

Cambridge Centre for Risk Studies
Advisory Board Research Showcase – 23 January 2018

Please Mind the (Protection) Gap: The Role of Insurance in Economic Recovery

Centre for
Risk Studies

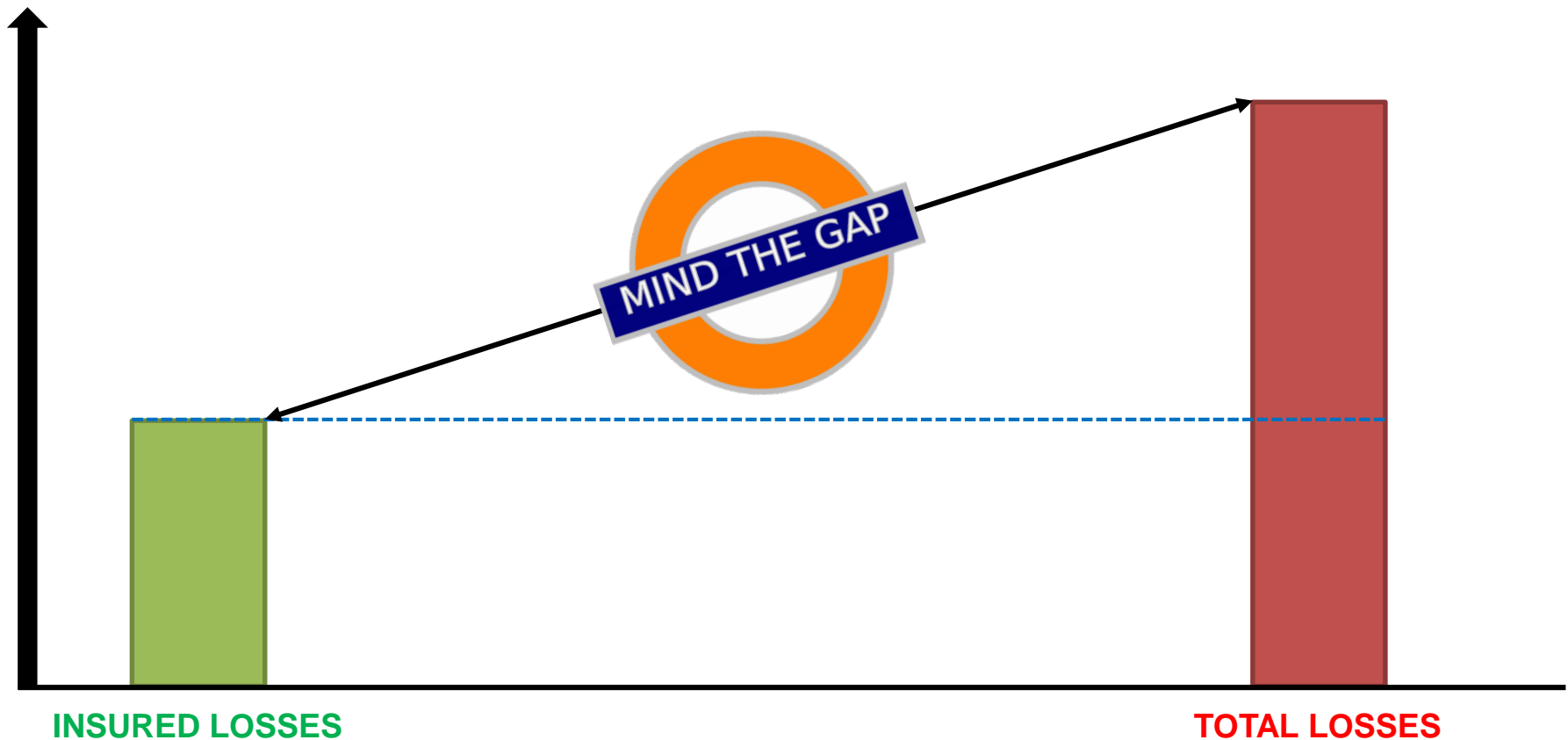


UNIVERSITY OF
CAMBRIDGE
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The protection gap: what?

- Difference between the amount of insurance coverage that is economically beneficial and what is actually purchased



The protection gap: how?

Project Scope: *The impact of (re-)insurance on the economic recovery from natural disasters*

