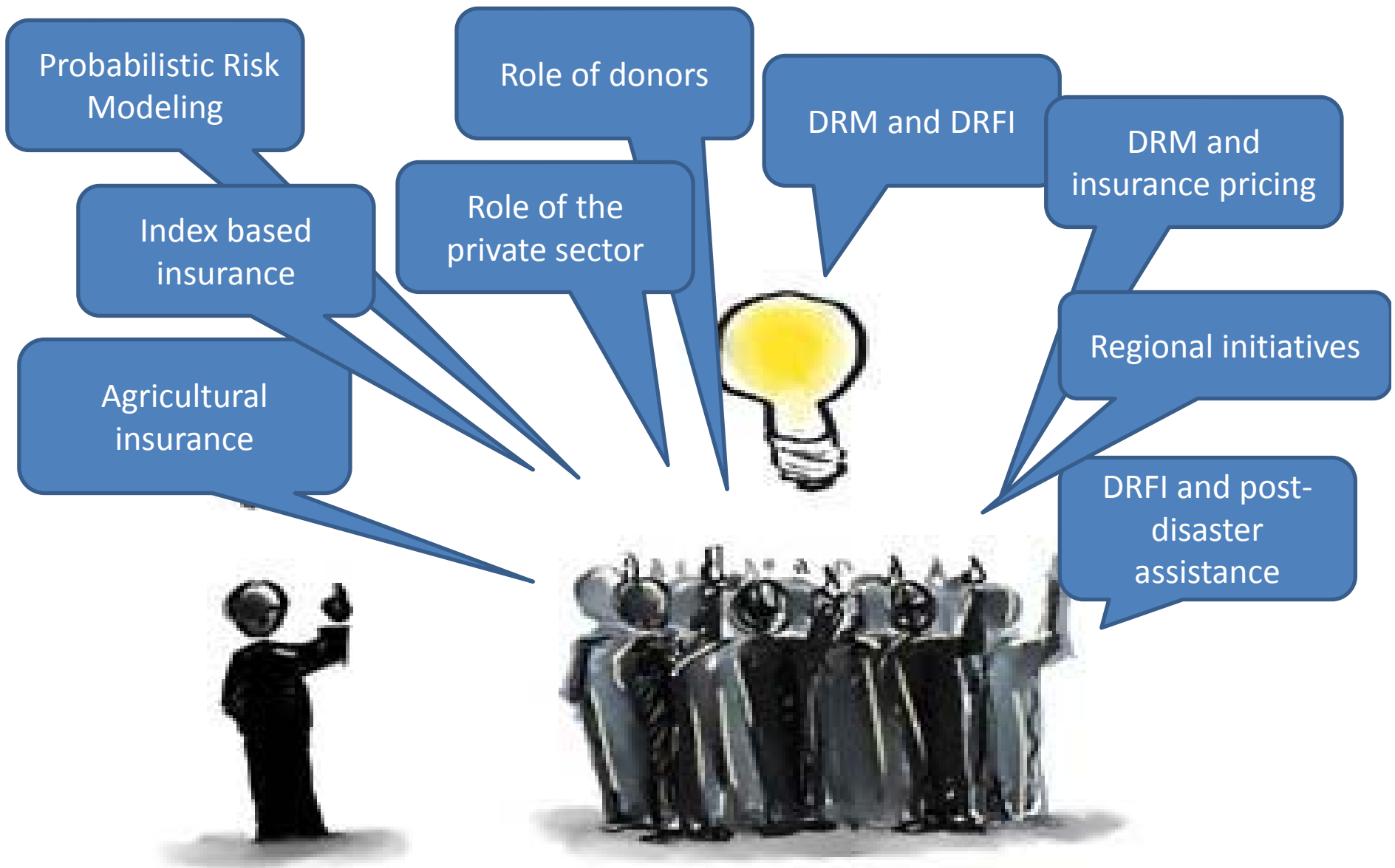


- Regional cooperation on disaster risk financing and insurance
  - Risk information systems (e.g., exposure database, catastrophe risk models)
  - Inclusion of natural disaster risks into fiscal risk management and public debt management
  - Knowledge exchange, advisory services, and capacity building
  - Leverage of private reinsurance and capital markets through regional platform (including possibly disaster risk pooling mechanism)



