Swiss Re

Risk Transfer

An integral part of a Disaster Risk Management Framework

Dehradun, 22 November, 2017

Financing is a pillar of integrated disaster risk management

1 Identification

What risks do we **face**?

- Systematic
- Cross-sectoral

2 Assessment

Can we **quantify** it?

- Frequency
- Severity

3 Prevention & mitigation

How can we **minimize** it?

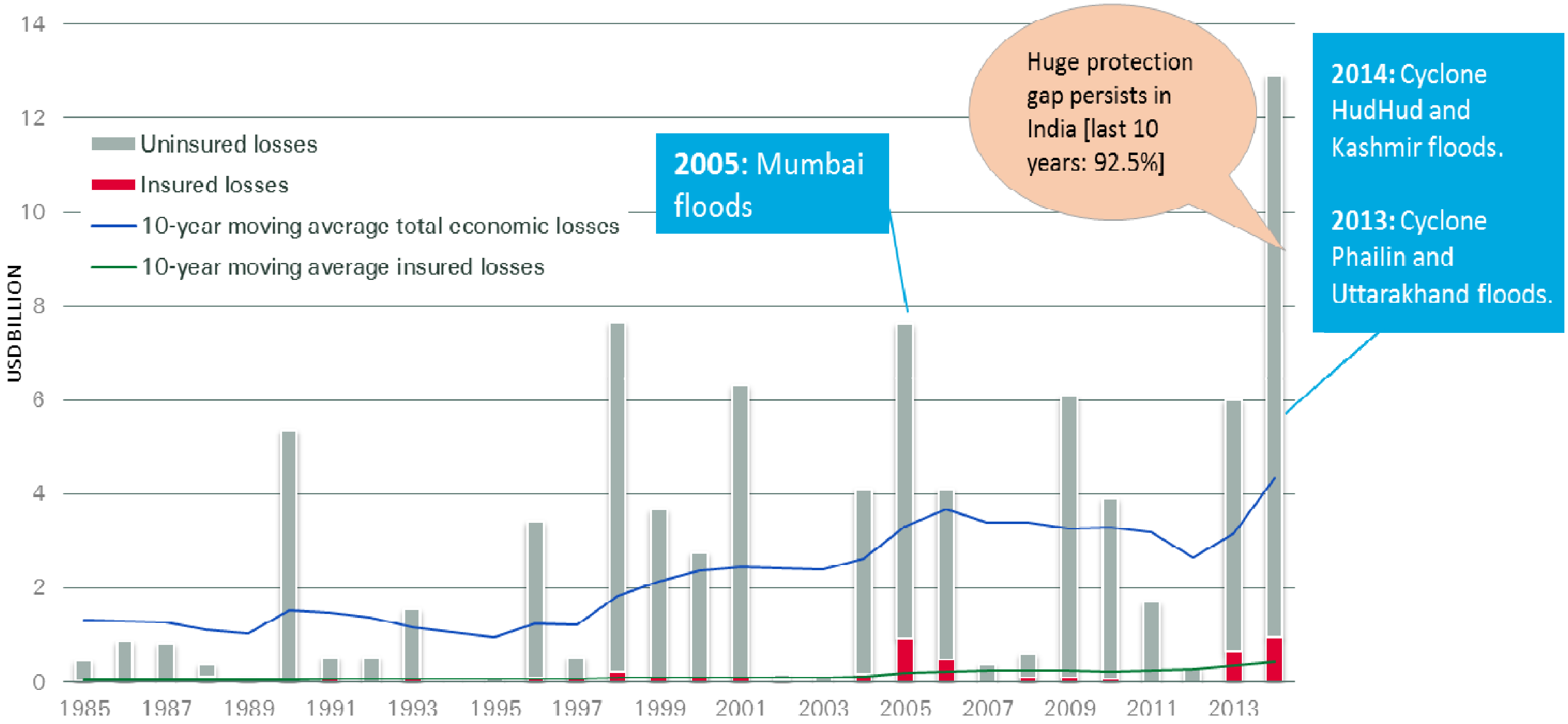
- Improve quality
- Build new protection

4 Adaptation

How can we manage the **residual risk**?