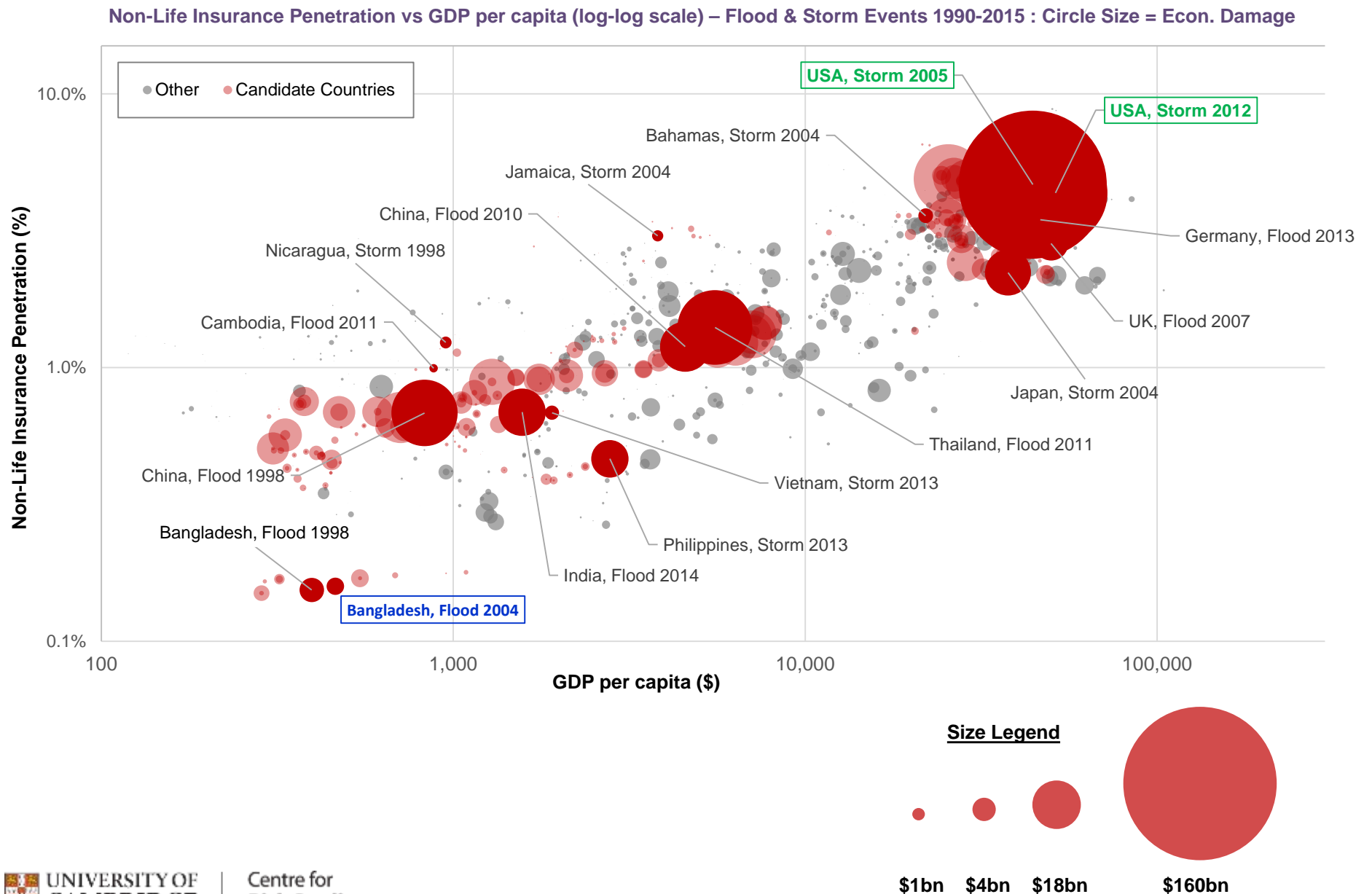
Research questions:

- What is the role of insurance in economic recovery and resilience?
- Are there any country-level similarities or differences in the recovery dynamics?
- How destruction of physical assets (stocks) can be translated to output losses (flows)? Which factors affect this response function?

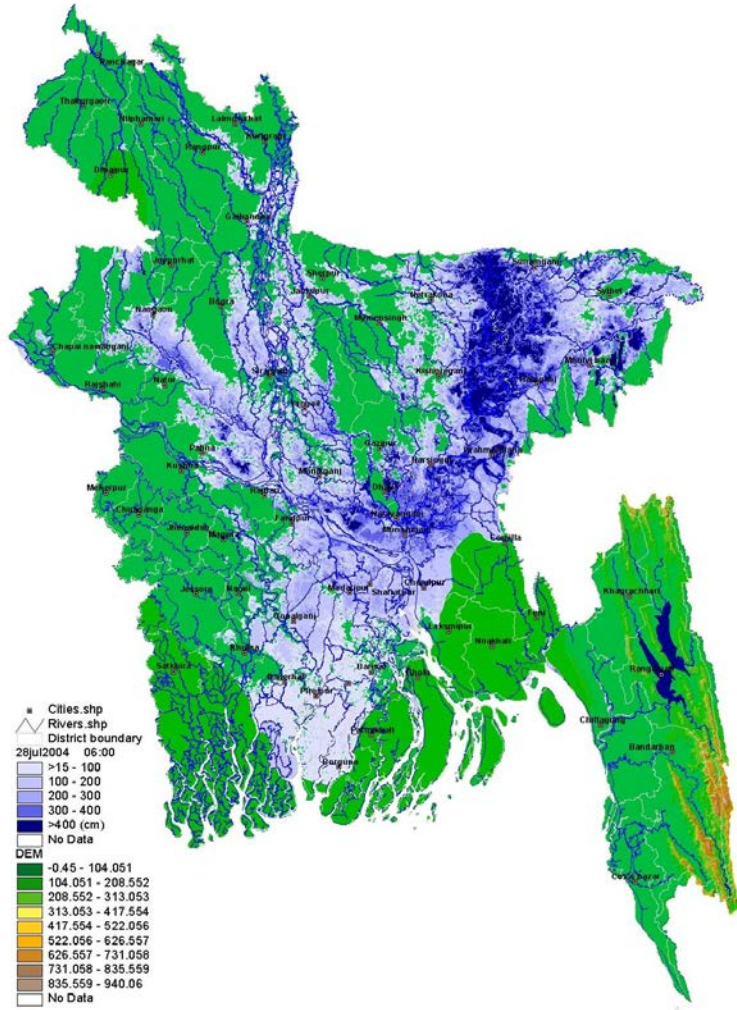
Methodology:

