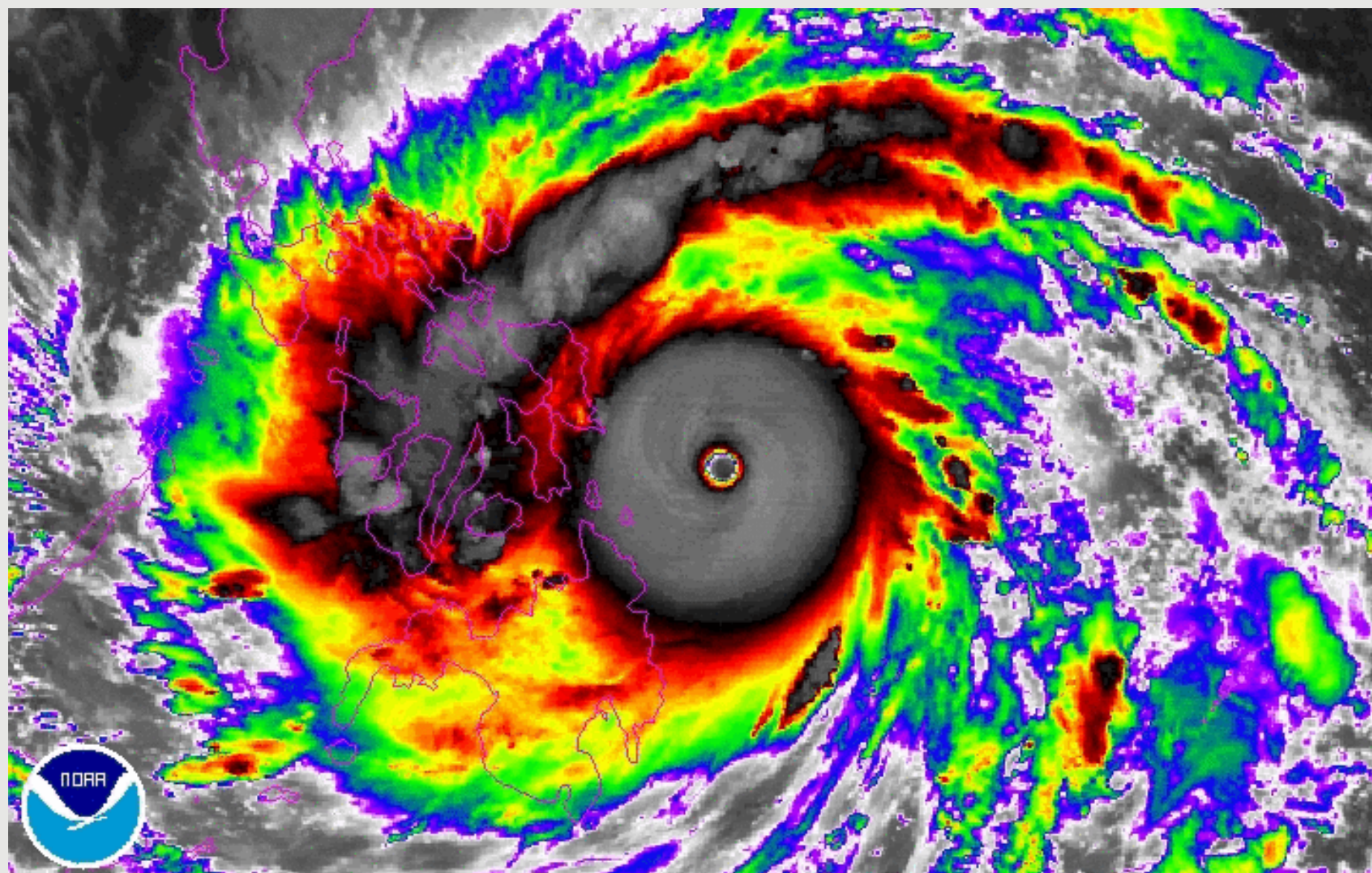




USAID
FROM THE AMERICAN PEOPLE

ADAPTATION COMMUNITY MEETING: CLIMATE RESILIENT INFRASTRUCTURE

September 27, 2018



Philippines Samar Road



- Raise bridges
- Upgrade culverts and drainage pipes
- Widen water channels
- Strengthen road embankments
- Remediate slopes
- Install seawalls