- Change behavior
- Pre-finance
- **Risk transfer**

The Protection gap in India
Economic losses from natural catastrophes remain largely uninsured

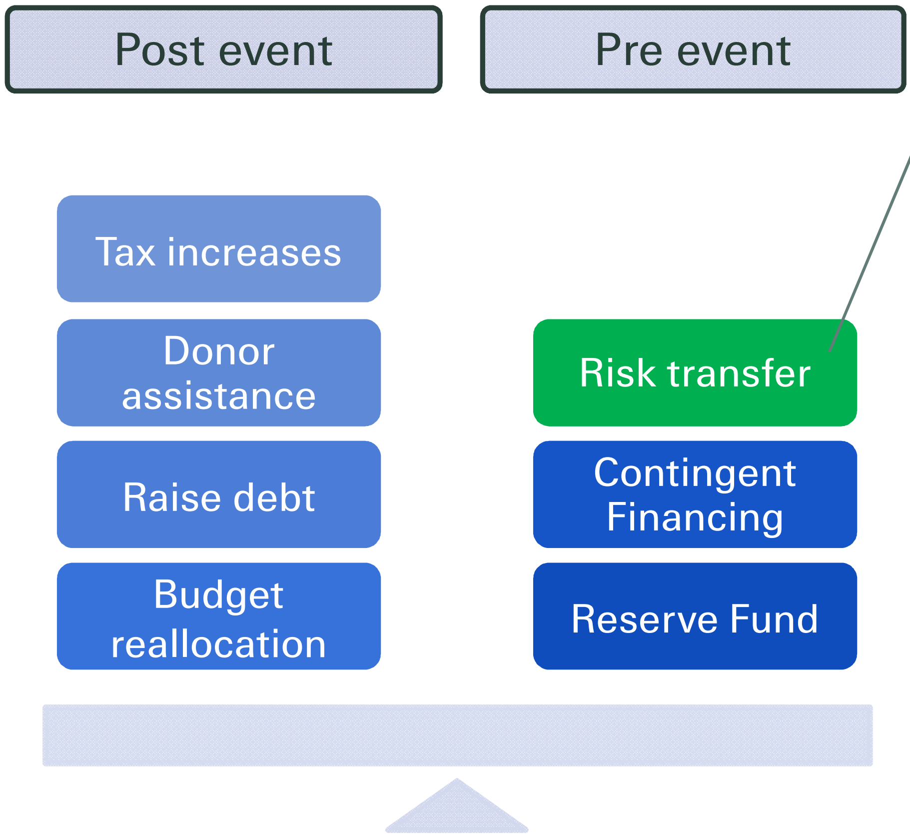


=> the Financing Gap is borne largely by the government

Governments' financing options: Post-event vs pre-event

Ecuador earthquake 2016...

Nepal earthquake 2015 ...



Risk Transfer puts a "price tag" on underlying risks => efficient capital allocation to risk improvements

....Sri Lanka (Cat DDO, WB)

"From an ex-post perspective, the availability of insurance offers the best mitigation approach against real and fiscal consequences of disasters"