- Case studies
- Economic framework

Insurance Penetration, GDP, and Economic Loss 1990-2015



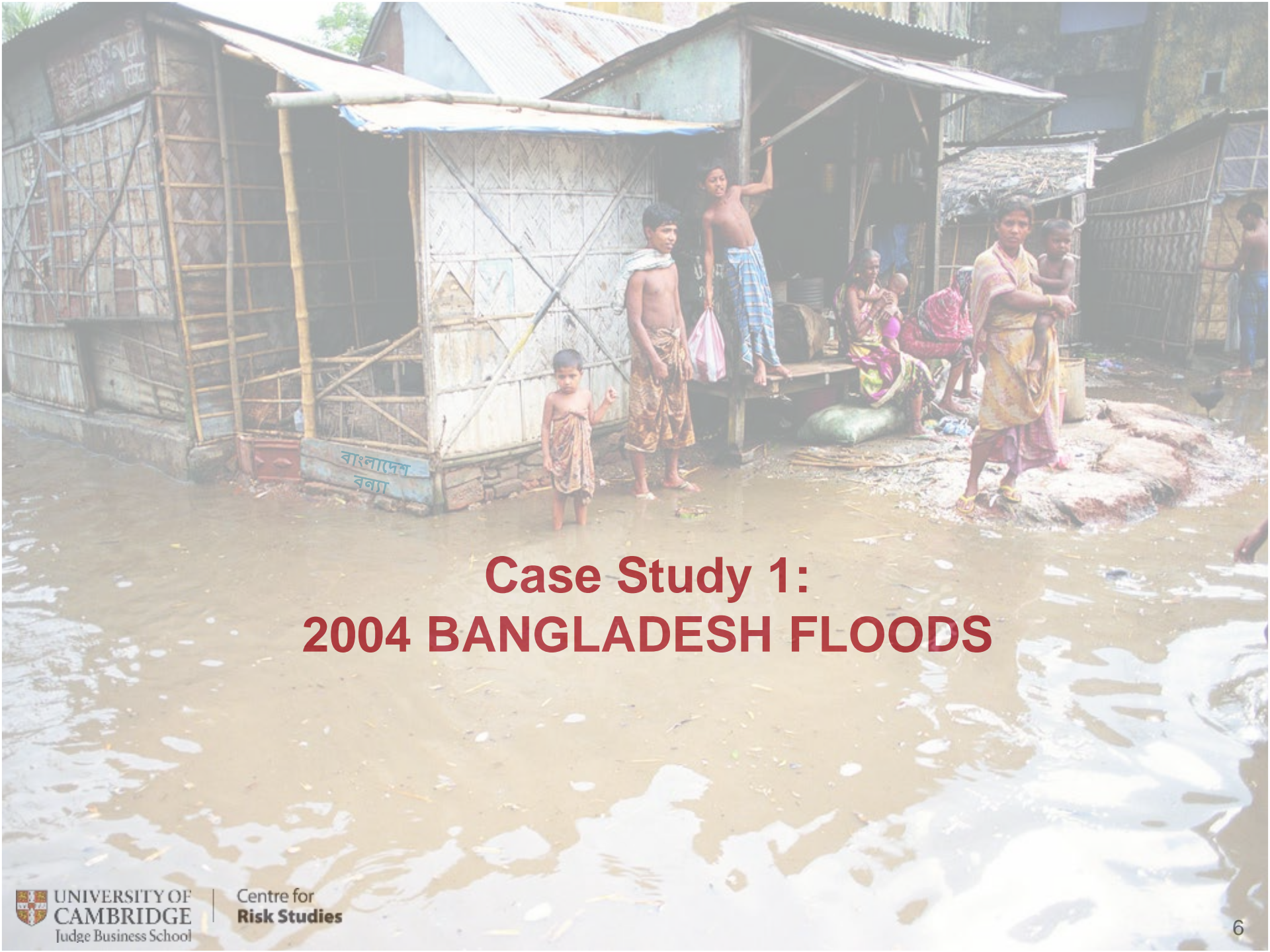
A tale of two countries (and two threats)



Bangladesh Floods 2004



USA Storms 2005



Case Study 1: 2004 BANGLADESH FLOODS

Stages of flooding

- **Early phase** (*mid-April*): incidence of **flash floods** in some regions
- **Initial phase** (*23-28 June*): water levels in most regions were as **normal annual floods**
- **Aggravating phase** (*8-14 July*): water levels crossed danger levels at many points
- **Devastating phase** (*15-28 July*): flood triggered by torrential rains and cascades from hills across border and **water levels reached highest level** at many points
- **Receding phase** (*28 July – mid August*): **flood water recedes** in northern and central regions resulting in rise in water levels in southern and coastal districts
- **Renewal phase** (*mid-September*): localized depression creates **continuous torrential rain** resulting in **renewed flooding** to central Bangladesh and other areas not usually affected

FIGURE 2
FLOOD INTENSITY BASED ON WATER LEVEL

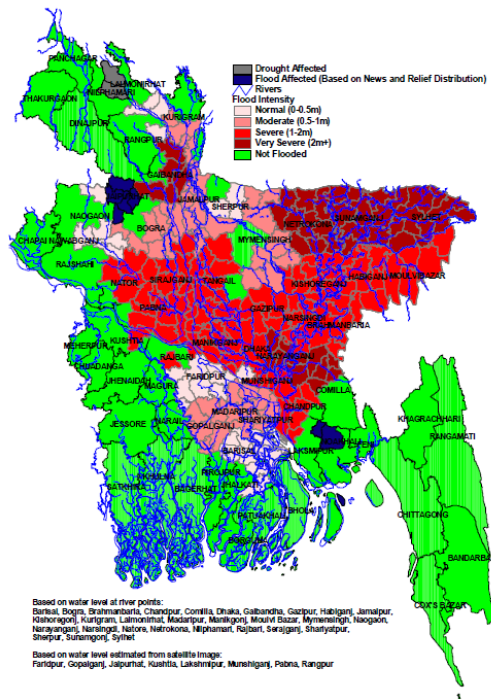
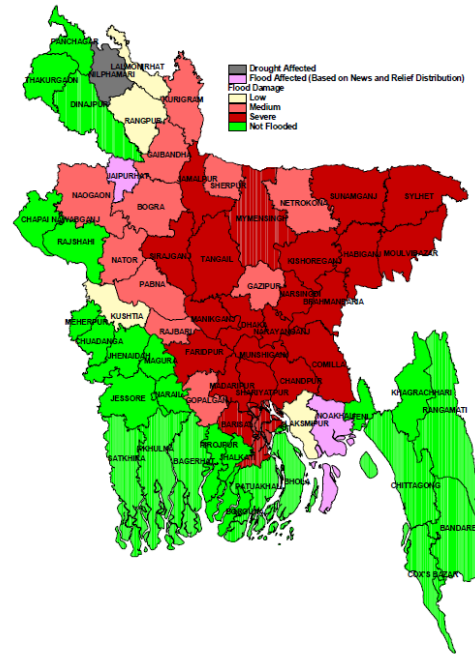


