



# Financing Climate Resilience

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# Financing Resilient Infrastructure



- Historically, large protection projects have been entirely publically supported & funded
  - New Orleans Levee System
  - Thames Barrier (London)
- Investments were seen as public goods with low revenue generation potential (if any)
- Currently, there is growing pressure to stretch limited public resources and leverage private capital for resilience projects

# Placing a Value on Infrastructure



Image credit: [weather.gov](https://www.weather.gov)

insuring for resilience.

# The High Cost of Infrastructure Failure



Image credit: [Instagram \(paulphootrakul\)](#)



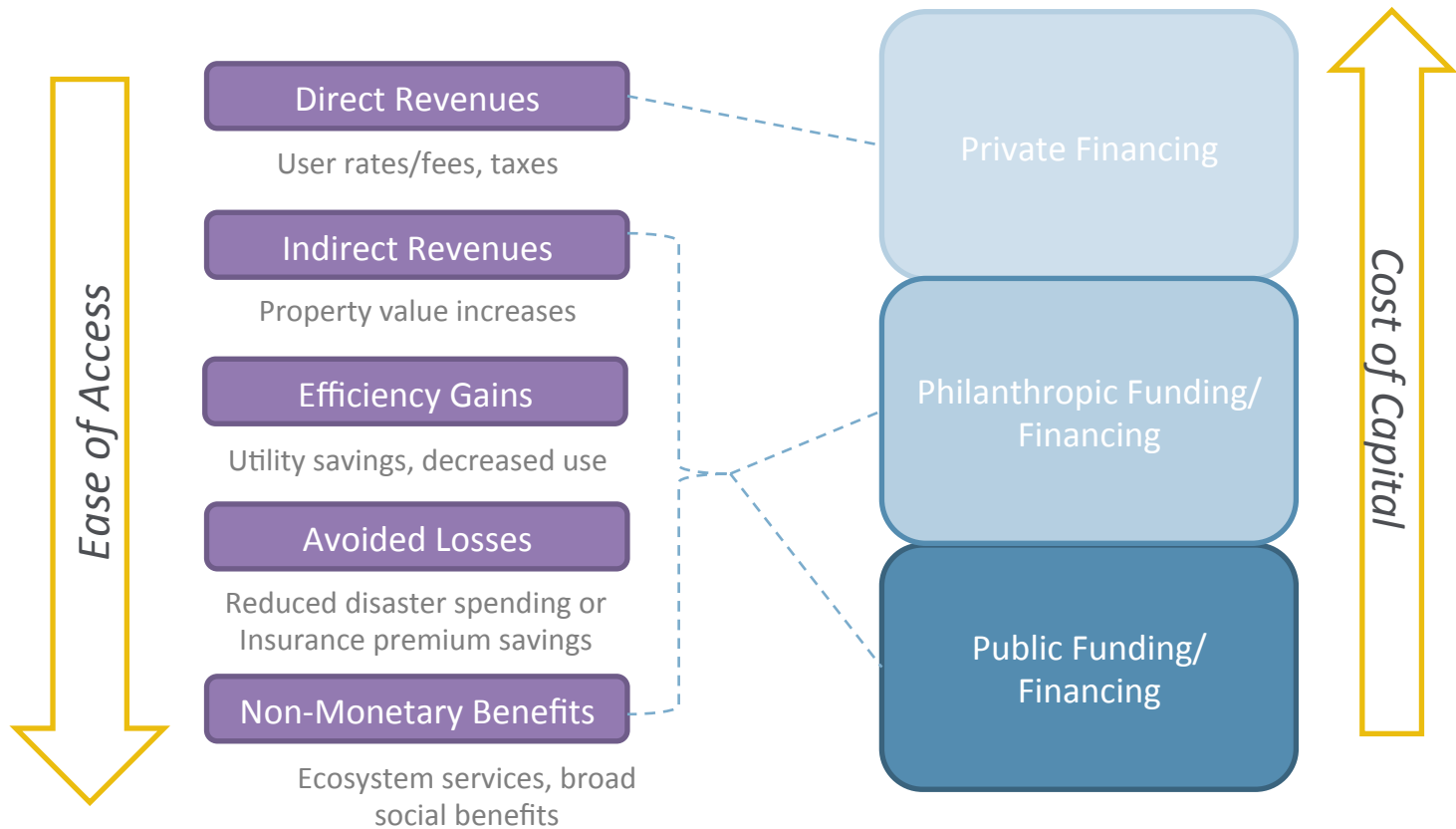
Lucy Nicholson / Reuters



AP Photo/Mike Meadows

insuring for resilience.

