



Apoyo a la
Infraestructura



Evaluación Ambiental



Apoyo Comunitario



Amigos de la Laguna
del Condado

Building Capacity for Natural Disaster Planning, Response and Recovery

Brenda Torres Barreto, San Juan Bay National Estuary Program



#EstuarioRevive



Approximately 18 miles of coastline
97 square miles of Watershed

Critical Infrastructure & Local Economy Supported by the Estuary

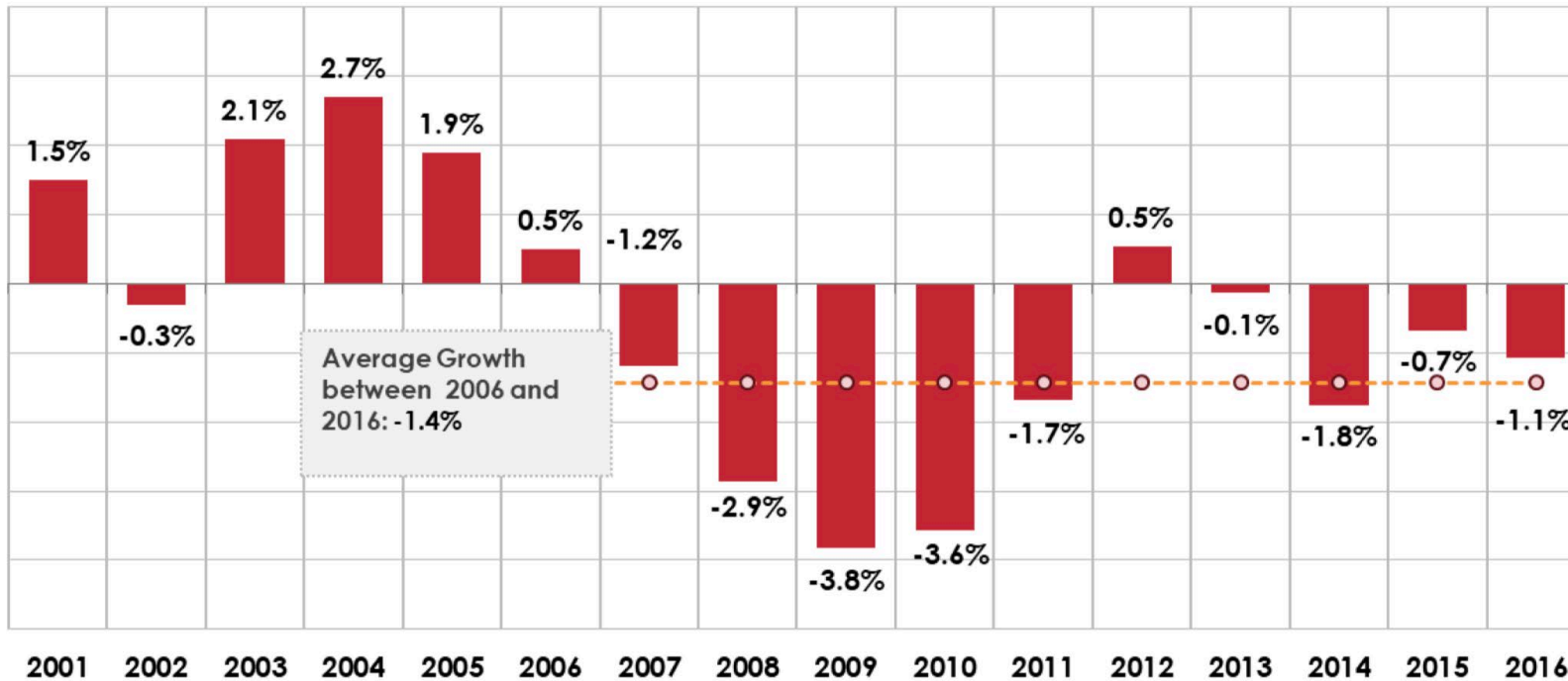
- Over 1 million tourists visit the port through 700 annual cruise ship trips
- 9.8 million travelers use the Luis Muñoz Marín International Airport, located in the watershed
- The San Juan Bay port is the 17th largest worldwide
- Receives 80% of the products imported to Puerto Rico.
- 602 MW Power Plant in Cataño