FIGURE 3
DAMAGE INTENSITY OF FLOOD 2004



Funding for disasters in Bangladesh

■ Government:

- Disaster Risk Reduction Fund (modest)
- Emergency Fund Disaster Management (small)
- Fund for Unforeseen Incidents (approximately \$14.28m every year)
- Palli Karma-Sahayak Foundation (microfinance institution)

■ Central Bank:

- Plan for 88 institutions to deposit BDT 50 million each therefore a total of BDT 4.5 billion (\$64.3 million) for post-disaster response, disaster risk management, and capacity building

■ Insurance:

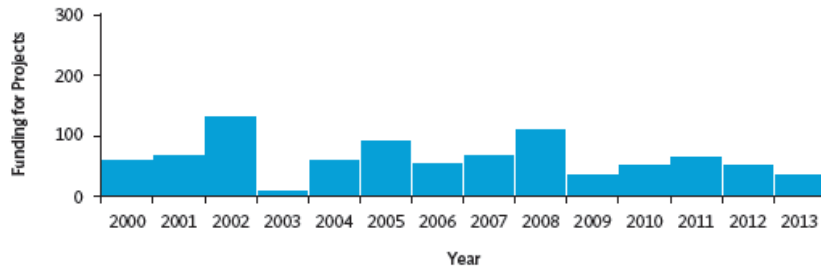
- **State-owned:** Sadharan Bima Corporation (SBC) for general insurance; and Jiban Bima Corporation (JBC) for life insurance
- **Private:** 31 life and 46 general insurance companies operate
- 12 life insurers and 2 general insurers (health and flood) offer micro-insurance, as of 2016

■ Microfinance Sector:

- Temporary loans, loan forgiveness, rescheduling of loan, asset replacement, housing loans, and loans for starting new activities
- As of 2014, loans were BDT 257 billion (\$3.3 billion), savings were BDT 94 billion (\$1.2 billion)
- 742 registered MFIs with the Microcredit Regulatory Authority with 26.4 million members and 19.7 million borrowers

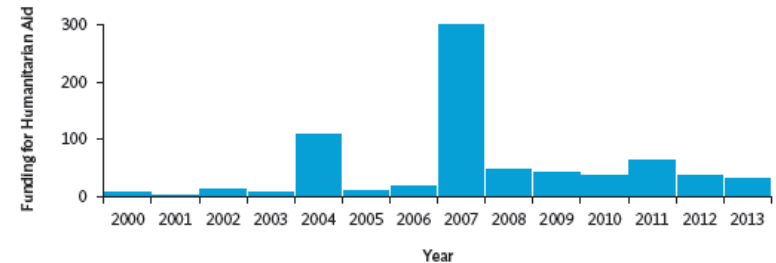
Funding for disasters in Bangladesh

Figure 3: Funding for Recovery and Rehabilitation Projects in Bangladesh, 2000–2013
(\$ million)



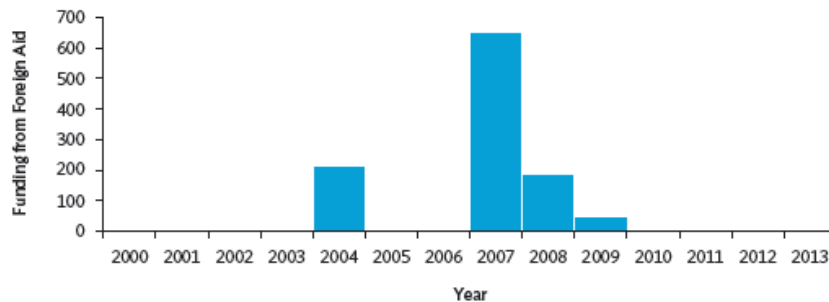
Source: ADB. 2015. *Capacity Building for Disaster Risk Finance in Bangladesh*. Consultant's report. Manila (TA 8144-BAN).

Figure 4: Humanitarian Aid into Bangladesh, 2000–2013
(\$ million)



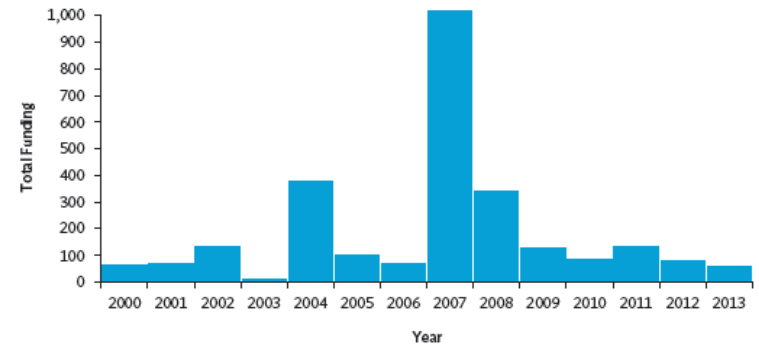
Sources: ADB. 2015. *Capacity Building for Disaster Risk Finance in Bangladesh*. Consultant's report. Manila (TA 8144-BAN); Financial Tracking Service of the United Nations Office for the Coordination of Humanitarian Affairs.

Figure 5: Foreign Aid on Disaster-Related Emergency Response into Bangladesh, 2000–2013
(\$ million)



Sources: ADB. 2015. *Capacity Building for Disaster Risk Finance in Bangladesh*. Consultant's report. Manila (TA 8144-BAN); Government of Bangladesh, Ministry of Finance, Economic Relations Division.

Figure 6: Total Available Funding, 2000–2013
(\$ million)



Source: ADB. 2015. *Capacity Building for Disaster Risk Finance in Bangladesh*. Consultant's report. Manila (TA 8144-BAN).