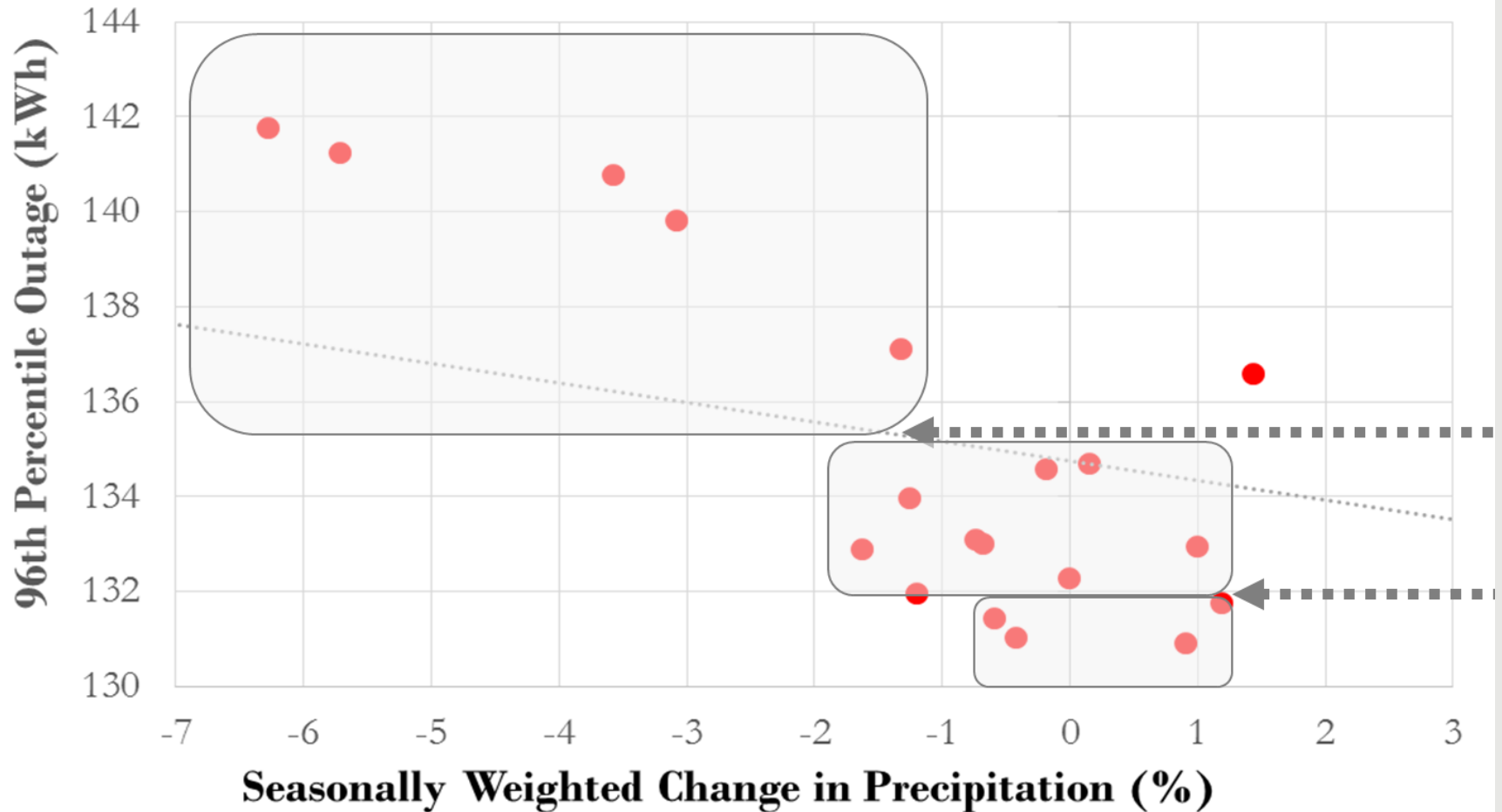
Make better decisions in the face of uncertainty

Zambia Iolanda Water Treatment Plant



Robust Decision Making

Climate Scenario Bins



Your thoughts are welcome!

