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# Climate Change Preparedness in New Jersey: A Risk Management Perspective

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# The Aftermath of Hurricane Sandy

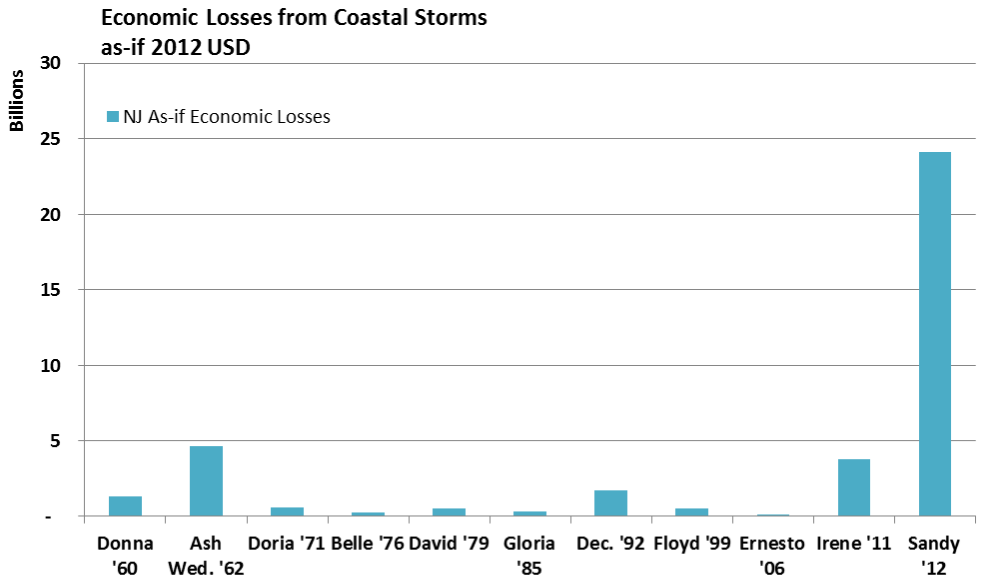
## New Jersey by the numbers

Joey Harrison's Surf Club – Then and Now

According to New Jersey Governor Chris Christie's office:

- 346,000 housing units were damaged or destroyed, with 22,000 units rendered uninhabitable.
- 75 percent of New Jersey's small businesses were adversely affected—10 percent of which, or nearly 19,000 businesses, sustained damage of $250,000 or more. Total business losses are estimated at a whopping $8.3 billion.
- An estimated 10,000 structures statewide will need to be demolished.
- Transit, roads and bridges have been damaged to the tune of $2.9 billion, which includes 294 damaged rail cars and 74 damages locomotives.
- Route 35 requires an estimated $120 million to repair
- Power and gas line repairs are expected to cost roughly $1 billion.
- Waste, water and sewer will require around $3 billion to repair and protect; and
- Hospitals, assisted living and other health facilities have seen over $153 million in storm damage.

# Sandy's Place in History
## Economic Losses from Coastal Storms in New Jersey




Source: NJ.com

Estimated economic losses from Sandy are 5 - 6 times the second largest event, the Ash Wednesday 1962 nor'easter