Funding for disasters in Bangladesh

Table 11: Disaster-Related Economic Impact and Funding Gap in Bangladesh, 2000–2013
(\$ million)

Year	Disaster-Related Economic Impact	Disaster-Related Funding				Funding Gap
		Funding for Recovery and Rehabilitation Projects	Humanitarian Aid	Foreign Aid on Disaster-Related Emergency Response	Total Funding	
2000	582	61	5	...	66	516
2001	85	67	2	...	69	16
2002	1,072	129	6	0	135	937
2003	1,042	8	4	0	11	1,030
2004	2,335	60	109	209	378	1,957
2005	139	95	6	0	101	38
2006	27	58	12	0	71	(44)
2007	2,744	73	300	645	1,018	1,726
2008	145	111	43	186	339	(194)
2009	1,206	38	37	52	128	1,078
2010	254	52	31	1	84	170
2011	186	64	66	0	131	55
2012	626	47	32	0.2	79	547
2013	350	34	26	...	60	290
Total	10,793	897	679	1,093	2,670	8,122

() = negative, ... = not available.

Source: ADB. 2015. *Capacity Building for Disaster Risk Finance in Bangladesh*. Consultant's report. Manila (TA 8144-BAN).

Figure 1

Funding for Projects

Source: ADB. 2015.

Figure 5: Funding from Foreign Aid

Funding from Foreign Aid

Source: ADB. 2015.
Government of Bangladesh

12 2013

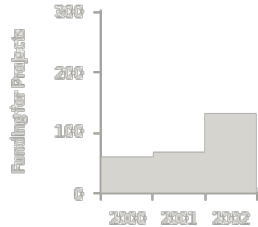
TA 8144-BAN

2 2013

TA 8144-BAN

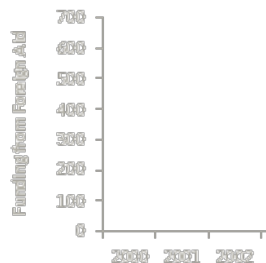
Funding for disasters in Bangladesh

Figure 3: Funding for Recovery and Rehabilitation Projects in Bangladesh, 2000–2013 (\$ million)



Source: ADB. 2015. Capacity Building for Disaster Risk Finance in Bangladesh. Consultant's report. Manila (TA 8144-BAN).

Figure 5: Foreign Aid on Disasters



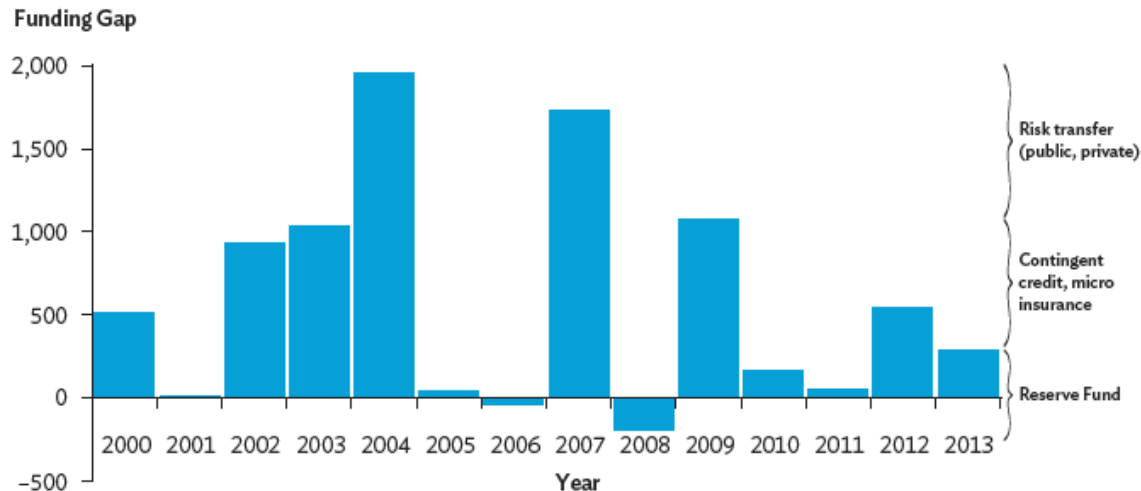
Sources: ADB. 2015. Capacity Building for Disaster Risk Finance in Bangladesh. Consultant's report. Manila (TA 8144-BAN); Government of Bangladesh, Ministry of Finance, Economic Relations Division.

Figure 4: Humanitarian Aid into Bangladesh, 2000–2013 (\$ million)



Source: Manila (TA 8144-BAN); in Affairs.

Figure 8: Funding Gap Results Summary with Risk Financing Options (\$ million)



Source: ADB. 2015. Capacity Building for Disaster Risk Finance in Bangladesh. Consultant's report. Manila (TA 8144-BAN).

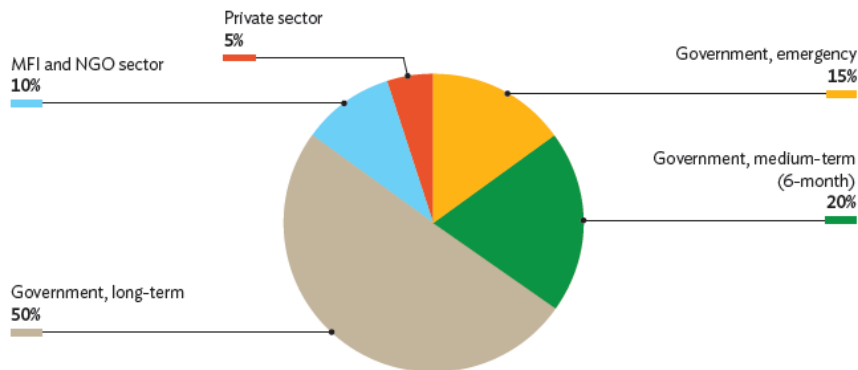


Source: ADB. 2015. Capacity Building for Disaster Risk Finance in Bangladesh. Consultant's report. Manila (TA 8144-BAN).

- Public and private risk transfer mechanisms such as insurance are crucial for managing risks from extreme events

Who finances what?