World Bank, Policy Research Working Paper 5564, 2011

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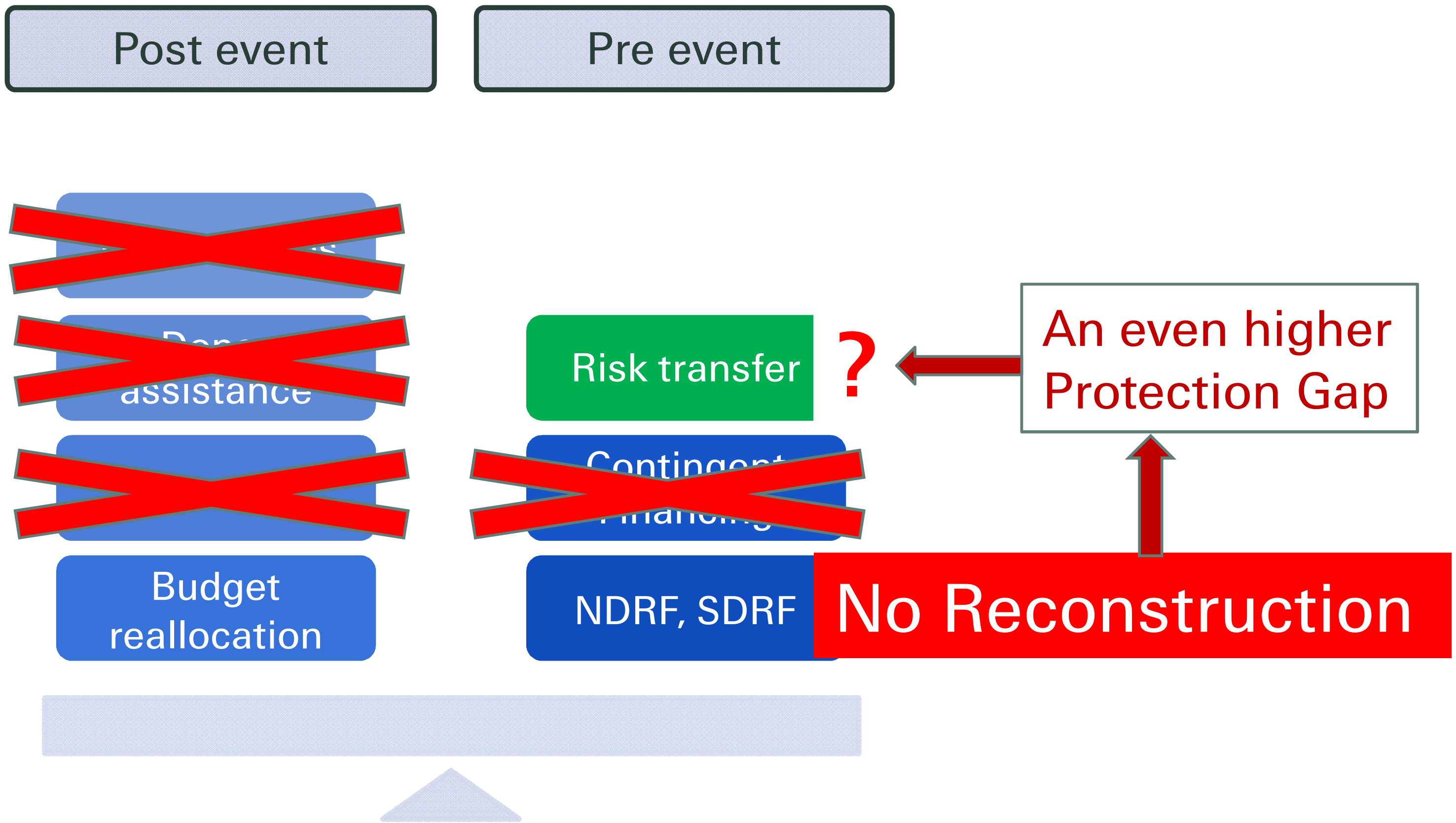
Governments' financing options in India: Post-event vs pre-event