# Infrastructure Funding versus Financing



insuring for resilience.

# Drivers for Linking Resilience & Insurance



- Peril/Liability: growing risks & expected losses
  - New Orleans Levee Systems
  - Thames Barrier (London)
- Insurance: required coverage or compliance
  - New York MTA (2013)
  - Amtrak (2015)
- Project: planned resilience projects
  - New Construction
  - Required Upgrade/Recertification

# Why the Public Sector is Looking at Catastrophe Bonds to Build Resilience



## ISSUER

A city, state or organization (like a re-insurance company) exposed to huge risk announces a Cat Bond sale.



## INVESTOR

Capital market investors (hedge funds, sovereign wealth funds, pension funds, wealthy individuals) buy the bonds. The investor lends money (the principal) to the Issuer, which is reinvested in low-risk securities.



Image credit: <http://roadtoparis.info/2014/11/18/cat-bonds-cashing-catastrophe/>

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## CATASTROPHE STRIKES

Investor loses principal. The money pays for the damage. Pay-out can be triggered by a specific event, for example, when an issuer's losses reach an agreed amount, or when wind speed exceeds a particular threshold. Independent monitoring is crucial.



## NO CATASTROPHE

No catastrophe between the agreed dates (usually 1-3-year period)? The principal returns to the investor with a whopping 9% interest on average.



Image credit: <http://roadtoparis.info/2014/11/18/cat-bonds-cashing-catastrophe/>

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# From Catastrophe to Resilience Bonds

- By definition, resilient infrastructure projects are designed to reduce risk
  - Public sector assets & services are safer
  - AND insurance companies lose less money when public & private policy holders are better protected
- Resilience Bonds are one way of ensuring the *financial* value created by these public investments returns to the public sector



# Leveraging Private Finance for Projects

- The Opportunity: Linking Insurance & Infrastructure
  - Resilience Bonds can help close the loop
  - Create virtuous cycle of risk reduction investments



CAT BOND



PROJECT



REBATE

- The Challenge: Structuring Projects to Leverage \$\$\$
  - Public resources for risk reduction projects are limited
  - Benefits are diffuse & rarely modeled/monetized
  - Success is often something that didn't happen