Before Maria: Economic Recession

Real GNP Growth in Puerto Rico

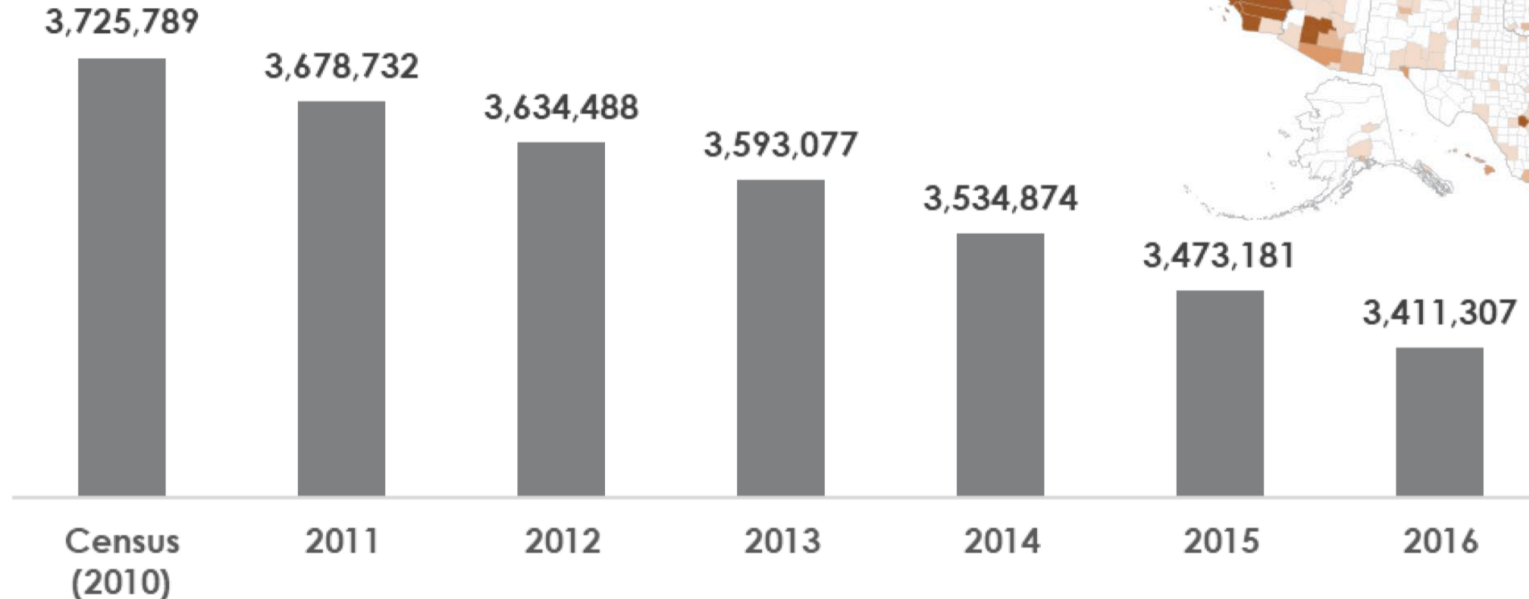
Fiscal Years -- 2001 - 2016



Before Maria: Population Loss

Population in Puerto Rico

2010-2016



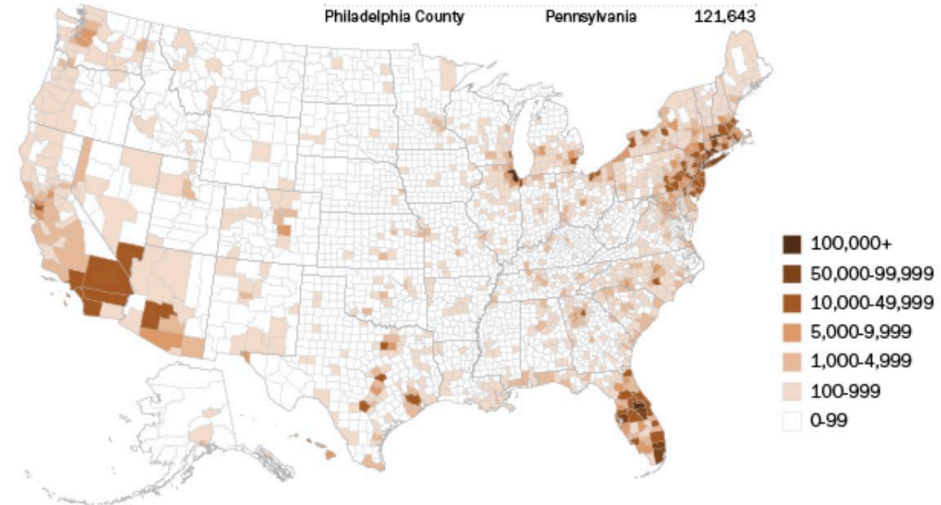
U.S. Puerto Rican Population

By county

2010

Top five county
Puerto Rican
populations

Bronx County	New York	298,921
Kings County	New York	176,528
Orange County	Florida	149,457
Cook County	Illinois	133,882
Philadelphia County	Pennsylvania	121,643