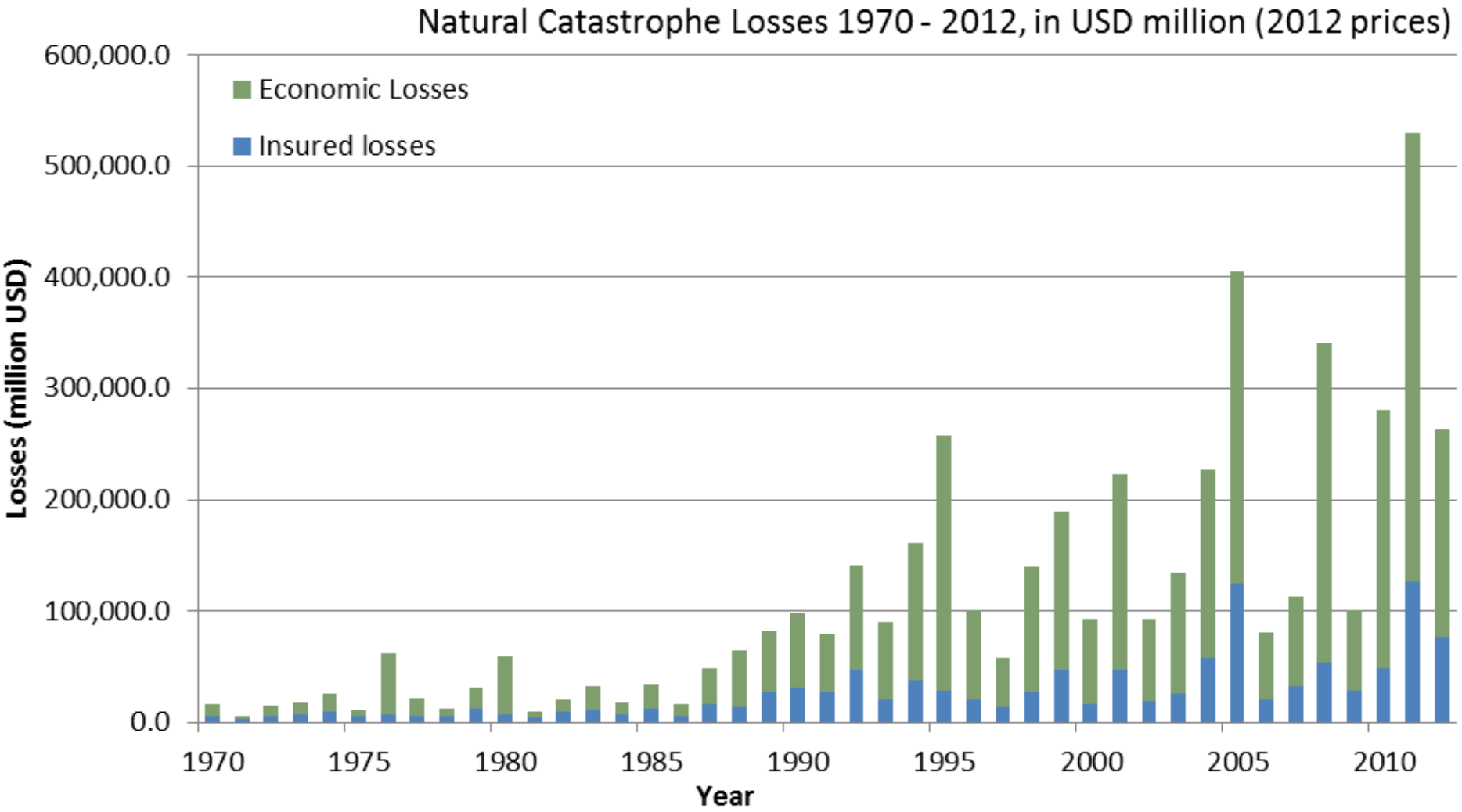
# The Role of Re/Insurance

## Closing the Financial Gap – Post-event statistics

- On a typical day, Toms River, NJ, 911 dispatch received 250 calls.
  - In the 24 hours after Hurricane Sandy, more than **1,300 calls** were logged
- NJ Transit estimates that between **a quarter to a third of rolling stock** was damaged by Sandy.
- 7 million people affected by power losses, or **80%** of the state's population.
- As of December 2012, approximately **333,922 cubic yards** of Sandy-related debris was removed from only six towns in Monmouth and Ocean Counties (Asbury Park, Beach Haven, Eatontown, Howell, Long Branch and Middletown).

Source: Personal

# Massive gap between economic and insured losses




Note: Insured losses: property and business interruption, excluding liability and life insurance losses Source: Swiss Re sigma

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# The Role of Re/Insurance
## Public Private Partnerships

From the *Bank of International Settlement (BIS) Working Papers No. 394: Unmitigated disasters? New evidence on the macroeconomic cost of natural catastrophes*

- The uninsured part of catastrophe losses drive the macroeconomic costs.
- Insured losses are either inconsequential or positive for economic growth, especially in the three years after the event.
- Growth impacts from meteorological events are typically weakly positive.
- Small and/or low to middle income countries suffer more when uninsured but recover faster when insured against catastrophes when compared to large, high income countries.
- Insurance can play an important role in mitigating the macroeconomic costs arising from major natural catastrophes.

