When extreme weather events collide with socio-economic reality:

Lessons learned from Hurricane María

CALS Lunch and Learn
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Who are we?

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Puerto Rico Municipalities (78)
Purpose of this seminar and discussion

• Build up on previous seminar at UW-Madison campus
• Historical context for Puerto Rico’s vulnerability
• Highlight events related to the storm’s passing
  • Student’s perspective from Puerto Rico and from Madison
  • Madison for Puerto Rico – Initiative from UW-Madison’s Puerto Rican students
• Overview of community-based and local NGO’s efforts as well as recommendations for the future
• Ways you can help PR
Roots of vulnerability
Electric infrastructure

- Designed for an economy that no longer exists
- Aging infrastructure, limited maintenance
- Bankruptcy

(Puerto Rico energy commission, 2006; energia.pr.gov)

Food Supply

- Imported foodstuff
- One functioning seaport
- Unequal food distribution
- Food production (15%)
- 58% of all children live below the U.S. poverty level

(Rosario-Mejías & Dávila-Román, 2012)

Debt

- Unconstitutional government financing
- Corruption
- Bankruptcy

(Quintero, Irrizarry Mora 2012)
Puerto Rico under Colonial Governments

- A system of exploitation was already in place (1898)
- Political and economic forces outside PR determined how we used resources

Report of the Treasurer (1907), supra note 90, at 63–64.

Imposed laws

Marine Merchant Act 1920 (Jones Act)

“AMERICA FIRST”
SHIPPING BILL.

Senator Jones has Merchant Marine Law Substitute.
Response in a time of crisis

HURRICANE SAN CIRIACO 1899 and HURRICANE SAN FELIPE 1928

• Both affected the entire island's coffee crop
• Congress does not manage to send hurricane relief to the island, coffee industry disappears
• 40% currency peso devaluation and replacement by the U.S. dollar.
• Suddenly, each peso is worth only 60 U.S. cents. This cripples the Puerto Rican economy.
USA investment in Puerto Rico (1940-2005)

- Ambitious economic projects that evolved Puerto Rico into an industrial high-income territory
- Oil refineries and job opportunities
- IRS Section 936 promotes Manufacturing, pharmaceutical, chemical companies (1976)

"Operación "Manos a la Obra" (1947): Industrialización y crecimiento". Fundación Puertorriqueña de las Humanidades & National Endowment for the Humanities (NEH.GOV). ; (Irizarry, 2001) ; Images: Justicia Económica PR
Life after the 2000s

• Section 936 expires
• Unemployment (peaked at 16%)
• PROMESA federal Law

When it’s Friday and #PROMESA passed the House yesterday.
When natural disturbances collide with socioeconomic realities
September 20, 2017
Category 5 (175mph winds)
Food shortage before Hurricane Maria

- Hurricane Irma
- Tax on storage
Hurricane María’s trajectory
Hurricane María wiped away around 80% of Puerto Rico’s crops

Plantain farm in Yabucoa, PR (South East)
Longest blackout in US history

Second longest blackout in the world after the Philippines in 2013
Main Problems:
• Fuel shortage
• Food insecurity
• Access to basic utilities
• Access to medical services
In an island that is used to being struck by tropical storms and hurricanes, why was Puerto Rico so unprepared?
Loss of basic utilities

- Harvard university
  - Stratified sample of randomly chosen households.
  - Distribution of days households reported being without basic services according to remoteness categories
- Data shown is from September 2017 to December 31, 2017
Number of days without water

On average, 64 days without water

(Kishore, 2018)
Deaths from bacterial disease in Puerto Rico spiked after María

~Suther, 2017 CNN
Number of days without cellular telephone coverage

On average, 41 days without telephone coverage

(Kishore, 2018)
Number of days without electricity

On average, 84 days without electricity

(Kishore, 2018)
More than $\frac{1}{4}$ of households had disruptions in medical services

(Kishore, 2018)
Mortality Rates after Hurricane María

- George Washington University, College of Public Health
  - They used official data from the CDC
    - Underreported deaths
      - Flaws in death certification evaluation process.
      - Physicians and forensic physicians had no formal training in death certificate completion.
Estimated Percentage increase in crude mortality rates by municipality in Puerto Rico from September 2017-February 2018

(Carlos Santos Burgoa et al., 2018 and Milken, 2018)
Estimated excess death ratio by socioeconomic status in Puerto Rico from September 2017-February 2018

(Carlos Santos Burgoa et al., 2018 and Milken, 2018)
Despair and anxiety: Puerto Rico’s ‘living emergency’ as a mental health crisis unfolds

-The guardian
Exodus: The Post-Hurricane Puerto Rican Diaspora, Mapped
(Enchenque, 2018)
Madison for Puerto Rico

Initiative created and led by Puerto Rican graduate students from UW-Madison
Puerto Rico Needs your Help!

Hurricane Maria Relief: Donations needed!

What can you donate?
- Bottled Water
- Canned or Dry foods
- Canned milk
- Baby formula
- Dry or canned pet food
- Female hygiene products
- Baby and adult pain relief medicine
- Stomach and Diarrhea relief medicine
- Mosquito repellent
- First-aid kits
- Hand Sanitizer
- Baby wipes
- Diapers
- Soap/shampoo
- Laundry detergents
- Dish soap
- Garbage bags
- Flashlights, matches, candles
- Batteries (especially D)
- Citronella candles

Who is organizing this? Graduate students from UW-Madison

When are we collecting? NOW

Where are we collecting? YOUR LOCATION

How can you help?