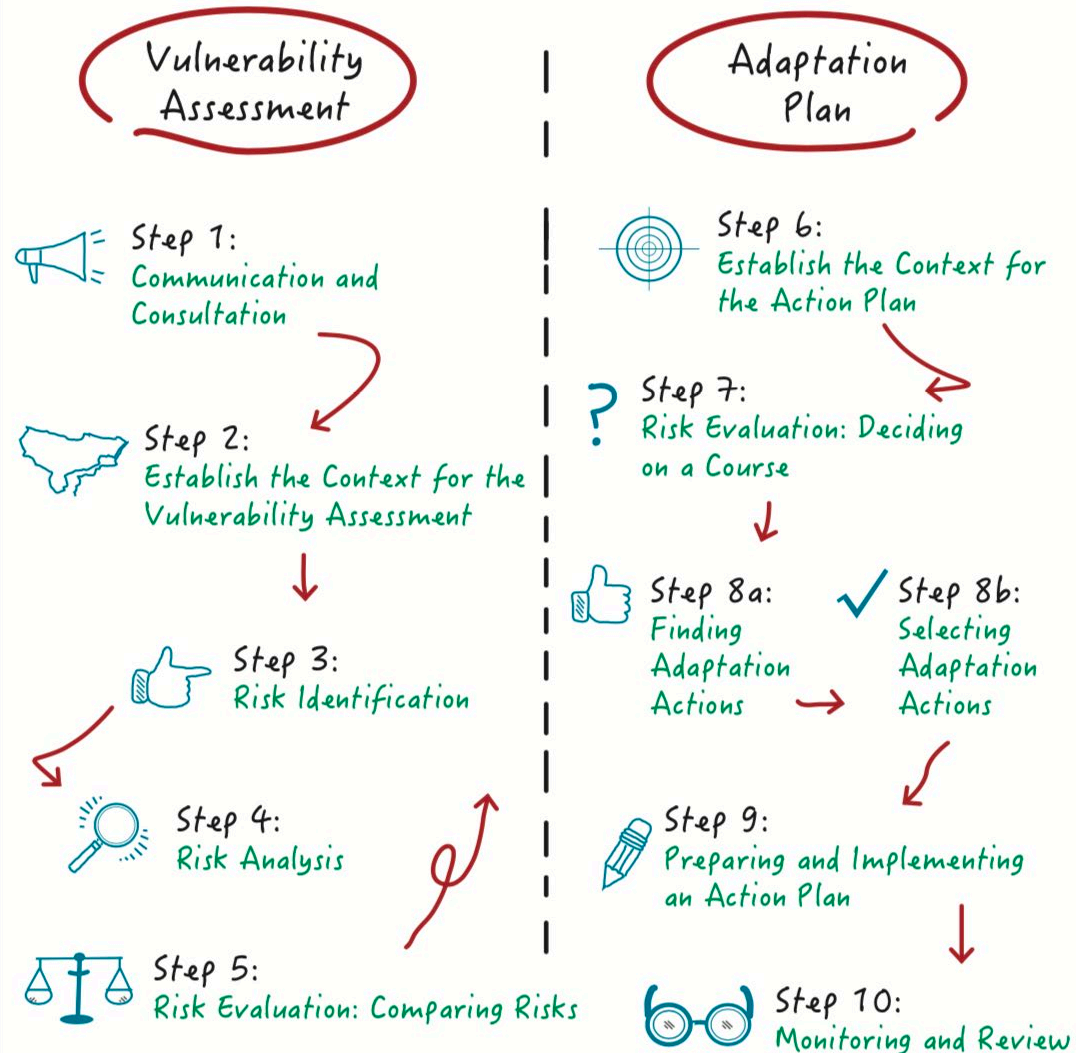


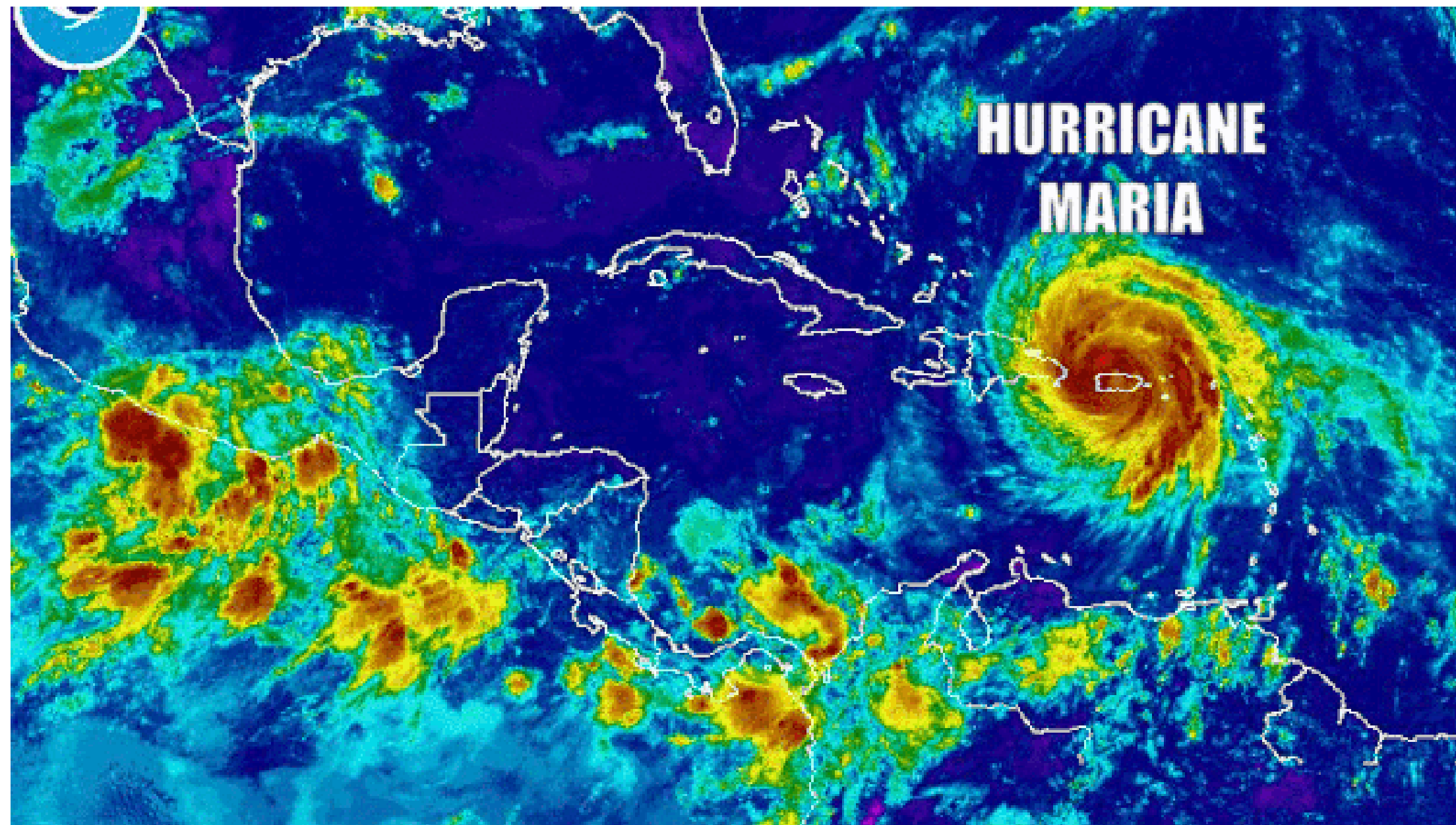
Source: US Census Bureau (2017). Annual Estimates of the Resident Population [Table PEPANNRES].