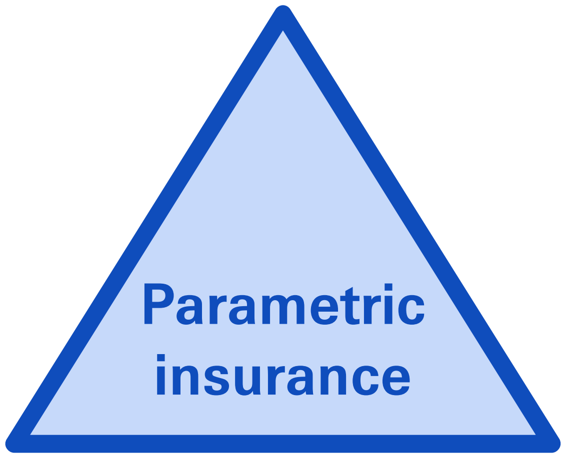


A Risk Transfer Solution: Parametric Insurance

Insurance payouts triggered by event magnitude

Fast access to cash

Payout can be made as fast as 15 to 30 days



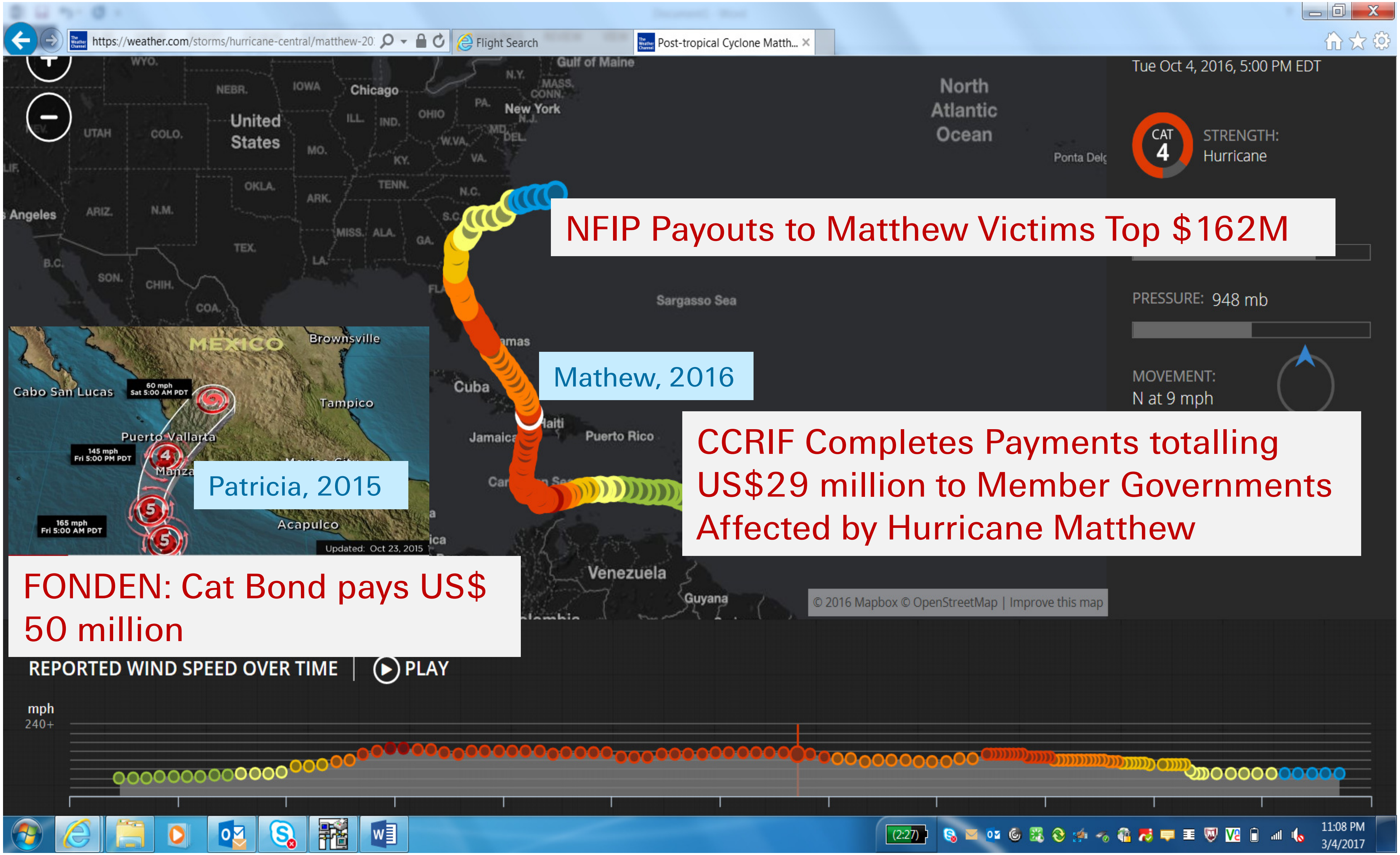
Coverage of uninsurable risks

i.e. emergency relief, cleaning-up operation, evacuation costs

Efficient and affordable

Reduced administrative costs, no claims process, low limits

Risk Transfer Examples (1/3)



NFIP Payouts to Matthew Victims Top $162M

Mathew, 2016

CCRIF Completes Payments totalling US$29 million to Member Governments Affected by Hurricane Matthew