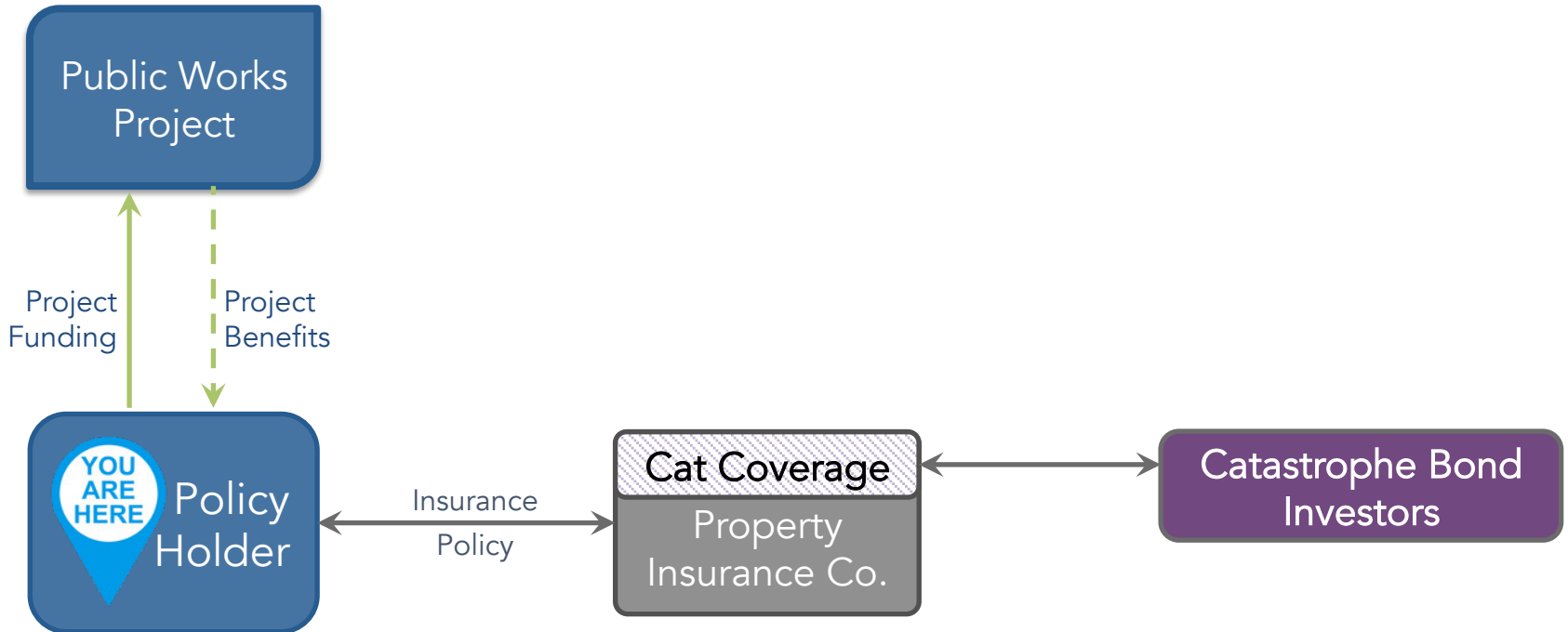
# How Resilience Bonds Work



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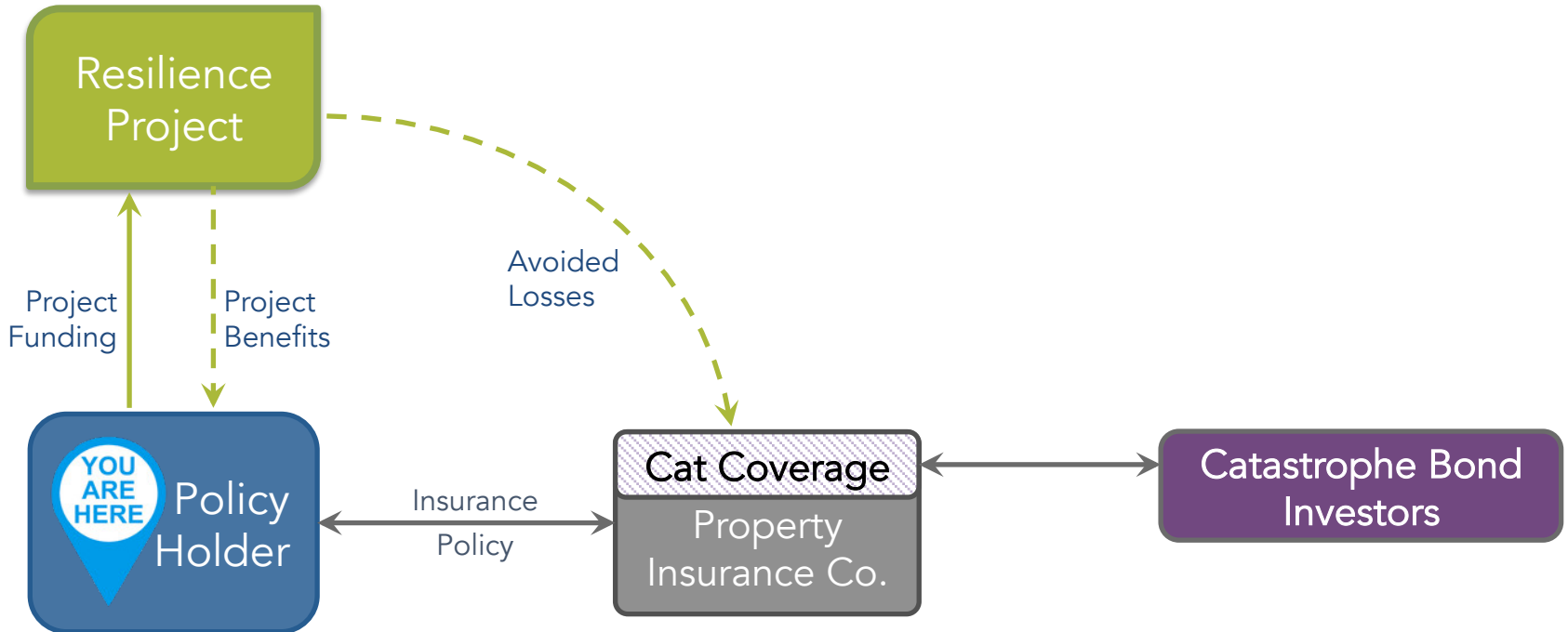
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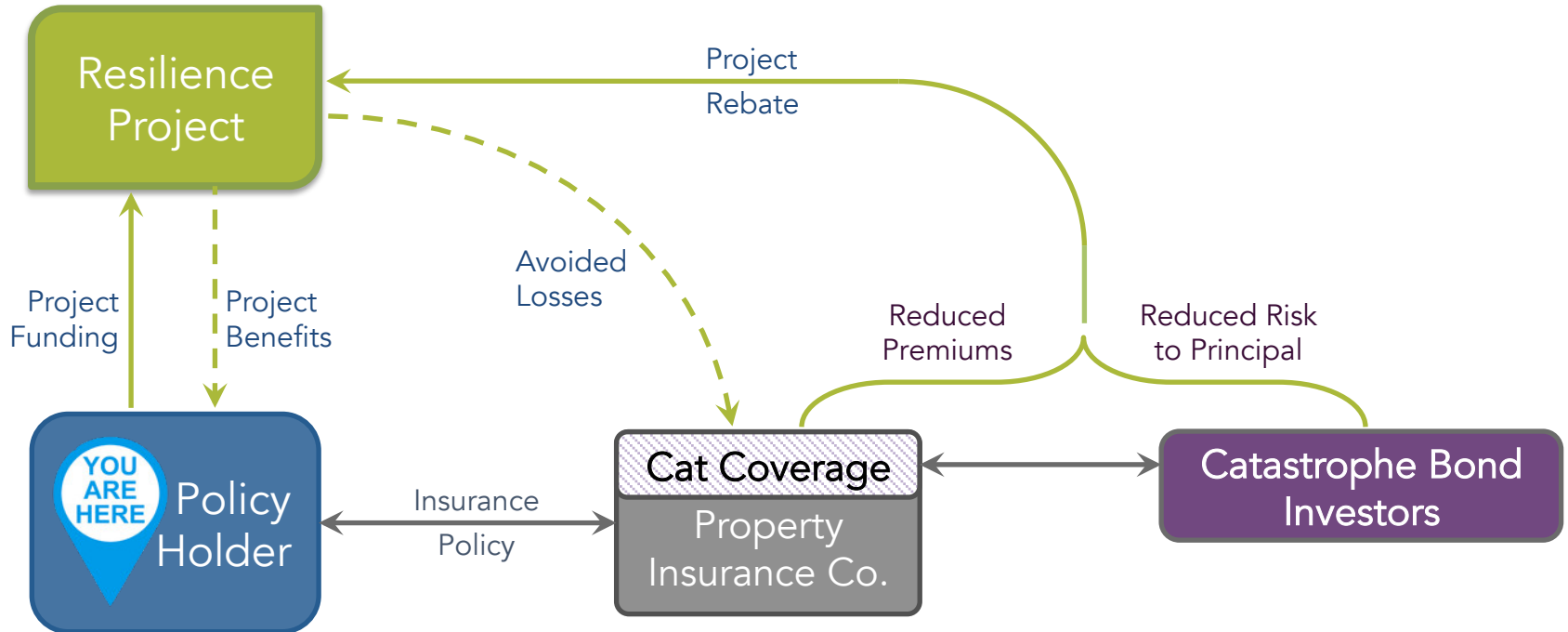
# How Resilience Bonds Work



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# How Resilience Bonds Work



# Benefits of Resilience Bonds



## 1. Fill Project Funding Gaps

- Rebates can fund future phases of projects
- Savings can cover O&M costs or addt'l insurance

## 2. Help Meet Insurance Compliance Obligations

- Existing federal disaster assistance requirements
- Potential new req's (i.e. FEMA Disaster Deductible)

## 3. Ensure Project Design Integrity

- Set design standards linked to risk reduction value
- Avoid value-engineering out key benefits



# Questions?

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