#Planning

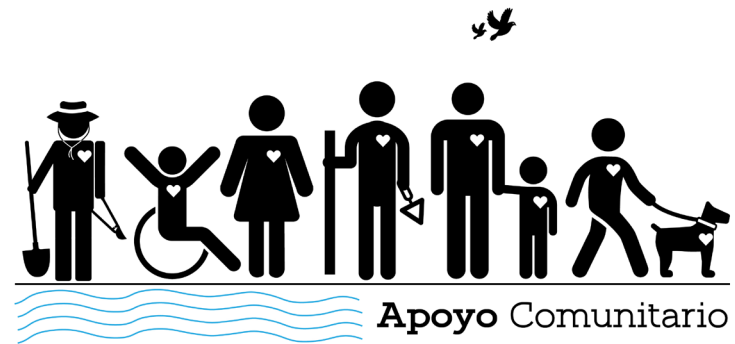
Steps for Climate Change Adaptation

Risk management methodology





#Response

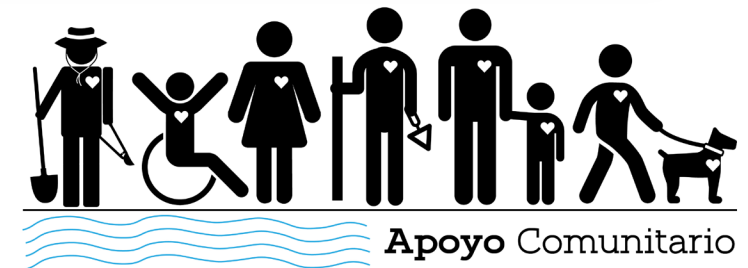
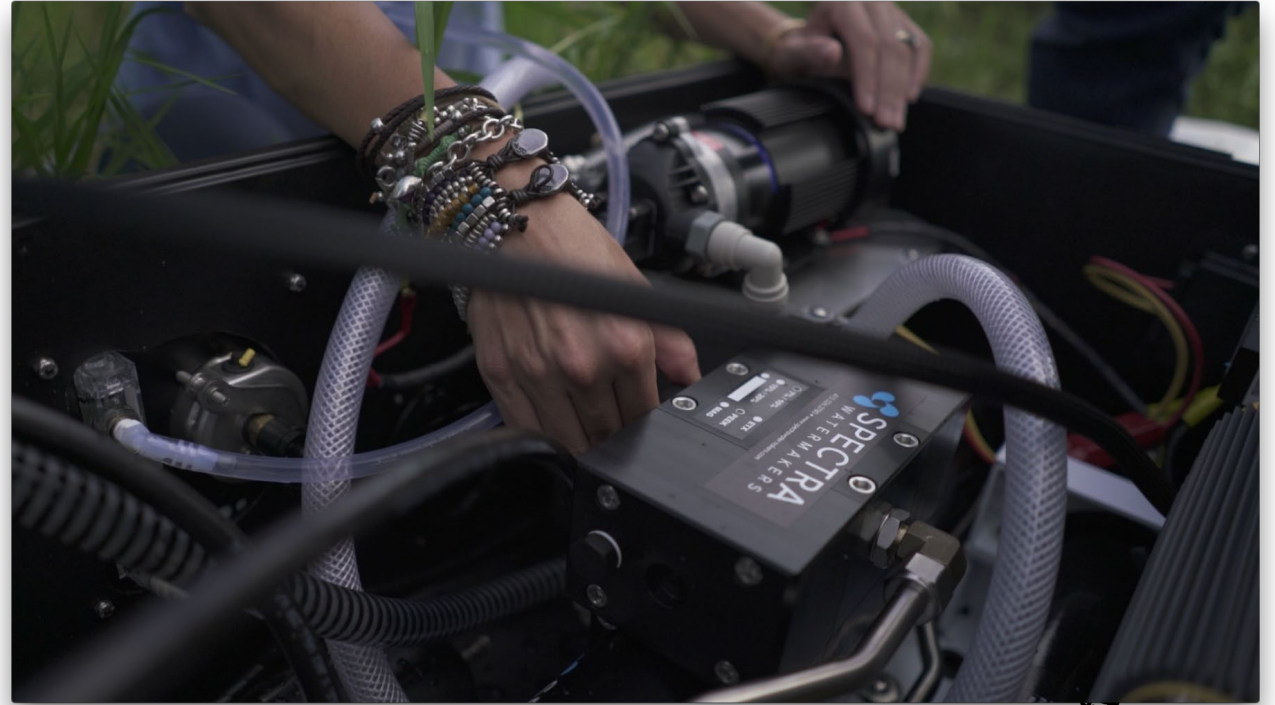