Doug Mason
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CLIMATE VULNERABILITY ASSESSMENT OF JAMAICA'S TRANSPORT SECTOR

Chris Perine
Chief of Party
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ATLAS
Adaptation Thought Leadership and Assessments

KEY PRESENTATION POINTS

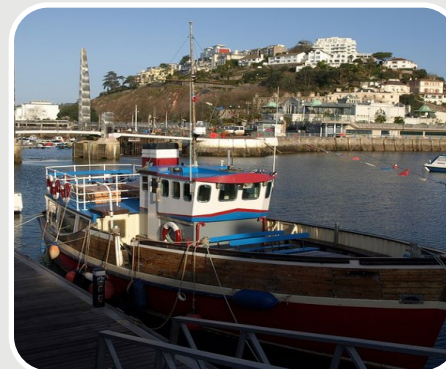
- Assessment Objective
- Assessment Methodology
- Overview: Climate Change and the Jamaican Transport Sector
- Recommendations
- Observations to Advance Assessment Findings



PHOTO COURTESY JAMAICANS.COM

ASSESSMENT OBJECTIVES

- Identify and prioritize climate vulnerabilities
- Develop and document a methodology for continued use by Jamaican stakeholders (and for other countries)
- Offer recommendations to integrate climate resilience into planned revision of national transport policy

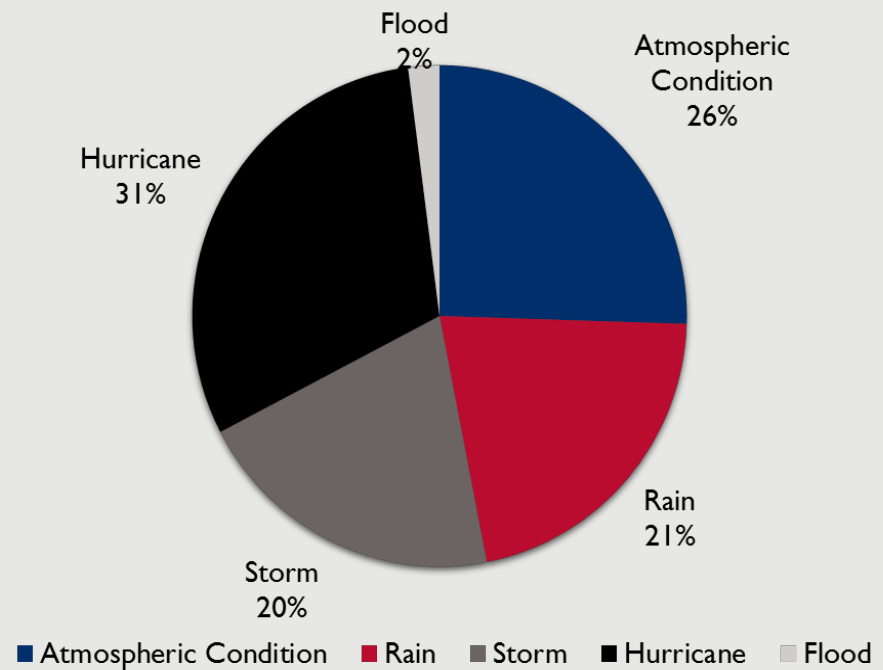


ASSESSMENT METHODOLOGY

- Review secondary data
 - State of Climate Report 2015 and 2012, other assessment reports (e.g., World Bank landslide risk)
 - GIS data from GoJ and World Bank
 - Policy documents including NTP, Vision 2030
 - Historical weather data/IPCC projections
- Consult with GoJ stakeholders about perceived challenges, priorities, etc.
- Map and analyze available data to determine vulnerabilities (sensitivity, exposure, criticality)
- Make recommendations to improve climate resilience