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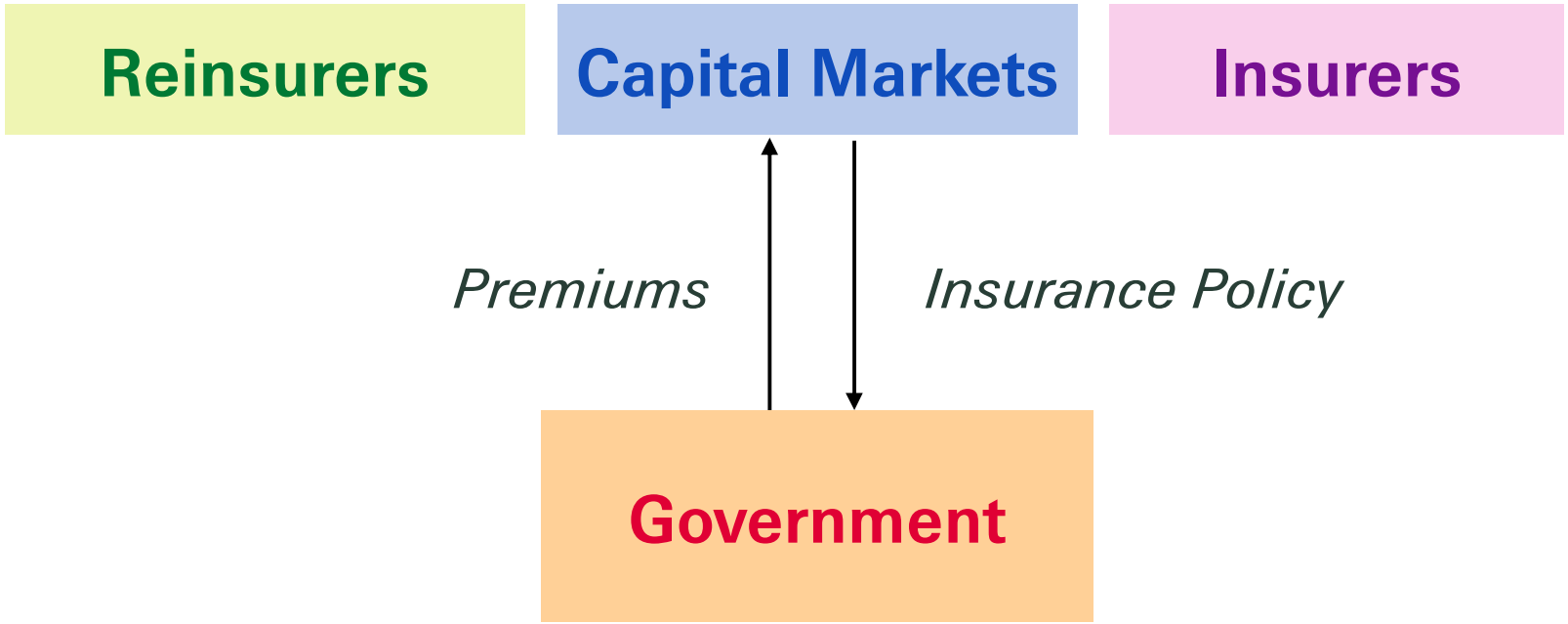
# Risk Transfer Solutions

