



## STRENGTHENING TRUST AND CAPACITY: REBUILDING PUERTO RICO AFTER HURRICANE MARIA, 2017–2023

*Kate Johnston drafted this case study based on interviews conducted with government officials and civic leaders in Puerto Rico and Washington, D.C., from July through October 2023. Matthew Lillehaugen and Alina Dunlap contributed to the research. Alina Dunlap authored the addendum. Case published March 2024.*

### SYNOPSIS

When Hurricane Maria struck Puerto Rico in September 2017, it devastated the island's already fragile infrastructure. The power grid, old and poorly maintained, collapsed. Communications systems, the water supply, and many roads, schools, and homes also suffered severe damage. The estimated cost of repair was US\$98 billion. To coordinate effective recovery and reconstruction efforts and manage federal funding, the Puerto Rican government established a central agency, the Central Office for Recovery, Reconstruction and Resiliency, later known as COR3. Reconstruction got off to a slow start because of limited capacity, fiscal austerity, and US federal government procedures that assumed local financial liquidity and the ability to come to rapid agreement on the estimated costs of proposed projects. Gradually, as levels of trust between levels of government grew, procedural innovation enabled funds to flow to municipalities and other recipients, which then contracted for repair or rebuilding under COR3's supervision. By late 2023, six years into the reconstruction effort, roughly 10,600 projects were in progress and Puerto Rico had spent \$1.8 billion of the US\$23.4 billion the US Federal Emergency Management Agency (FEMA) had awarded. US\$11.3 billion awaited FEMA approval before expenditure could begin. Separately, the US Department of Housing and Urban Development had committed over \$20 billion in disaster recovery and mitigation grants and disbursed about a quarter of that amount. The first five years of the recovery, 2018–2023 offered important lessons about ways to balance speed, quality, cost, integrity, equity, and alignment with strategic priorities during major postdisaster reconstruction.

[Because of time lags and variation in reporting systems, some of the numbers in this case may not align across all sources. The numbers reported reflect our best effort to interpret allocations, awards, authorizations, and disbursements by FEMA, HUD, and COR3. See FEMA. Disaster Relief Fund: Monthly Reports accessed at [https://www.fema.gov/sites/default/files/documents/fema\\_october\\_2023\\_disaster\\_relief\\_fund.pdf](https://www.fema.gov/sites/default/files/documents/fema_october_2023_disaster_relief_fund.pdf). For information about numbers of projects in progress see FEMA, "FEMA Reaches Historic \$30 Billion Milestone for the Recovery of Puerto Rico," April 16, 2023. <https://www.fema.gov/press-release/20230417/fema-reaches-historic-30-billion-milestone-recovery-puerto-rico>. See also US Department of Housing and Urban Development (HUD), "CDBG Disaster Recovery Grant History 1992–2022," 2022 and US Government Accountability Office, "Puerto Rico: Progress Mad But the Recovery Continues to Face Challenges," GAO-24\_105557, February 2024.]

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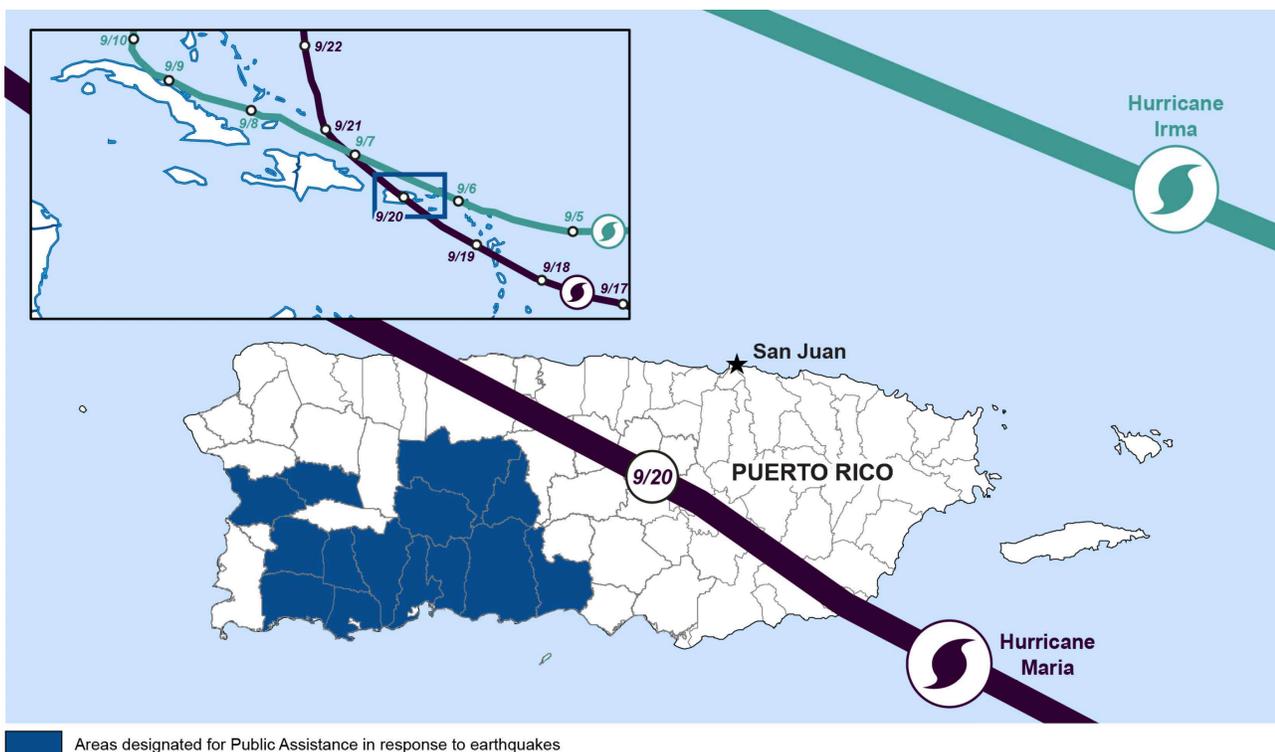
## INTRODUCTION

