

# Toa Baja Puerto Rico

Building Physical, Economic, and Social Resilience

A ULI Advisory Services Panel Report

**ULI Climate Resilience Roundtable in Amsterdam**

Adam Greenfader, Chair of the ULI SE Florida/Caribbean Council

Lessons for Sint Maarten,  
Bahamas.....



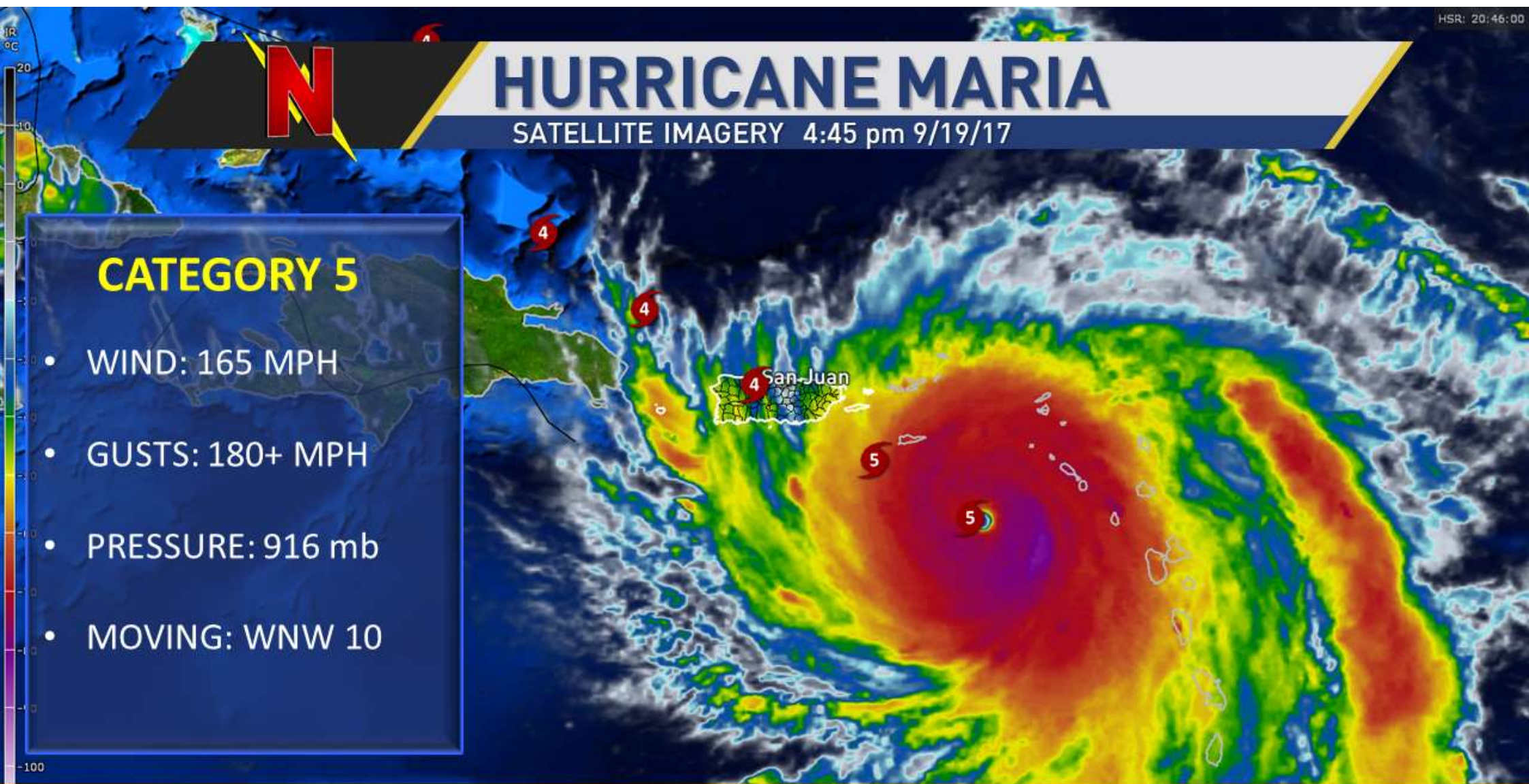


# HURRICANE MARIA

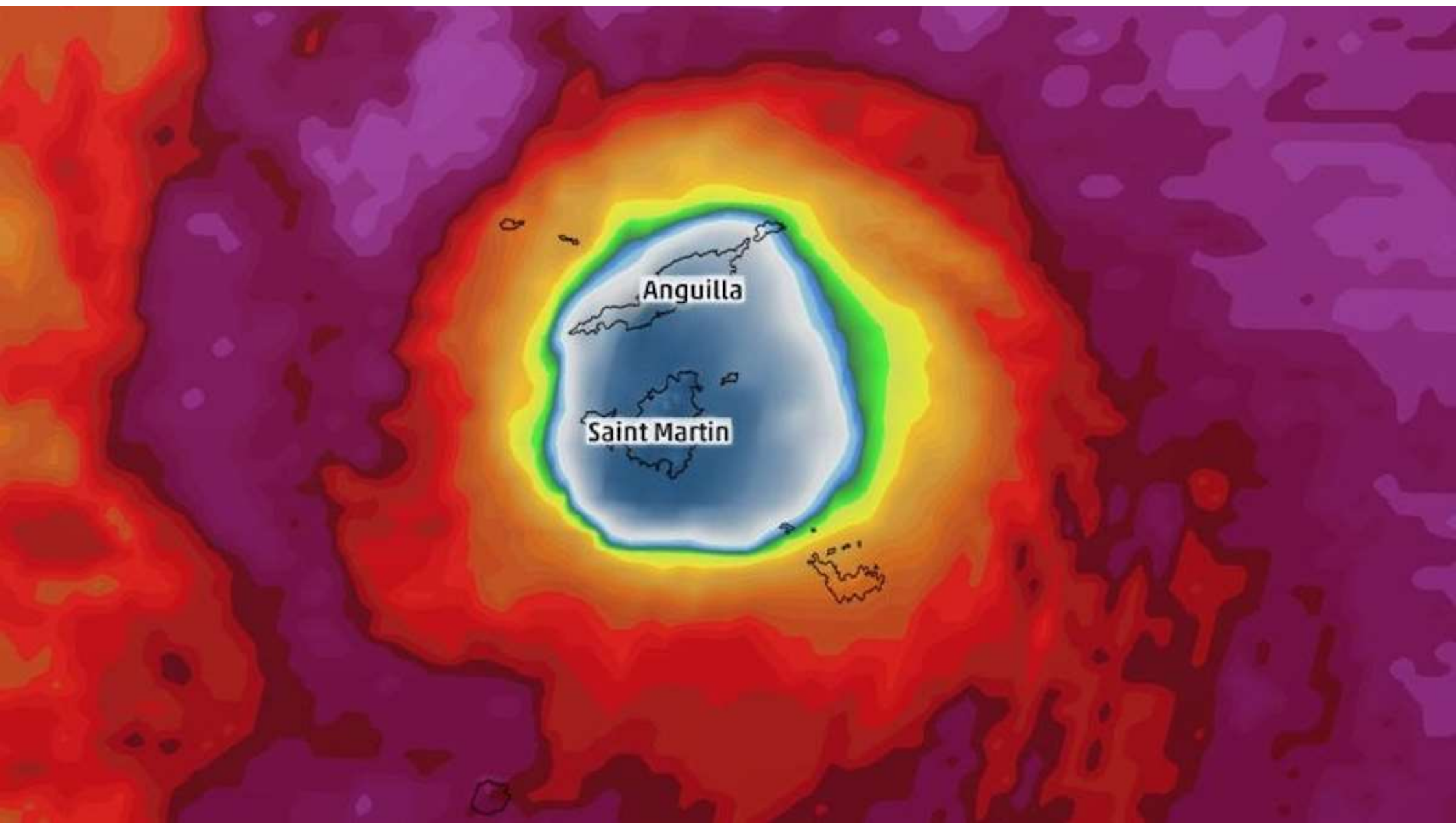
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## CATEGORY 5

- WIND: 165 MPH
- GUSTS: 180+ MPH
- PRESSURE: 916 mb
- MOVING: WNW 10







# Puerto Rico



3.2 million residents (almost 100 percent of residents) on the island of Puerto Rico were left without power—and most without water and communications.



3,000 deaths



Massive Emigration  
(150,000 people in twenty-four months)



Worldwide Attention





Puerto Rico 2017





Sint Maarten, 20





Abaco, Bahamas  
2019



# HURRICANE CATEGORY 1 - 5

## Category 1



Winds 119-153km/h (74-95mph)

Some damage and power cuts

## Category 2



Winds 154-177km/h (96-110mph)

Extensive damage

## Category 3



Winds 178-208km/h (111-129mph)

Well-built homes suffer major damage

## Category 4



Winds 209-251km/h (130-156mph)

Severe damage to well-built homes,  
trees blown over

## Category 5



Winds 252+km/h (157+mph)

Many buildings destroyed,  
major roads cut off

BBC



# ULI Advisory Services Panel



The ULI Advisory Services panel's technical assistance focused on the Municipality of Toa Baja.