# Some Lessons Learned on DRFI

- **Identify the specific needs of the countries**
  - Risk financing is a tool, not an end
  - Is risk transfer the right answer?
- **Design an integrated disaster risk financing and insurance strategy**
  - Budget planning of natural disasters
  - Three-tiered risk layering approach
  - National disaster funds
  - Post-disaster budget execution
- **Institutionalize disaster risk financing within the DRM and CCA agenda**
  - Use DRFI as a way to bring MoF into the DRM agenda
- **Create positive externalities beyond DRFI**
  - E.g., Pacific Risk Information System, fiscal risk assessment
- **Build capacity among countries and donor partners**
- **Do not over-estimate risk pooling benefits**
  - Risk pooling is usually not the only reason for countries to work together
- **Do not underestimate operating costs**
- **What is the value proposition?**
  - For countries
  - For donors
- **Manage expectations**





## Contact

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World Bank

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[www.worldbank.org/fpd/drfi](http://www.worldbank.org/fpd/drfi)

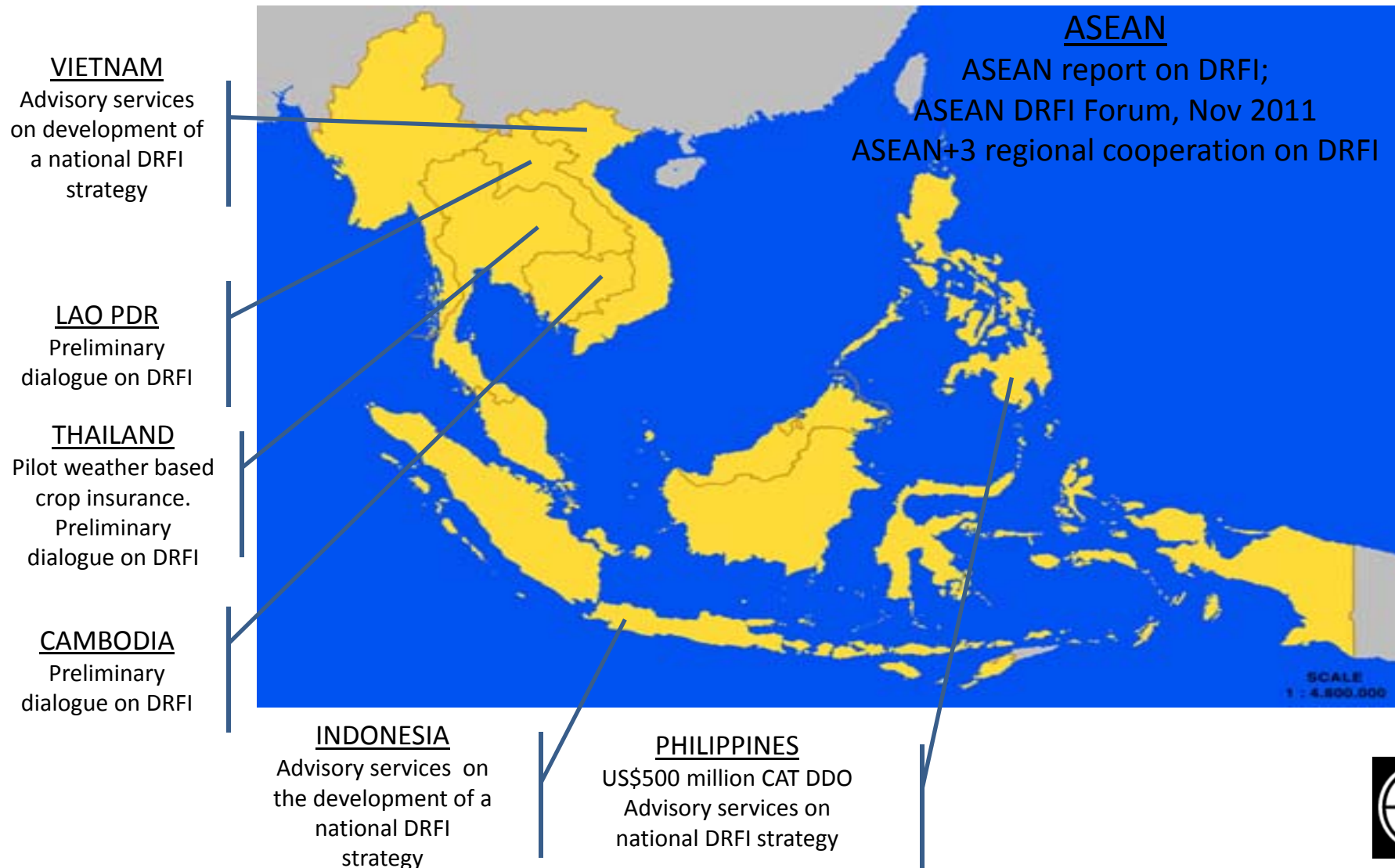




# Annexes

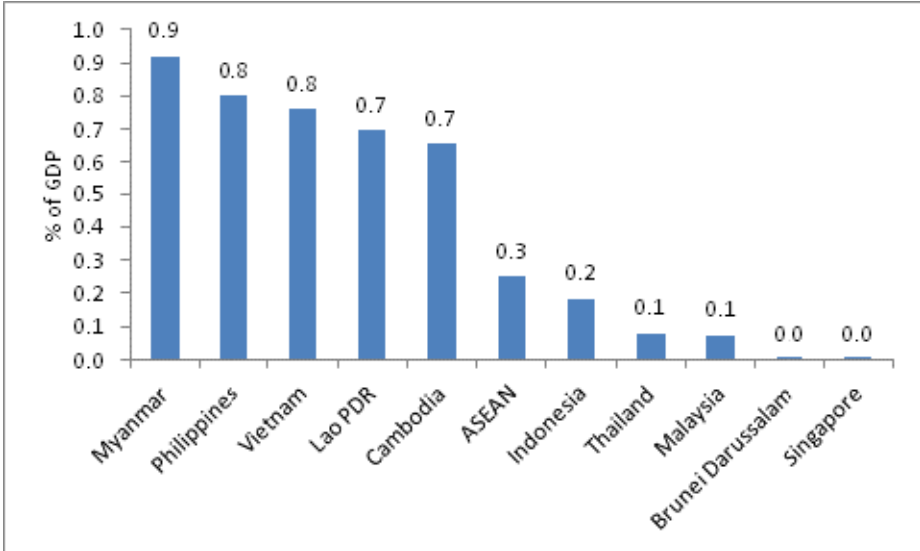
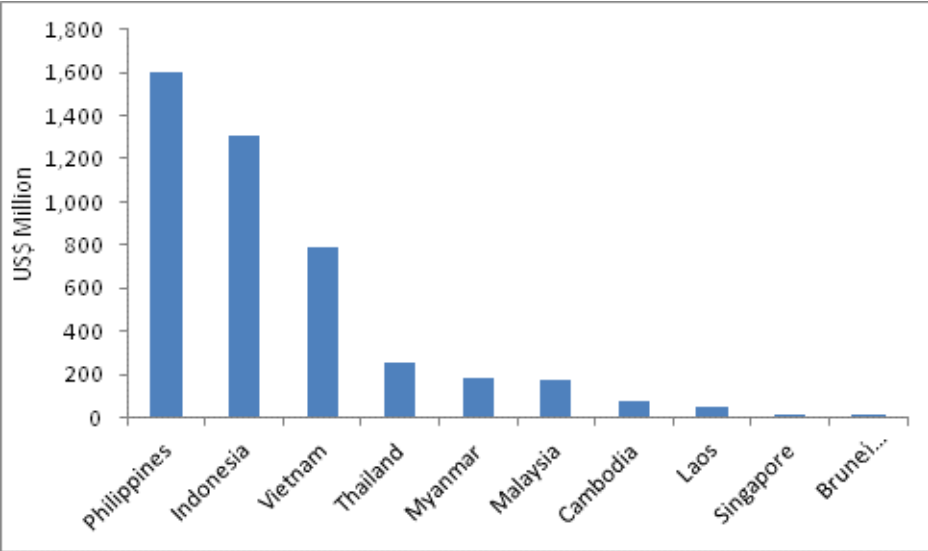


# World Bank DRFI operations in ASEAN countries





**Each year, on average, the ASEAN region experiences annual expected losses caused by natural disasters estimated at US\$ 4.6 billion, or 0.26% of regional GDP**

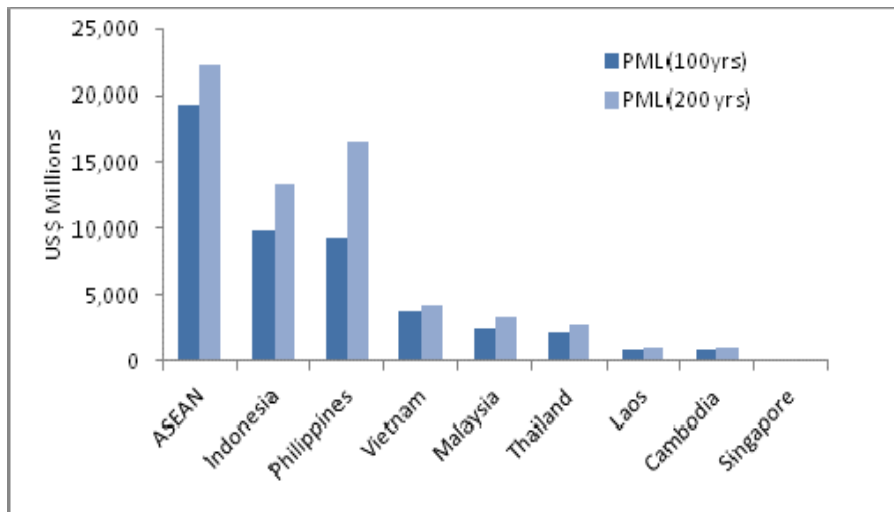


Source: World Bank , ASEAN Sec. and UNISDR (2011)