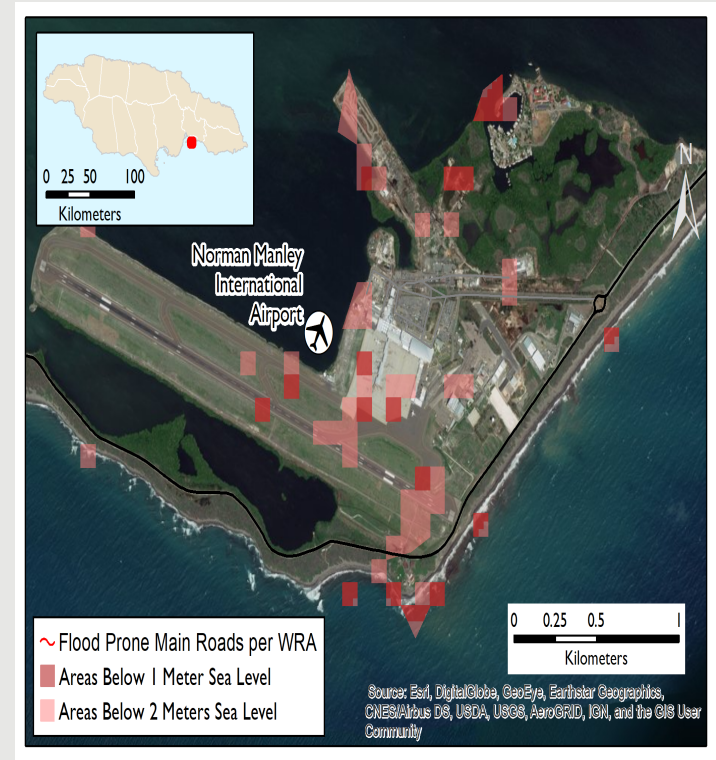
CLIMATE AND THE JAMAICAN TRANSPORT SECTOR: KEY RISKS

- Heat Exposure
 - Aircraft payload restrictions
 - Damage to road surfaces
- Flooding
 - Structural damage
 - Transport delays
- Sea Level Rise
 - Airport runway overtopping
 - Service interruptions



RECOMMENDATIONS

- Governance
 - Incorporate CVA findings in revised National Transport Policy
 - Create a transport sector strategy/plan/monitoring system
 - Update local urban development plans
- Information Systems
 - Revise infrastructure design standards
 - Improve quality of infrastructure data
 - Conduct facility-specific CVAs



OBSERVATIONS TO ADVANCE ASSESSMENT FINDINGS

- Data is critical – having a defensible evidence base moves the ball
 - Helps change minds and behavior
 - Provides a rationale for policy reform
 - Justifies investment
 - Helps prioritize climate resilience activities (triaging in a resource-scarce environment)
- Completing the assessment is just the start of addressing the problem
 - Changing mindsets:
 - Understand that climate resilience is a priority now, not a future challenge
 - Regularize climate resilient planning
 - Amend design processes and specifications



Thank You

Chris Perine
Chief of Party

ATLAS
Adaptation Thought Leadership and Assessments



Adaptation in Real Time: Construction in USAID's Development Portfolio

John R. Pasch, P.E.
Engineering Division Chief

USAID/E3 Office of Energy and Infrastructure

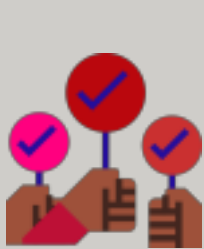


Construction at USAID

- **\$2+ billion** in active construction projects (every year)
- Construction activities in **every Mission** and supporting **all development objectives**
- **Mechanisms:** 55% Assistance, 22% Contracts, 12% G2G
- Nearly half of activities are **under \$1 million**
- Major programs in **Pakistan, Afghanistan, South Sudan**
- **1/3rd buildings, 1/5th water, 1/8th transportation, remaining ~1/3rd energy, IT, and other**