1. Hurricane Relief Drive:
   a. We are setting up a donation container on the 1st floor of Microbial Science Building by the cow.
   b. Donate to the UW-Madison graduate student GoFundme initiative: [https://www.gofundme.com/MadisonForPuertoRico-Maria](https://www.gofundme.com/MadisonForPuertoRico-Maria). These funds will cover critical supplies and shipping expenses.


For updates follow our twitter: @Madison_for_PR
Donations collected from UW and Madison communities

Total of 14 pallets of donations (food, first aid supplies, batteries, dog food, diapers, clothes, …) that were shipped to PR and distributed by a local non-profit group.

Thank you for your donations!!!
From: Madison
To: Puerto Rico
Donations to local NGO's from gofundme fundraiser

• Grupo A.M.A.R: volunteer group of medical professionals that provided care and medicine to rural areas of the island

• Veterinarians for Puerto Rico: medicine and supplies

• Come Colegial: student-led group that provides meals to college students experiencing food insecurity (UPRM)

• Casa de Todos: shelter for domestic violence children and mothers
Rebuilding Puerto Rico
Local Organizations

- Governments could not be relied for help entirely
- Communities/NGO's rose up to the challenge

Comedores Sociales: [https://www.cdpecpr.org/comedores-sociales-de-puerto-rico](https://www.cdpecpr.org/comedores-sociales-de-puerto-rico)
Salud y Acupuntura Para el Pueblo: [https://www.facebook.com/saludacupunturapr/](https://www.facebook.com/saludacupunturapr/)
Colectivo Agroecologico Guakia: [https://www.facebook.com/guakiapr/](https://www.facebook.com/guakiapr/)
Casa Pueblo de Adjuntas: [www.casapueblo.org](http://www.casapueblo.org)
Casa Protegida Julia de Burgos: [https://www.facebook.com/casajuliapr/](https://www.facebook.com/casajuliapr/)
Fundación Comunitaria de Puerto Rico [https://www.fcpr.org/](https://www.fcpr.org/)
Campamento Contra Cenizas de Carbon: [https://www.facebook.com/nocenizasdecarbon/](https://www.facebook.com/nocenizasdecarbon/)
Vieques en Rescate: [www.viequesenrescateninc.com](http://www.viequesenrescateninc.com)
Sierra Club de Puerto Rico: [https://www.facebook.com/SierraClubPR/](https://www.facebook.com/SierraClubPR/)
Proyecto ENLACE del Cano Martin Pena: [www.martinpena.org](http://www.martinpena.org)
Campamento Contra La Junta: [https://www.facebook.com/CampamentoContraLaJunta/](https://www.facebook.com/CampamentoContraLaJunta/)
Jornada Se Acabaron Las Promesas: [https://www.facebook.com/seacabaronlaspromesas/](https://www.facebook.com/seacabaronlaspromesas/)
Enlace Latino de Accion Climatica: [https://www.facebook.com/ELACPR/](https://www.facebook.com/ELACPR/)
Centro Mujer Barranquitas: [https://www.facebook.com/centromujer.barranquitas](https://www.facebook.com/centromujer.barranquitas)
PRFI [http://prfi.org](http://prfi.org)
Comedor social ([https://www.cdpecpr.org/comedores-sociales-de-puerto-rico](https://www.cdpecpr.org/comedores-sociales-de-puerto-rico))
Matría ([https://www.proyectomatria.org](https://www.proyectomatria.org))
Moving Forward

- Different perspectives and suggestions
- Governor's request - George Washington University group - 'Ascertainment of the Estimated Excess Mortality from Hurricane Maria in Puerto Rico'
- Public Health Perspective

**Preparedness**
- Crisis and Public Health Communication Policy and Organizational Development Agenda
- Constantly update plans

**Credibility**
- Define clear leadership and alignment for effective, transparent and credible public health communications in disasters
- Develop standard protocols and procedures to inform the public

**Transparency**
- Ensure personnel capacity for effective crisis and emergency risk communication
- Coordinate and build capacity for crisis and emergency risk communication

**Compassion**
- Conduct training and simulations that include everyone (key stakeholders and local communities)
- Use participatory community approaches

Carlos Santos Burgoa et al., 2018
Moving Forward

- Ariel Lugo – International Institute of Tropical Forestry, USDA
- We can't rely on 'business as usual’
- Can't depend on external forces as much as we do
- Changes in infrastructure and technology are necessary

- Develop and practice emergency response by all sectors of society from the individual home to government agencies and institutions. Every citizen and government worker should know what to do during emergencies and where to go afterwards.
- Redesign infrastructure and systems for delivering water and energy to minimize fossil fuel consumption and dependency.
- Move critical insular infrastructure away from the ocean, flood prone and landslide prone areas, and relocate it in safe locations.
- Teach the population how to survive periods of scarcity by maintaining alternative living styles used by Puerto Ricans before the age of fossil fuels.
- Pursue political power to engage in global commerce.
- Back-up important electronic materials with paper.
- Avoid pumping ocean water from inland locations and minimize pumping water within the island.

Lugo, 2019
Moving Forward – Casa Pueblo

• Casa Pueblo is a community-based project that aims to protect natural and cultural resources
• They are passionate about sustainability and are currently working on many projects towards a more sustainable Puerto Rico
• In combination with improved urban planning

Una meta inicial de 50% de generación energética para el País con el sol
How can **YOU** help?

- Recruit/Collaborate
- Research in Puerto Rico
- ‘Voluntourism’
- Support local brands and organizations
- Raise awareness
- Vote/Contact your representatives
- And finally....

Empowering work: Students in Engineers Without Borders break ground in Puerto Rico

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