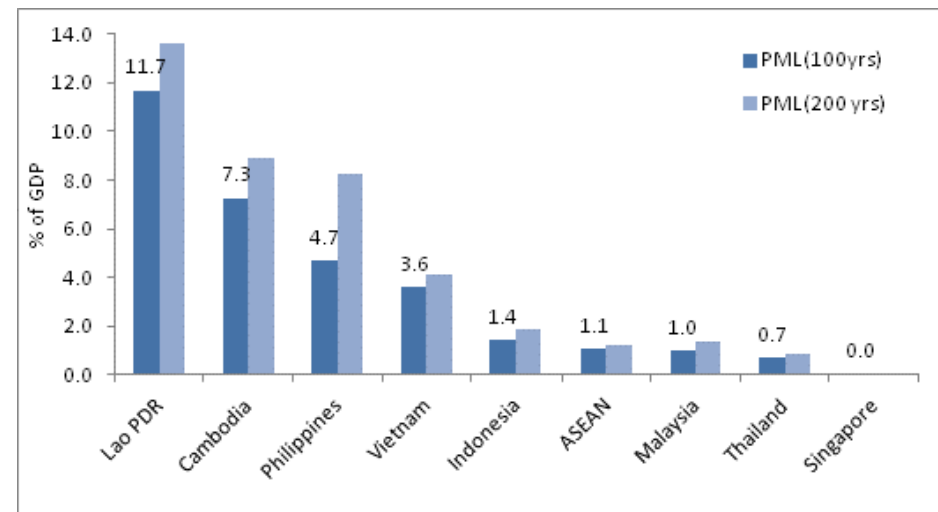
# Once every 100 years, on average, the ASEAN region is estimated to face annual disaster losses in excess of US\$19 billion

100-year and 200-year probable maximum loss in US\$ Millions



Note: Myanmar excluded due to data limitations.

100-year and 200-year probable maximum loss, as % of national GDP



As percentage of national GDP, probable maximum loss varies significantly across countries



# WB DRFI Operations

WBG-supported operations (year of implementation)	Number of insureds	Coverage (US\$ million)	WB lending operation (US\$ million)
<b>Sovereign Catastrophe Risk Financing</b>			
Catastrophe Bond (2005)	Government of Mexico	160.0	-
Catastrophe Bond (2009)	Government of Mexico	290.0	
Caribbean Catastrophe Risk Insurance Facility (2007)	16 island Governments	625.0	14.2
DPL with Cat DDO (2008)	Government of Colombia	150.0	150.0
DPL with Cat DDO (2008)	Government of Costa Rica	65.0	65.0
DPL with Cat DDO (2009)	Government of Guatemala	85.0	85.0
DPL with Cat DDO (2010)	Government of Peru	100.0	100.0
DPL with Cat DDO (2010)	Government of El Salvador	50.0	50.0
DPL with Cat DDO (2011)	Government of Philippines	500.0	500.0
DPL with Cat DDO (2011)	Government of Panama	66.0	66.0
DPL with CAT DDO (2012)	Government of Colombia	250	250
Weather derivatives (2008-)	Government of Malawi	5.0	-
<b>TOTAL</b>	<i>22 governments</i>	<i>2,346.0</i>	<i>1,280.2</i>
<b>Property Catastrophe Insurance</b>			
Turkish Catastrophe Insurance Pool (2000)	3,500,000 homeowners	100,000.0	180.0
South Eastern Europe and the Caucasus Catastrophe Risk Insurance Facility (2011)	Under implementation	-	10.0
<b>TOTAL</b>	<i>3,500,000 homeowners</i>	<i>100,000.0</i>	<i>190.0</i>
<b>Agricultural insurance</b>			
India weather based crop insurance (2003)	9,000,000	3,200.0	
India Modified National Agricultural Insurance Scheme (2010)	700,000	330	
Mongolia Index based livestock insurance (2005)	7,000	17.0	17.75
Malawi weather based crop insurance (2005)	2,600	2.5	-
Central America weather based crop insurance (2007)	100	1.6	-
Thailand weather based crop insurance (2007)	400	0.3	-
<b>TOTAL</b>	<i>9,710,100 farmers/herders</i>	<i>3,551.4</i>	<i>17.75</i>
<b>GRAND TOTAL</b>		<b>105,897.4</b>	<b>1,487.95</b>