Front-loading Risk Management: Planning and Design

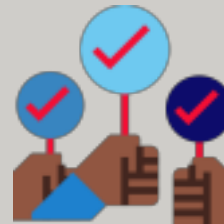
- Allocation of time and resources to planning and design (by policy)
 - Internal USAID risk managers (environment, climate, construction)
 - External engineering design and constructability expertise
- Always build to local standards or better



1. Procurement for
**architecture and
engineering design**



2. Firm A conducts
**architecture and
engineering design**



3. Procurement for
construction



4. Firm B completes
construction

Vulnerabilities and Challenges

- Inadequate/inappropriate design data
- Outdated/inadequate building codes, regulations and/or zoning requirements
- Balancing 'climate proofing', constructability and cost



Moving forward with Uncertainty

- Conservative design approach
 - Risk/Safety factors
 - Worst-case design
- Introduction of green-building elements
 - Opportunistic
 - Locally appropriate
- Realistic consideration of infrastructure life-span



CASE STUDY: Sindh Basic Education Program

- Construction of 100+ schools in Sindh Province of Pakistan (+\$20 million)
- Extreme temperatures ($> 130^{\circ}\text{F}$)
- Flood-prone



Temperature Control

- Increased ceiling height
- Increased insulation material
- Optimum building orientation
- Optimum window openings



Flood Mitigation

- Ideal siting
- Elevated construction (known maximum flood plus safety factor)





WATER, SANITATION & HYGIENE FINANCE (WASH-FIN)

Financing Climate Resilient WASH Infrastructure

Sam Huston, WASH-FIN COP
sam.huston@washfin.org



CHALLENGE

It is estimated that **\$114 billion per year** – or **three times current investment rates** – will be required to achieve **universal access to water and sanitation**.

Bridging the **massive financing gap** will require increases in **public investment** and expanded utilization of **private and other sources of finance**.

WASH-FIN's APPROACH

USAID's WASH-FIN project provides technical assistance and services to help municipalities and utilities track and mobilize greater financial resources for improved service delivery.



CREDIT: NICK KENRICK

ADAPATION PRINCIPLES

- **The climate is changing** and likely to impact the financial viability and longevity of projects.
- **Understanding and planning for climate risks to projects** reduces service delivery interruptions.
- **Climate and water availability risks need to be accounted for** in utility business plans.
- **Integrated analysis of climate and other risk factors** can reduce cost, improves operating revenue and extends asset life.
- **Adaptation options that are effectively integrated into operating plans** strengthens creditworthiness of utilities and opens opportunities to attract additional finance.



COUNTRY EXAMPLES

South Africa

- Wastewater reuse options in Cape Town
- Non-revenue water reduction in Pretoria
- Investment planning with increasing water scarcity

Nepal

- Planning and preparing for flooding of FSTP
- Integrating climate risk mitigation in business planning

Cambodia

- Financing transition to solar powered pumping for PWOs
- Financing investment in water intake systems that are less vulnerable to seasonable droughts
- Climate risk management in business planning

Kenya

- Including climate change risks in national business planning guidelines for WSPs
- Supporting investments that reduce water losses and improve efficiency



FINAL THOUGHTS

- Many utilities are **not keeping up with the task of serving rapidly growing cities**, without even considering the additional challenges from climate risks.
- Poorly managed and **non-creditworthy utilities will certainly lack the resilience** and adaptive capacity to deal with growing climate risks.
- On the flip-side, **failure to adequately integrate climate risk into utility business plans can lead to significant financial risks.**
- Maintaining, protecting and optimizing existing infrastructure for resilient service provision is the priority, but this **can only be achieved with well managed and efficiently run utilities.**
- We need to **ensure that new infrastructure investments are climate-smart** and allow for flexibility from a systems-engineering and service provision perspective.





CONTACT INFORMATION

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IMPLEMENTING PARTNERS



THANK YOU!

Questions? Comments?