Patricia, 2015

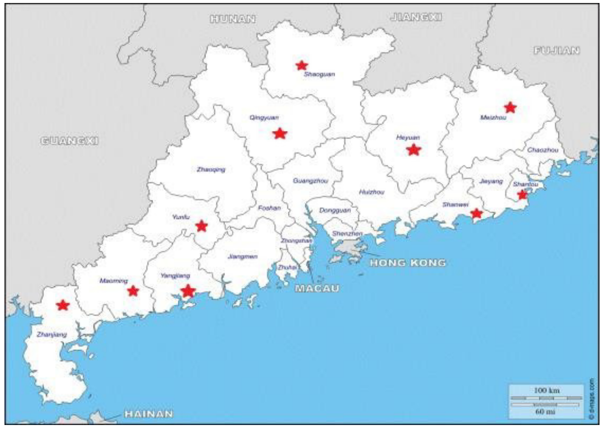
FONDEN: Cat Bond pays US$ 50 million

Risk Transfer Examples (2/3)
.... at Country level

CCRIF **Caribbean Catastrophe Risk Insurance Facility**	**Earthquake, Hurricane, Excess Rainfall risks for 16 countries, aggregate US$ 100 mn coverage**	***Parametric* Insurance**
NFIP National Flood Insurance Program, USA	US$ 1 bn reinsurance program established in 2016 for flood risks coverage	*Indemnity* Insurance
FONDEN Fund for Natural Disasters, Mexico	Earthquake and Hurricane Risks, Catastrophe Bond USD 315 mn	Parametric, Risk transfer to *Capital Markets* [one part of the program]

Risk Transfer Examples, State level(3/3)

Guangdong Natural Disaster parametric cover



Solution features

- Solution supporting the Guangdong province to build fiscal resilience against Nat Cat contingent liability
- Payouts to be used for disaster relief and post disaster reconstructions of property and infrastructure
- Covered perils: tropical cyclone, heavy rainfall
- Parametric triggers:
  - Tropical cyclone: typhoon track, wind speed,
  - Heavy rainfall: precipitation
- Sum insured: USD340 million for a first group of 10 pilot cities
- Time horizon: First implementation in 2016, cover to be annually renewed and extended to more municipalities starting from 2017

Involved parties

- Insured: 10 municipal governments in the Guangdong province
- Government project team: Guangdong Ministry of Finance bureau (lead) and members from CIRC, NDRC, MoCA, CMA*.
- Local insurance partner and lead insurer: PICC
- Sole product designer and reinsurer: Swiss Re
- Meteorological measures provided by Guangdong Climate Center

Payouts to date

- October 2016: USD 3.2m after Typhoon Haima and heavy rainfall

(*) CIRC: China Insurance Regulatory Committee
MoCA: Ministry of Civil Affairs

NDRC: National Development and Reform Committee
CMA: China Meteorological Administration

Case study Caribbean:
CCRIF SPC (former Caribbean Catastrophe Risk Insurance Facility)

Solution features

- CCRIF SPC offers parametric hurricane and earthquake insurance policies to 16 CARICOM governments
- The policies provide immediate liquidity to participating governments when affected by events with a probability of 1 in 15 years or over
- Member governments choose how much coverage they need up to an aggregate limit of USD 100m
- The mechanism will be triggered by the intensity of the event (modelled loss triggers)
- The facility responded to events and made payments:

Involved parties

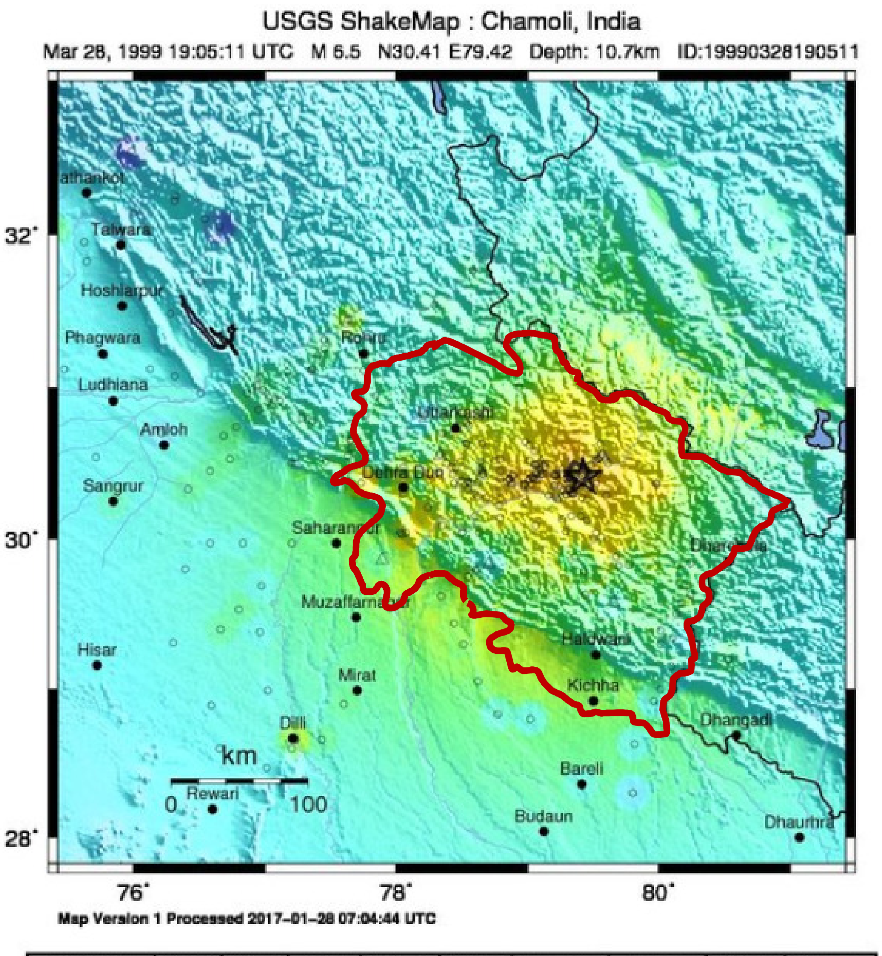
- Reinsurers: Swiss Re and other overseas reinsurers
- Reinsurance program placed by Guy Carpenter
- Derivative placed by World Bank Treasury