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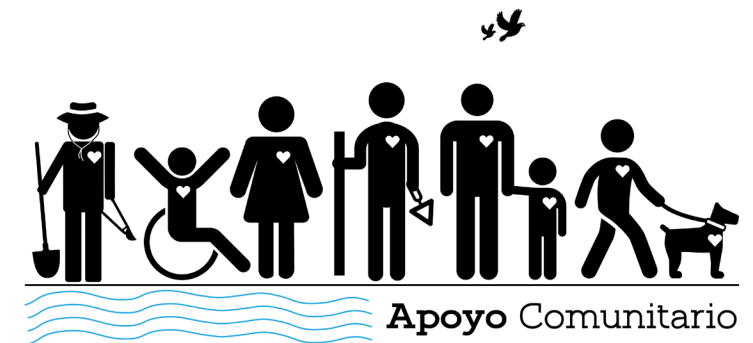
- A preliminary overall assessment of the damages and needs of the San Juan Bay watershed was performed.
- The need of removing debris that has been accumulating in critical infrastructure was prioritized.
- A rapid needs assessment was performed to guide the relief and ecological restoration projects on the ground.
- The Program installed solar systems in resilient hubs and distributed resources as needed.



Community Support: Safe Water



Community Support: Renewable Energy



Community Support: Water Filter Distribution



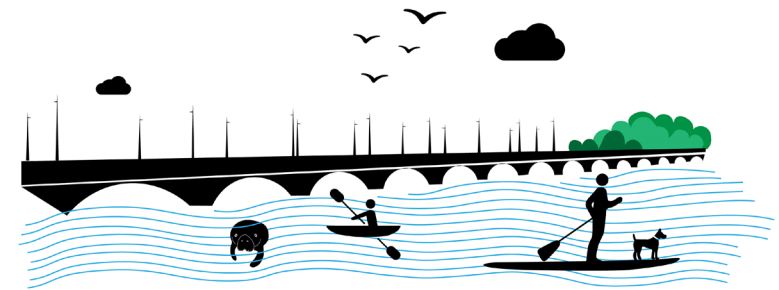
Environmental Assessment: Alert System



Infrastructure Support



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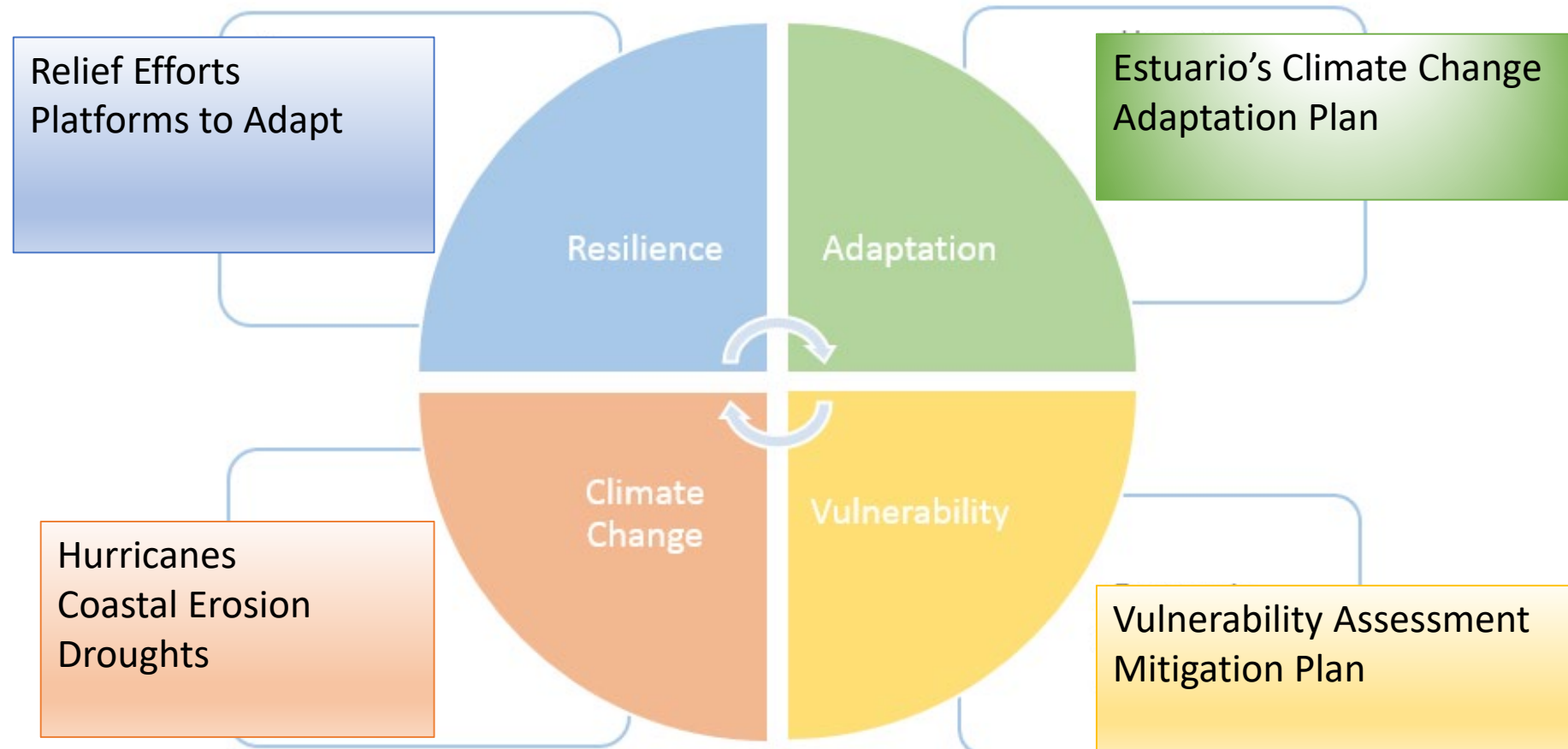


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#Recovery



An Interconnection between Climate Change, Adaptability, Vulnerability and Resilience



Transformation of Estuario's Relief Efforts into a *Community Resilience Unit*

1. Urban Forests Network
2. Green Infrastructure Master Plan
3. Community Water Network
4. Vulnerability Assessment of the System
5. Watershed Based Mitigation Plan
6. Community Development Corporation

Preparedness through Community Resilience Coordinators



- *Urban Waters Program Relief Efforts in the Urban Watershed of the San Juan Bay Estuary*
- *Improve access to clean water*
- *Improve connectivity and water quality in the watershed*
- *Promote the use of sustainable materials / and better handling of debris and solid waste.*
- *Improve community preparedness and resilience in the face of extreme events*