Figure 9: Relative Share of Government and Nongovernment, and Short-, Medium-, and Long-Term Postdisaster Costs (%)

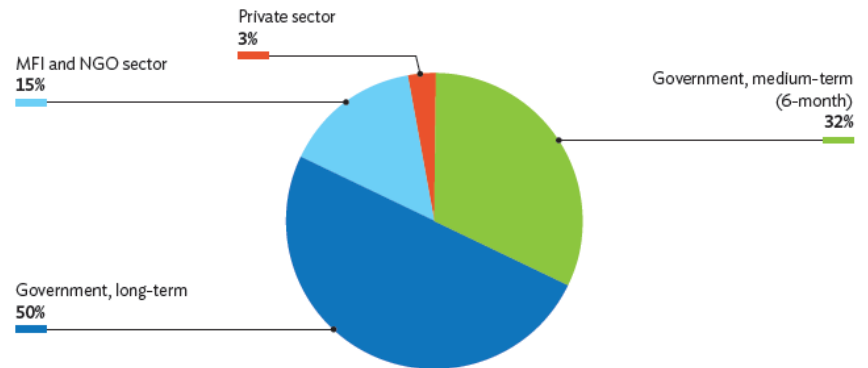


MFI = microfinance institution, NGO = nongovernment organization.

Source: ADB. 2015. *Capacity Building for Disaster Risk Finance in Bangladesh*. Consultant's report. Manila (TA

- Current role of the private sector in disaster recovery appears to be low
- Potential scope for insurance providers to close the funding gap

Figure 10: Share of Government and Nongovernment, and Short-, Medium-, and Long-Term Postdisaster Costs Relative to Estimated Funding Gap (%)



MFI = microfinance institution, NGO = nongovernment organization.

Source: ADB. 2015. *Capacity Building for Disaster Risk Finance in Bangladesh*. Consultant's report. Manila (TA 8144-BAN).

Insurance in Bangladesh

- **The missing money problem:** Natural disasters in Bangladesh cost more than **\$10 billion** economic losses between 2000-2013 but the total funding available for relief, rehabilitation, and reconstruction for the same period was only **\$2 billion** (Ozaki, 2016)
- **A market for insurance (or lack thereof):** A private insurance market for property damage risk due to natural disasters in Bangladesh **does not exist**
- **Demand and supply dynamics:**
 - Most life insurance policies offered in Bangladesh **work like a bond**, i.e., buyers typically pay a yearly premium and receive regular financial payments until maturity
 - On the other hand, the weather insurance model offers **compensation only when damage** is caused by a natural disaster and no return otherwise (Akter et. al, 2010)
 - Private insurers discriminate and **do not offer insurance** to individuals with **low or irregular income**
- **Coping strategies:** In the absence of well-developed insurance markets households rely on **informal risk-coping mechanisms** (Clarke et. al, 2015)
 - In rural areas, neighbourhoods undertake **self-insurance measures** by forming a small network of neighbours to diversify risks by pooling resources to smooth consumption (Park, 2006)

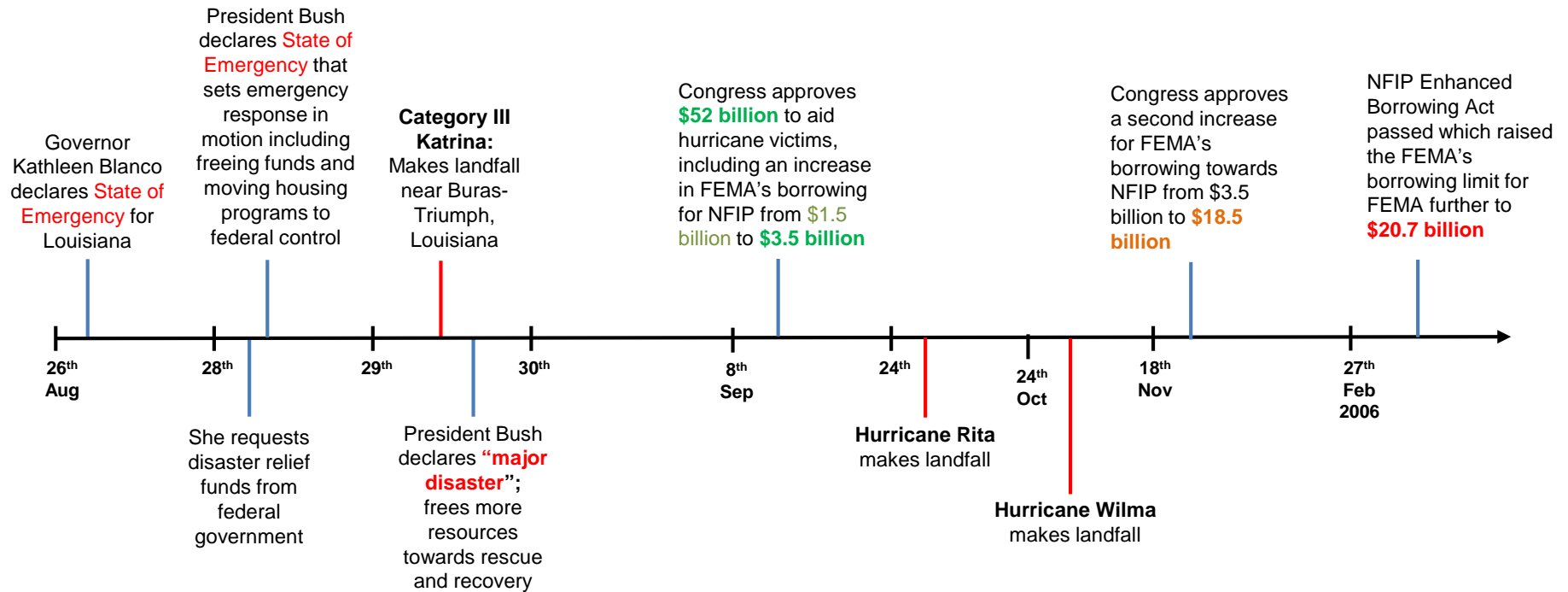
A satellite image of a large hurricane over the Gulf of Mexico. The hurricane has a well-defined eye and a dense, swirling cloud structure. The surrounding ocean is dark blue, and the landmasses of North and Central America are visible on the left and right edges of the frame.