Payouts to date

- 2016: Nicaragua USD 1.1m (hurricane), USD 500k (earthquake)
- 2010: Haiti USD7.7m (earthquake), Barbados USD 8.5m (hurricane), St. Lucia USD 3.2m (hurricane), St. Vincent & The Grenadines USD 1.1m (hurricane), Anguilla USD 4.2m (hurricane)
- 2008: Turks & Caicos USD 6.3m (hurricane)
- 2007: St. Lucia USD 418k (hurricane), Dominica USD 528k (hurricane)

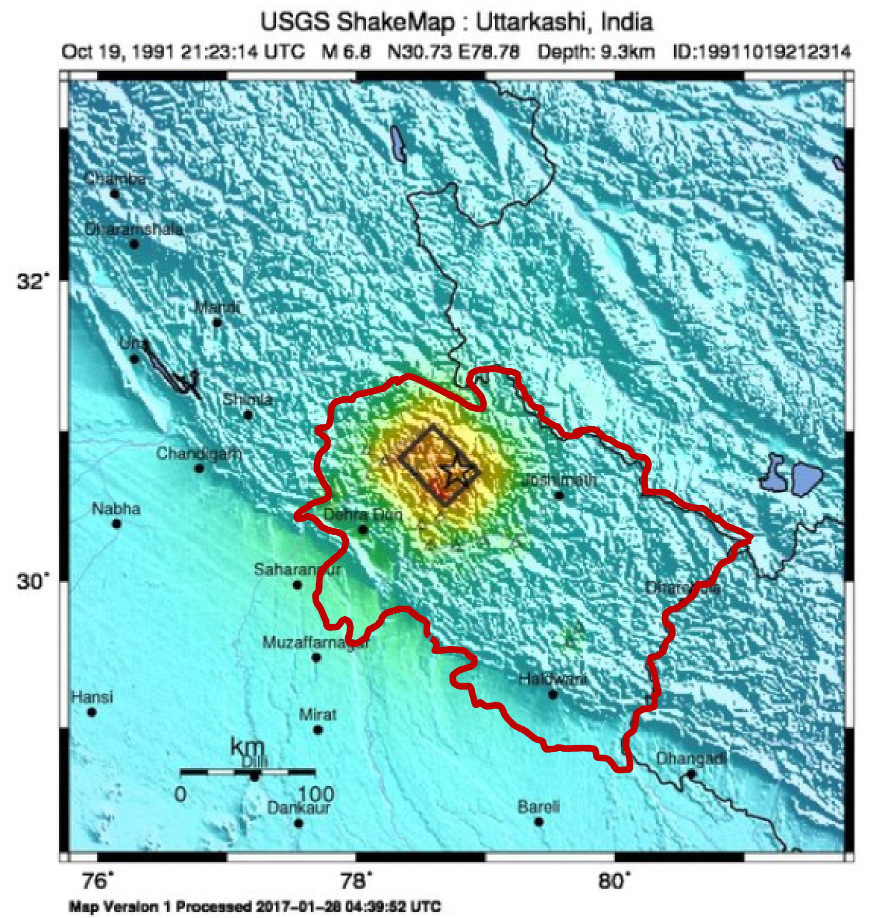
A Risk Transfer Solution for Earthquake in Uttarakhand

