

After Hurricane Maria: Predisaster Conditions, Hurricane Damage, and Recovery Needs in Puerto Rico



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To support development of Puerto Rico's short- and long-term recovery and resilience plan, experts conducted a comprehensive assessment of the commonwealth's challenges and the damage caused by the 2017 hurricanes. They identified short- and longer-term needs for Puerto Rico to recover and to build resilience to future storms; economic, social, and environmental trends; and ongoing governance challenges. This report summarizes their work.

RESEARCH QUESTIONS

- What challenges and stressors did Puerto Rico face prior to the 2017 hurricane season?
- What damage did the 2017 hurricanes, especially Hurricane Maria, cause? What happened in their aftermath?
- How did these hurricanes exacerbate predisaster challenges and stressors? How did those challenges and stressors exacerbate the effects of the hurricanes?
- What are the remaining needs to address when developing short- and longer-term recovery priorities?
- How can Puerto Rico improve its resilience in the face of future challenges?

KEY FINDINGS

- **Puerto Rico faced extensive and deep-rooted stressors prior to the 2017 hurricane season.** Puerto Rico experienced a decade of economic decline and a debt crisis prior to the hurricanes, which contributed to a lack of investment in its physical and natural infrastructure. Increasing migration of young people and working-age adults away from Puerto Rico and a declining birth rate have led to a population downturn. An increasing share of Puerto Rico's remaining population has faced poverty or other social challenges. Puerto Rico has struggled to provide effective and transparent governance for its residents.
- **Hurricane Maria caused catastrophic damage to Puerto Rico's lifeline infrastructure systems and housing.** Hurricane Maria destroyed much of the commonwealth's electricity grid. It took more than 200 days to restore power to all Puerto Rico residents. Approximately 90 percent of households applied for postdisaster assistance, with initial estimates of housing damage ranging from \$14.1 billion to \$18.3 billion.
- **Prehurricane conditions and damage to lifeline infrastructure affected response and recovery in every sector.** The lack of electricity meant that even facilities that the hurricanes did not damage directly were still inoperable. Failure of communication infrastructure delayed critical emergency services and hindered emergency coordination between agencies. Puerto Rico's debt crisis hindered initial damage assessments, inspections, repairs, and recovery. Many assets showed adverse impacts from aging even before the storms, which made prioritizing repair difficult. Debris in roadways made initial damage assessments difficult. It limited transport of fuel supplies for weeks. People could not access physical or mental health care.

RECOMMENDATIONS

- In the short term (within two years of publishing the recovery plan), Puerto Rico needs to address remaining cross-sectoral recovery priorities: Complete damage and needs assessments that remain incomplete, repair critical infrastructure that remains nonfunctioning or in disrepair, promote efforts to improve governance and fiscal accountability, update emergency-preparedness plans, clearly establish responsibility for infrastructure assets and services, and repair homes that remain damaged or destroyed.
- In the longer term (the next decade or so), Puerto Rico will need to focus on key resilience challenges: Address economic conditions that precipitated population loss, worsened storm damage, and currently inhibit recovery; pursue municipal priorities for economic development and recovery; scale housing, social service, health, education, and infrastructure systems for current and future populations; reduce the vulnerability of infrastructure in Puerto Rico to natural hazards and build it to 21st-century standards; address building-permit and code-enforcement gaps that reduce the effectiveness of Puerto Rico's utilities and perpetuate activity in the informal sector; and report timely and accurate data on the commonwealth's economic and fiscal status.