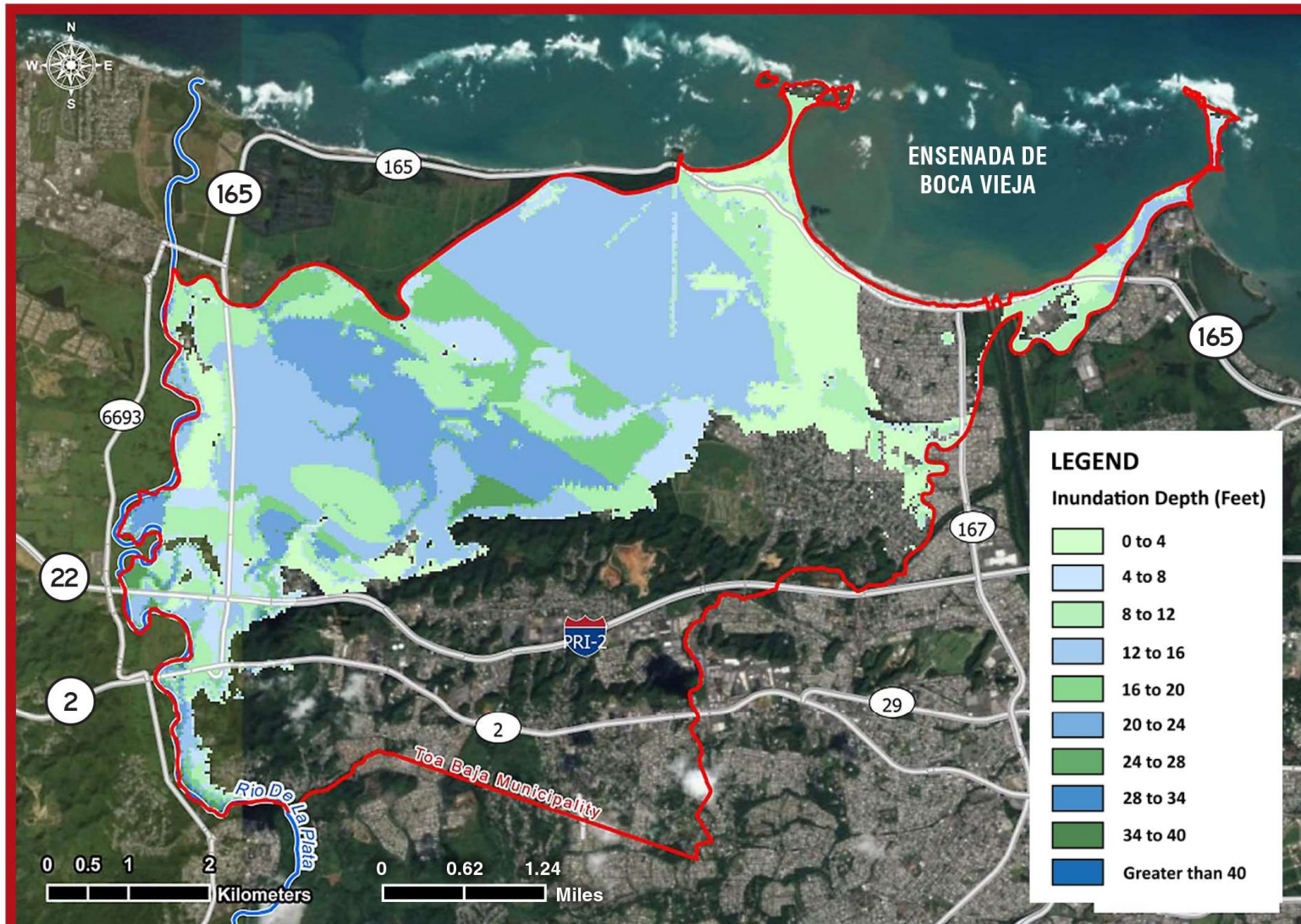


*Resilience:* Determine how Toa Baja can be more prepared for extreme weather events and enhance resilience through investments, partnerships, and land development processes; and



*Economic development:* Identify how Toa Baja can leverage competitive advantages and economic drivers at regional, commonwealth, and national levels.





The area of inundation is a result of stormwater runoff flowing downriver, overflowing the river's banks, and flooding the surrounding ground.





Puerto Rico, 2017



# Advisory Panel Conclusions



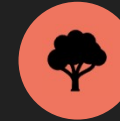
Electrical Infrastructure  
Hardening (Micro v  
Centralized)



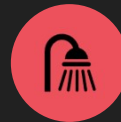
Enforce Building  
Codes (50% +)



Streamline Permit  
Process (Bureaucracy  
leads to informal  
construction)



Create New Land Use  
and Floodplain  
Regulation



Enhance water  
supply and sanitation



Improve  
Communications  
Infrastructure (Cellular  
phones are the first line  
of defense)



Encourage Natural  
Drainage Systems



Consensus Building  
and Civic  
Engagement (How  
do you move  
communities out of  
flood zones)

# Next Steps For ULI



US Government through its housing - HUD has approved the Puerto Rico Disaster Recovery Action Plan for **\$20 billion USD** in funds.

By creating a reimagined municipality that is at the forefront of these matters, Toa Baja will be a model for resilience for other municipalities to replicate, across the commonwealth and the Caribbean.



# Conclusions

Understanding climate risk and its real estate investment implications is a complex challenge.

Develop a proactive approach to address climate risks.

Learn from best practices – worldwide.

Build better by thinking long term.



# Developing Urban Resilience

Learn about real estate development projects showcasing best practices in resilient design.

Featured projects and policies address climate shocks and stresses at the site scale, proactively considering environmental vulnerabilities like sea-level rise, storms, heat, drought, and earthquakes.



# CLIMATE RISK AND REAL ESTATE INVESTMENT DECISION-MAKING



Urban Land  
Institute

HEITMAN

A REAL ESTATE INVESTMENT MANAGEMENT FIRM