Historical Earthquakes: M 6.6 in 1999, M 6.8 in 1991



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Source: USGS
https://earthquake.usgs.gov/earthquakes/eventpage/usp00095cb#shakemap



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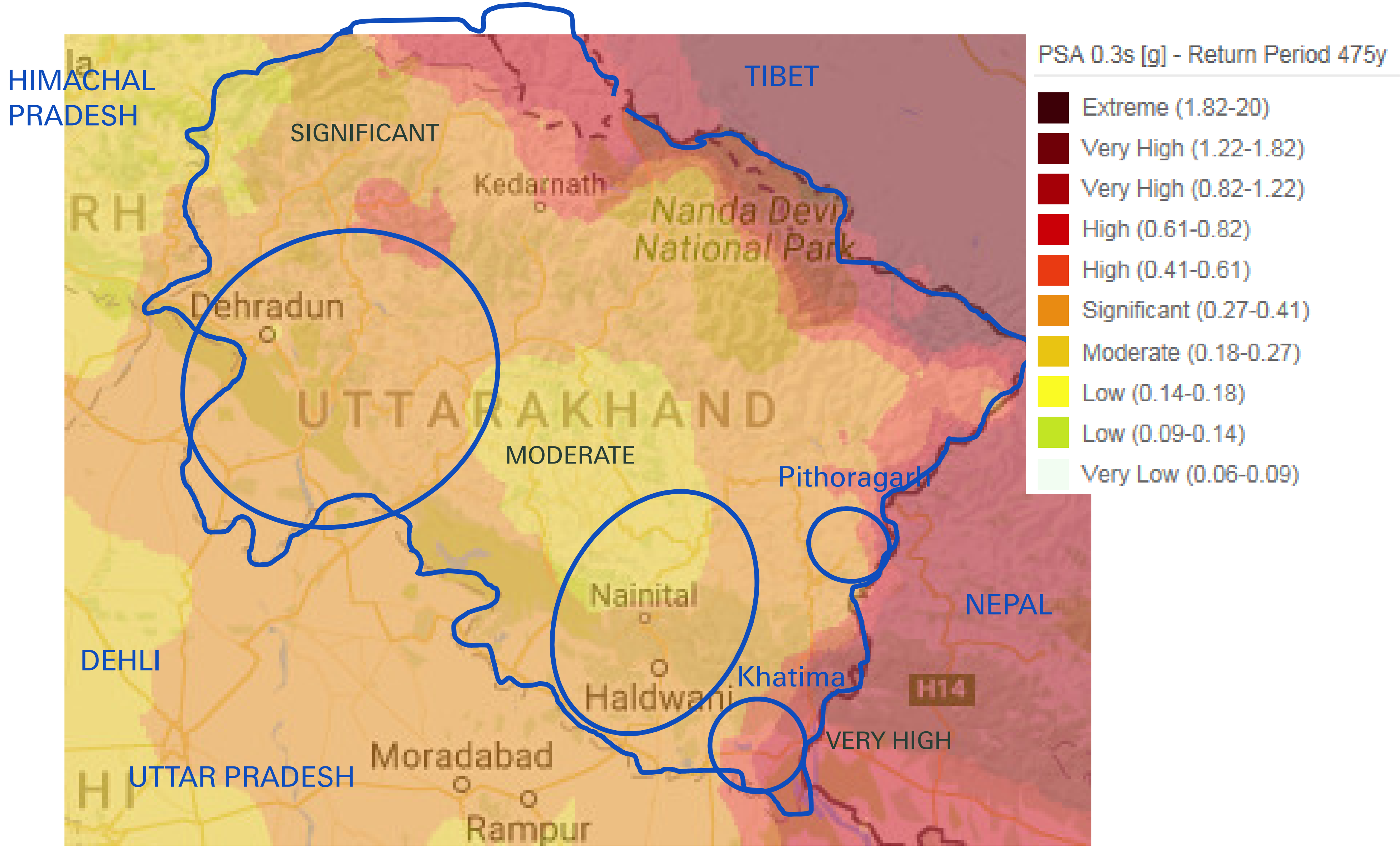
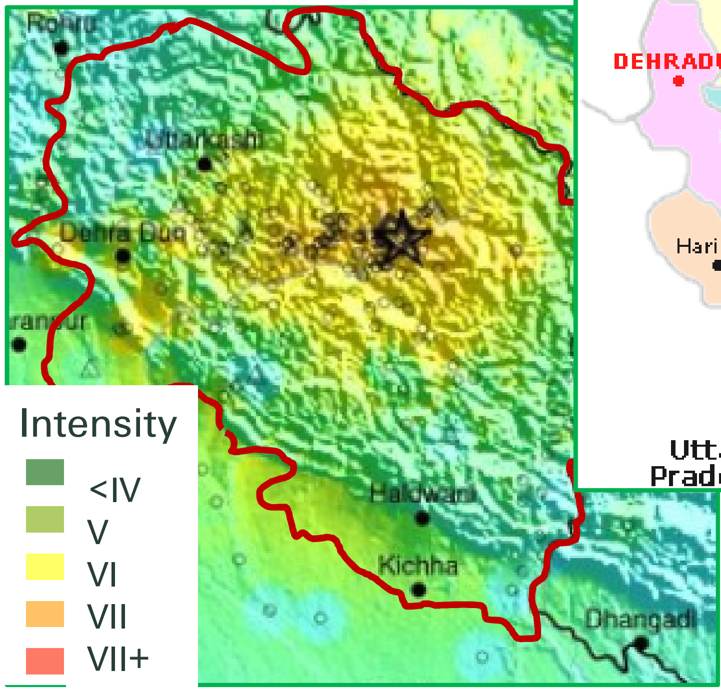
Earthquake risk: very high in Pithoragarh and Khatima, the South faces significant risk