Case Study 2: USA Storms

20 5

Hurricanes Katrina, Rita & Wilma

US2005 Disaster management: As it happened



Disaster management efforts: Funding

- **Major sources of funding for disaster management:** in the US include NFIP, CDBG, private insurance, charitable donations and humanitarian aid
- **Funding for rebuilding:** Chief source of private funding for rebuilding after a disaster was reported to be **private insurance** (Comerio, 1998; Roth et al., 1998; Wu and Lindell, 2004)

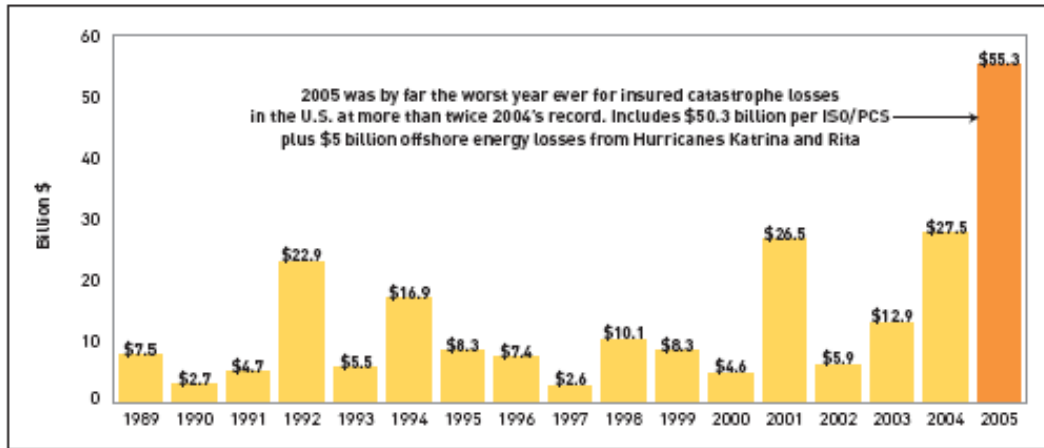
Table 1. Federal programs supporting housing recovery in Louisiana and Mississippi.

Federal agency	Program	Appropriations/allocation authority (\$)
Federal Emergency Management Agency	Hazard Mitigation Grant Program	1.9 billion
	Individual and Households Program	684 million
	Public Assistance for Permanent Work	33 million
U.S. Department of Housing and Urban Development	Community Development Block Grant Program	18.9 billion
	Capital Fund Emergency/Natural Disaster Funding	29.8 million
Small Business Administration	Physical Disaster Business Loan	270 million
	Home Disaster Loan	4.0 billion
U.S. Department of the Treasury	GO Zone Low-Income Housing Tax Credits	276 million
	GO Zone Tax-Exempt Private Activity Bonds	12.8 billion
	New Markets Tax Credits (GO Zone)	1 billion

Source: Spader & Turnham, 2014

Insuring away Katrina

U.S. insured catastrophic losses



Source: American Re (2005). Note: 2001 figure includes \$20.3 billion for 9/11 losses reported through 12/31/01. Includes only business and personal property claims, business interruption and auto claims. Non-prop/Bil losses = \$12.2 billion.

DISASTER DOLLARS

Storms ranked by flood insurance payouts (in billions):