Components of Estuario's Community Resilience

Pedro Brull, Orlando FL

 **#EstuarioRevive**



Public Health & Healthcare Access

Cultural Empowerment



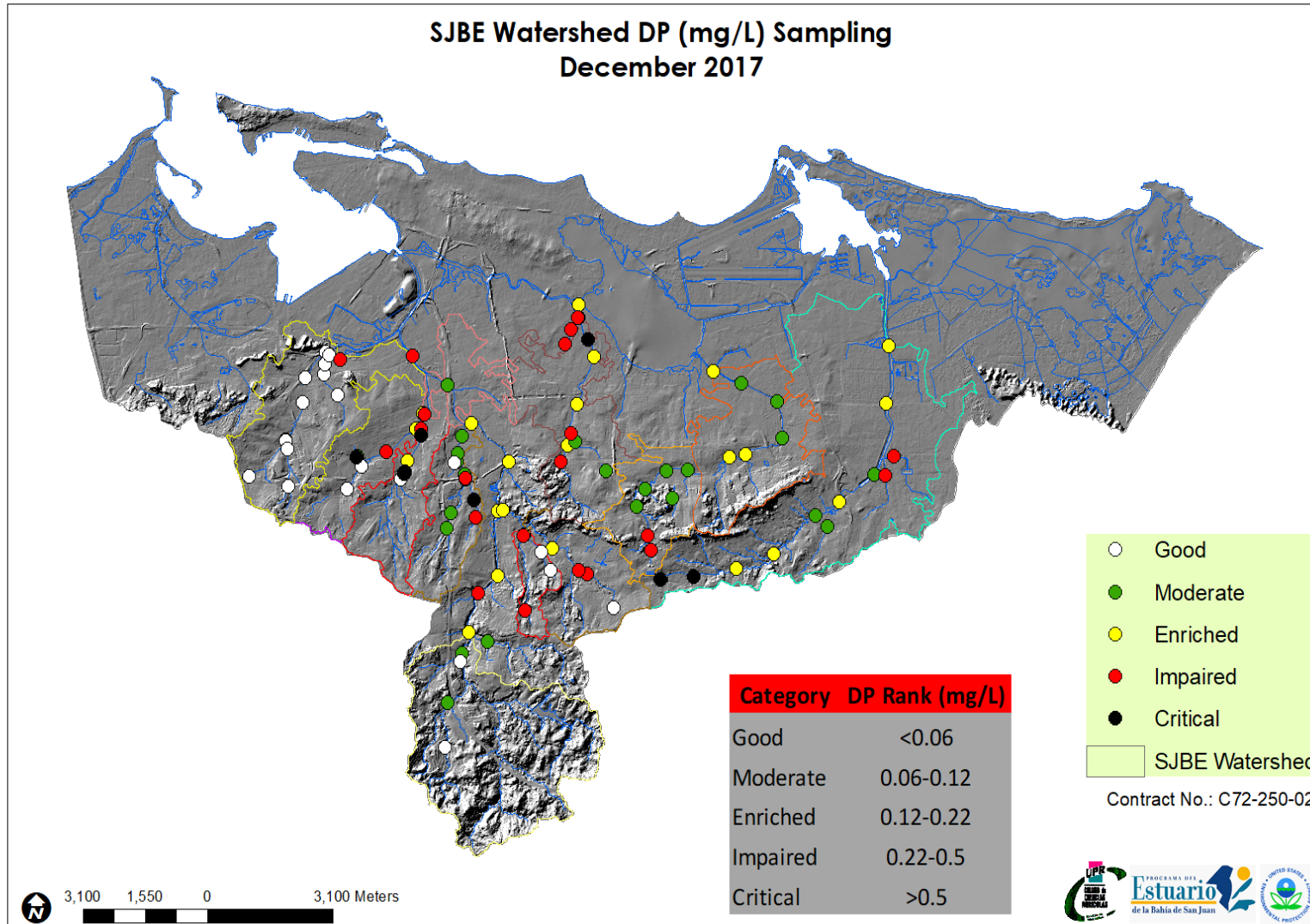
Environmental Education & Training



Economic Empowerment



WQ Sampling at the Watershed Level



CAÑO MARTÍN PEÑA RESTORATION AND RESILIENCY PROJECT



Estimated Cost

\$1,000,000,000

Proposed Funding Source

USACE

Other Possible Funding
Sources

HM, CDBG-DR

Caño Martín Peña Restoration and Resiliency

EVALUATION CRITERIA



LOCATION



DESCRIPTION

Caño Martín Peña Ecosystem Restoration Project (dredging of 2.2 miles of the eastern channel) authorized under WRDA 2007, including LEERDs and other non federal components; wastewater and storm water sewers with green infrastructure components, potable water distribution system, and the Paseo del Caño; and associated relocation of approximately 1,000 families, construction of new resilient homes in available lots and improvements to homes and public facilities.

IMPACT

70% of the communities flooded with wastewater during several days, around 1,000 homes lost part or all the roof, or were destroyed, trees fell into the tidal channel further blocking the channel, which affects San Juan Bay Estuary Area.

LONG-TERM BENEFIT AND OPPORTUNITIES

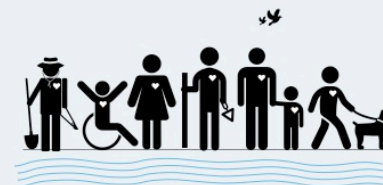
The main benefit of the project is the improvement of the health conditions of 15,000+ persons that are frequently exposed to contaminated water and diseases. On the economic side partial estimates point to benefits of \$587 million to the Puerto Rican economy.



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para mas información
visítanos en www.relief.estuario.org