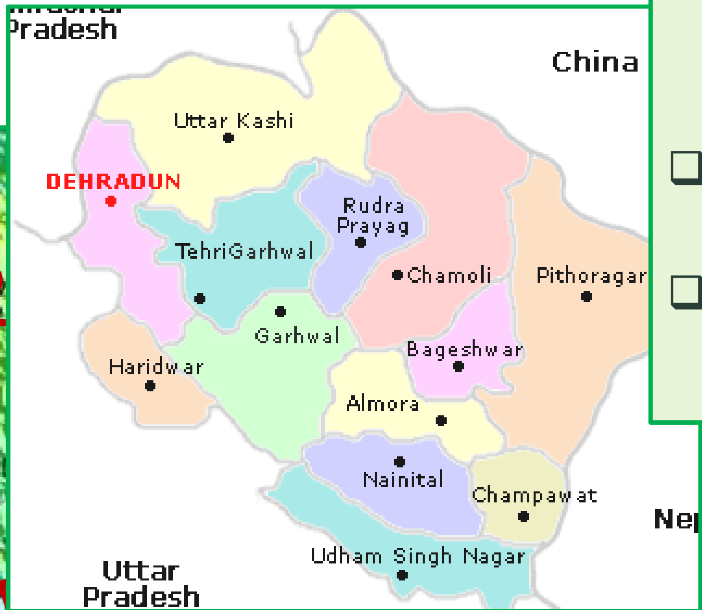


The QUAKE Parametric cover can provide payout within 30 days and **capture localized impacts**

1. Use ShakeMap (USGS) as independent data provider



2. Allocate maximum payout based on population per district or per 1km^2



3. Define parametric cover

- ❑ Define payout per shaking intensity, i.e.
  - 25% >= 6 MMI
  - 50% >= 7 MMI
  - 100% >= 8 MMI
- ❑ Maximal payout per event: for eg....USD 100 million
- ❑ Maximum payout per year: for eg....USD 200 million

Indicative

Conclusion
Disaster Risk Transfer; Points for Consideration

- Financial resilience to natural disasters and fiscal protection is a key element of states' financial robustness
- Credit Rating agencies – Moody's; S&P – have started evaluating country exposures to natural disasters and impact on financing/ refinancing costs. There are similar implications for state governments/ municipalities too!
- Pilot risk transfer can be launched by Uttarakhand
- Risk Transfer premiums will primarily be determined by (a) Cover Amount/ Loss limit sought by govts (b) Severity/ Magnitude of disasters for which cover is required (c) Geographical area to be covered
- Possibility of making use of international climate risk funds for capacity building

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