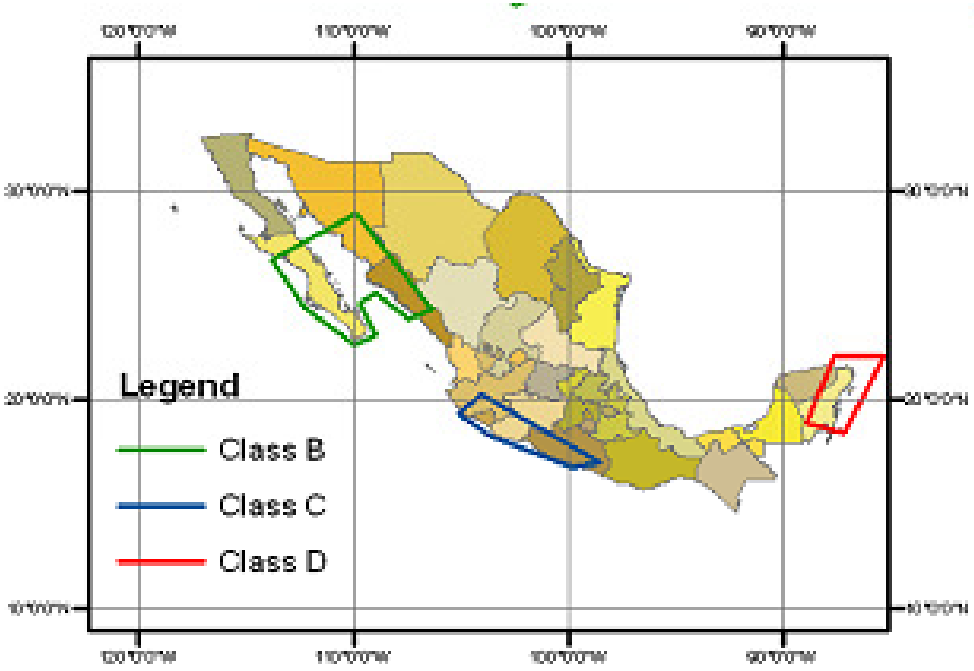


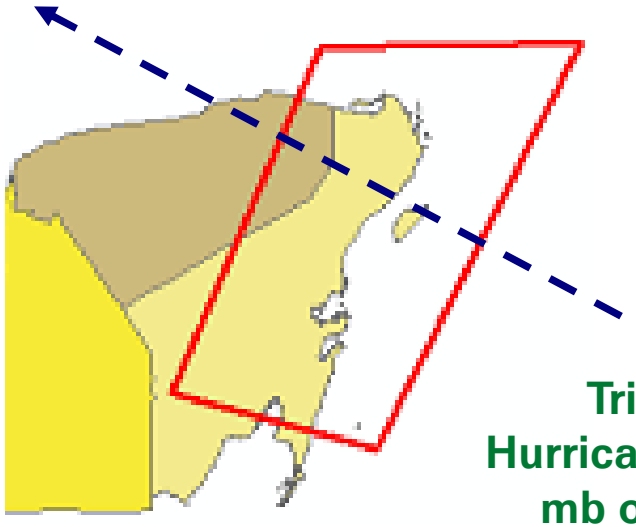

- Policy: Insurance linked securities ("cat bonds"), swaps and reinsurance
- Risks: Natural catastrophes, agriculture risk, pandemics, longevity
- Use of funds: Emergency costs, long term liabilities, internal funding

# Traditional vs. Parametric – Benefits to buyer

| Topic | Traditional Insurance | Parametric Solutions |
|---|---|---|
| Use of Proceeds | Intended to cover loss sustained | Used at buyers discretion |
| Speed of Payment | Subject to loss adjustment (can be slow) | Rapid: 2 – 6 weeks |
| Loss Adjustment / Administrative Process | Yes - buyer may need own claims adjusters | No – little claims administration needed |
| Transparency | Loss settlement is complex to explain | Parametric triggers easier to explain |
| Pricing Flexibility | Limited modifications | Structure can be adjusted to price |
| Changes in Exposure | Annual adjustments | No adjustment needed |

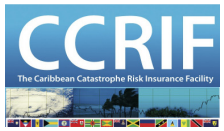
# How do Parametric solutions work: MultiCat Mexico hurricane example



**Trigger: Hurricane of 920 mb or lower through box = payment**

# How others have used parametric solutions

| Country | Client | Coverage Size | Use of Funds | Form |
|---|---|---|---|---|
|  | Government of Mexico | USD 290 million (Hurricane and Earthquake) | Cover emergency expenses following disasters | Cat Bond (ILS) |
|   | Caribbean Catastrophe Risk Insurance Facility | USD 111 million (Hurricane and Earthquake) | Provide financial liquidity for the government following disasters | Parametric reinsurance and derivative |
|  | State of Alabama | Transaction size not disclosed (Hurricane) | Pay for increased insurance costs following hurricanes | Insurance |
|   | University of Texas Medical Branch | USD 50 million (Hurricane) | Covering losses from hurricanes to soften impact to University system | Insurance |