HURRICANE KATRINA, 2005

\$16.3

SUPER STORM SANDY, 2012

\$8.6

HURRICANE IKE, 2008

\$2.7

LOUISIANA FLOODING, 2016

\$2.4

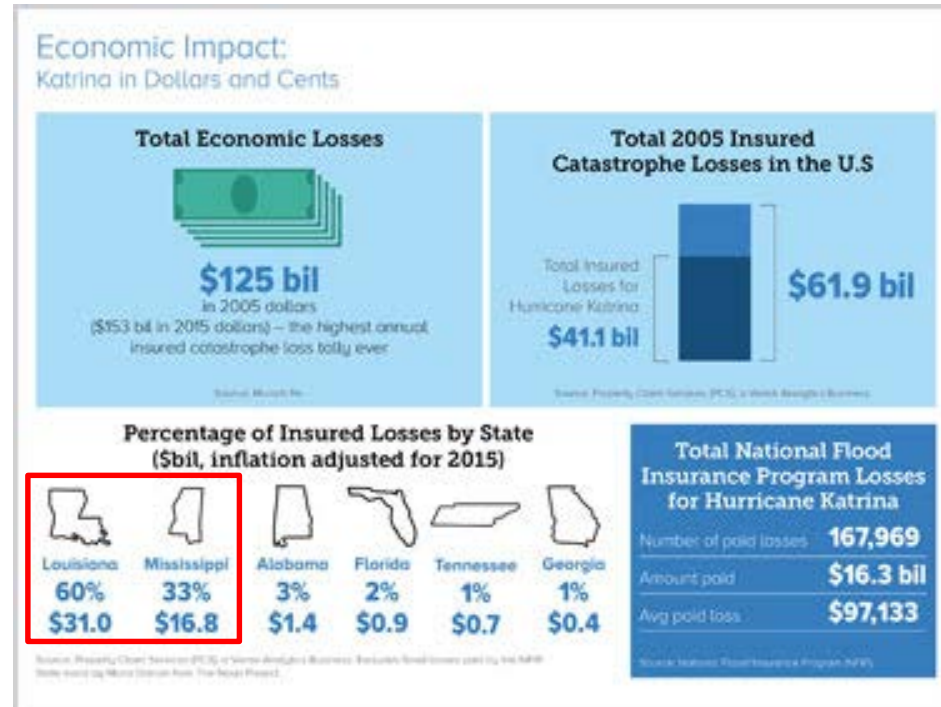
HURRICANE IVAN, 2004

\$1.6

SOURCE National Flood Insurance Program
George Petras, USA TODAY

USA TODAY

- On average, only about 40% of the total damages from Katrina were insured



Insuring away US Storms: Facts

- **Size of Katrina:** about 63% of flood insurance claims greater than 95% of total insured value between 1978 and 2012 occurred in 2005 (Kousky and Michel-Kerjan, 2015)
- **When mandatory is optional:** as a part of federal insured mortgage, flood coverage has been mandatory in the US since 1973, however only 40% of the victims in Louisiana and Mississippi had insurance to cover losses (Kunreuther, 2006)
 - **Lessons unlearned:** Only 20% of NYC homeowners had flood insurance during Sandy, in spite of Hurricane Irene the previous year in that region (PlaNYC Report, 2013)
- **Inverse correlation:** Districts in the US with high poverty were found to have lower flood insurance coverage (Masozera et al., 2007)
- **Bias:** More loans were being approved to wealthy neighbourhoods than others, which affected the speed of recovery at the micro-level

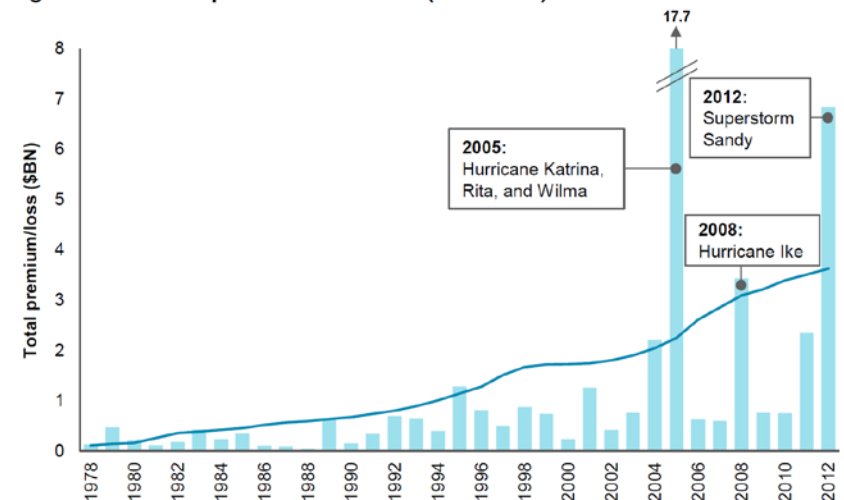
Insuring away US Storms: Issues

- **1.7 million different claims** for vehicle, houses and business damages were made in the six affected states (Insurance Information Institute, 2010)
- Volume of claims from these and Hurricane Ike were so high while the premiums collected were low such that the National Flood Insurance Program (NFIP) went into **\$17-18 billion debt** and Sandy pushed these further to **\$24 billion**
- **Average premium shortfalls were ~\$800 million/year**, which were borrowed from federal government (Bingham et al., 2006)
- Despite FEMA aid and a massive **federal bailout of over \$50 billion** by 2008, status quo was not reached.

Rank	Date	Event	Number of Claims Paid	Total Amount Paid	Average Amount Paid per Claim
1	Aug. 2005	Hurricane Katrina	168,000	\$16.3bn	\$97,000
2	Oct. 2012	Superstorm Sandy	130,000	\$8.4bn	\$64,000
3	Sep. 2008	Hurricane Ike	47,000	\$2.7bn	\$58,000
4	Aug. 2016	Louisiana Storms	22,000	\$1.7bn	\$80,000
5	Sep. 2004	Hurricane Ivan	28,000	\$1.6bn	\$57,000
6	Aug. 2011	Hurricane Irene	44,000	\$1.3bn	\$30,000
7	Jun. 2001	Tropical Storm Allison	31,000	\$1.1bn	\$36,000
8	May 1995	Louisiana Floods	31,000	\$0.6bn	\$19,000
9	Aug. 2012	Tropical Storm Isaac	12,000	\$0.6bn	\$46,000
10	Sep. 2003	Hurricane Isabel	20,000	\$0.5bn	\$25,000

Source: Seeking Alpha

Figure 1: NFIP total premiums vs. losses (1978–2012)



Source: Harvard Business School

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- Despite FEMA aid and a massive federal bailout to over \$50 billion by 2008, status quo was not reached.
- Few insurance companies had **doubled their rates** for certain categories and some **refused to issue new property insurance**, for those along the coast thereby slowing down reconstruction and recovery (Young, 2010; Smith J.P., 2012)
- Mississippi organized a “Wind Pool” (property insurance of last resort) at a heavy price. They **purchased reinsurance from global markets** at 398% and 268% premium increases on residential & commercial property policies, proving to be a very costly affair for the State

Protection Gap: Bangladesh 2004 vs US 2005

- **Major sources of livelihood** were severely affected. Agriculture in the case of Bangladesh, whereas energy and tourism in the case of US 2005
- **Recovery speed**, measured in terms of population levels, number of housing units and business establishment was quite slow in the US, despite being a developed country. Bangladesh faced an economic setback after the floods

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- **Reliance on ex-post disaster support** over ex-ante protection such as improving vulnerability or insurance uptake, partly due to moral hazard
- **Extensive dependence on external aid** for support, which is typically slow to materialize thereby slowing the speed and perhaps even the quality of economic recovery
- The **government shouldered most costs** of reconstruction and relief, resulting in massive structural deficits and negative economic knock-on effects

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- The **government shouldered most costs** of reconstruction and relief, resulting in massive structural deficits and negative economic knock-on effects
- **Extent of insurance coverage**: Insurance penetration was almost zero in Bangladesh but was higher in the US, yet still inadequate to cover all the losses. For instance in the US during Katrina, insured losses were still only 40% of the total estimated losses. **Scope for an increased role of insurance!**
- **Limits to insurance growth**: Bangladesh's weak regulatory capacity resulted in a ineffective, fragmented private insurance sector while in the US policy failures undermine their efficacy despite the presence of a well-developed private insurance market. **Policy issues need to be primarily addressed!**

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