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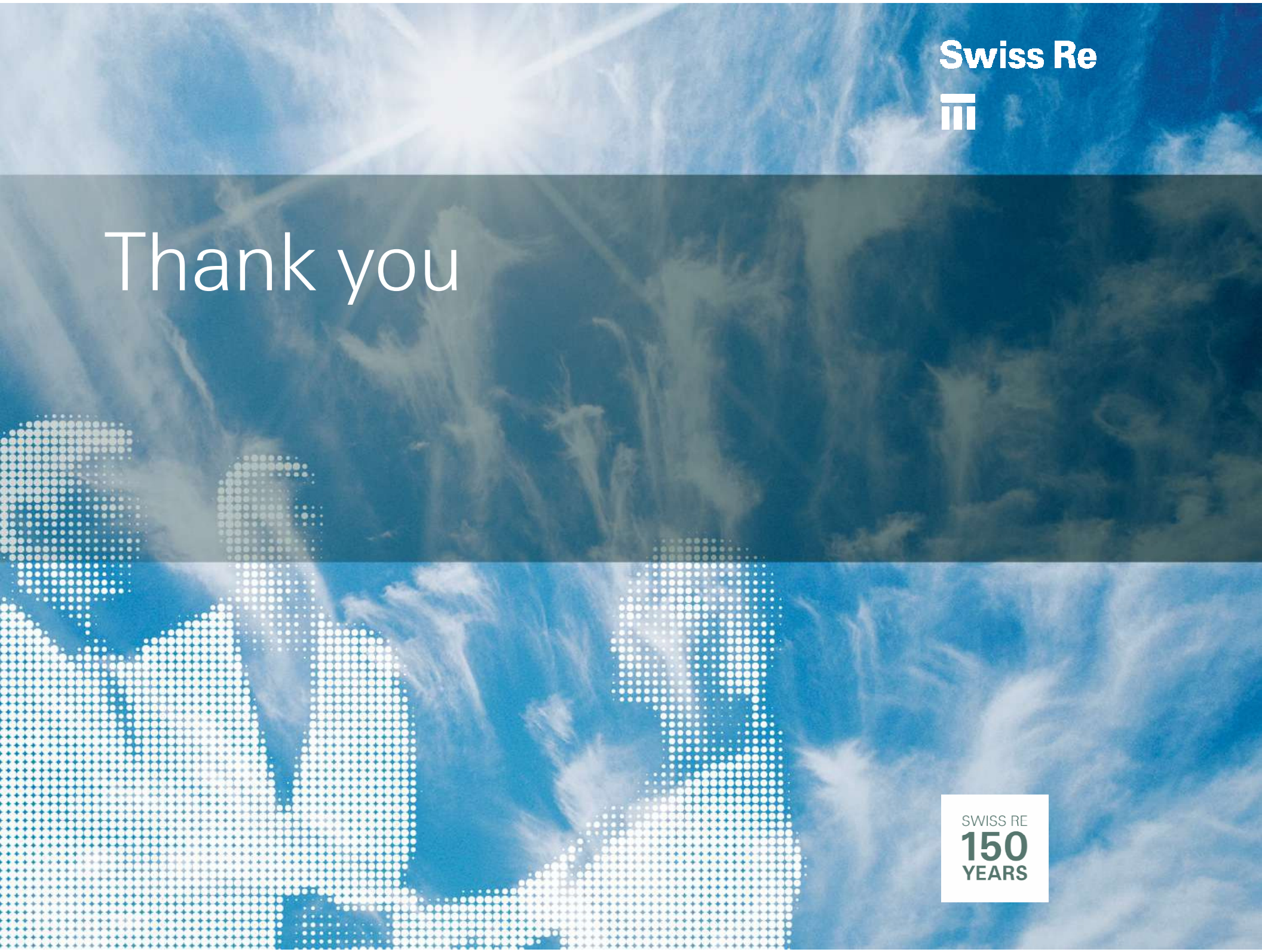
# Conclusions

- ✓ Good news...
  - ➢ Risk management strategies and product offerings from the private re/insurance industry can help the state of New Jersey and its municipalities financially prepare for significant weather events.
- × Bad news...
  - ➢ Hurricane Sandy served as a societal and economic reminder that the state of New Jersey is not immune to large, catastrophic coastal storms.
- ✓ Good news...
  - ➢ There is a proven track record of successful private-public partnerships within both developed and developing nations.

***The public and private sector can work jointly to protect the citizens of New Jersey from the financial impacts of climate change!***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