On September 19, 2017, Omar J. Marrero Díaz, executive director of Puerto Rico’s Public–Private Partnerships Authority (P3), recalled watching the weather map with an increasing sense of dread. Hurricane Maria, the 13th hurricane of the 2017 season, was barreling toward Puerto Rico, a US commonwealth about 1,600 km (1,000 miles) southeast of Miami.

When the storm came ashore near the town of Yabucoa at 6:15 a.m. on September 20, it devastated communities across the island (figure 1). Almost 3,000 people lost their lives, 300,000 homes were damaged, 95% of mobile phone networks collapsed, and all 3.4 million of the island’s residents were left without power.<sup>1</sup> Hurricane winds had brought down the lines that carried electricity through the mountains from the generation plant on the south coast to the most populous areas on the north coast around the capital, San Juan. Hospitals relied on generators for as long as the fuel supply lasted. Residents had no drinking water and no means of communication. Businesses were hit hard and production at pharmaceutical factories, which produced about 10% of the drugs on the American market, slowed to a standstill.<sup>2</sup>

Two days later, the US Federal Emergency Management Agency (FEMA) began to supply food, shelter, and medical care for the island’s population. Relief materialized slowly, however. The extensive damage—along with understocked warehouses, long shipping times, and mountainous geography—conspired to

**Figure 1: Map of Puerto Rico**



Source: GAO analysis of National Oceanic and Atmospheric Administration data and Federal Emergency Management Agency documents; Map Resources (map). | GAO-24-105557

**Text box 1: Relief-Phase Challenges**

Postdisaster, the first priority was emergency relief, with debris removal and recovery and reconstruction to follow. Provision of emergency relief for Puerto Rico in the immediate aftermath of Hurricane Maria quickly collided with distinctive logistical challenges. Overwhelmed by the 2017 hurricane season, FEMA was unable to provide enough qualified staff for the response effort and did not have enough satellite phones in order to coordinate effectively. In addition, FEMA was more familiar with operating in the contiguous United States—that is, in states on the mainland rather than island territories—and its own planning assumptions had significantly underestimated the impact of a hurricane on the island, leading to understocked warehouses. Natalie Jaresko, head of the Federal Oversight and Management Board at the time, said, “FEMA apparently had no standard operating procedures for airlifting aid into a location with which USAID [the agency that responded to disasters outside the United States] had more experience.” Even when aid began to arrive via boat, there wasn’t enough fuel on the island for truck drivers to move the aid to the areas that needed it.

See: Frances Robles. “FEMA Was Sorely Unprepared for Puerto Rico Hurricane, Report Says.” *New York Times*, July 12, 2018. <https://www.nytimes.com/2018/07/12/us/fema-puerto-rico-maria.html> and FEMA, 2017 Hurricane Season FEMA After-Action Report, July 12, 2018. [https://www.fema.gov/sites/default/files/2020-08/fema\\_hurricane-season-after-action-report\\_2017.pdf](https://www.fema.gov/sites/default/files/2020-08/fema_hurricane-season-after-action-report_2017.pdf).

impede progress. Reconstruction would soon confront those same challenges (text box 1).

Even while emergency relief was in full swing, Governor Ricardo Antonio Rosselló Nevares began to think about the island’s long-term recovery and reconstruction. The estimated cost of reconstruction in Puerto Rico after Hurricane Maria would be about US\$98 billion, and additions to enhance resilience against future disasters would bring the projected total cost to US\$139 billion.<sup>3</sup> By law, under the 1988 Stafford Act, each US state and territory was responsible for coordinating postdisaster reconstruction in partnership with the federal government and its respective local governments (text box 2). FEMA’s policy and practice dictated a specific approach to disaster response, requiring recipients of federal postdisaster funding to create or appoint an agency to manage those resources. Regardless of the type of reconstruction agency formed, the ensuing authority would have to use the resources effectively while promoting local ownership of decision-making, generating long-term benefits and future resilience, ensuring equity and transparency, and minimizing delay.<sup>4</sup> Despite FEMA’s one-size-fits-all approach, there was little guidance on what a reconstruction agency should look like.

The governor asked Marrero to supply him with options. Mike Byrne, federal coordinating officer and federal disaster recovery coordinator for Puerto Rico, had handed the governor a report on reconstruction governance published by the Lincoln Institute of Land Policy.<sup>5</sup> The report described a variety of approaches that states in the United States and other countries had taken to manage priority setting, assemble resources, develop clear and uniform procedures, foster collaboration, supply information and advice, and track

### Text box 2: Taking Stock of the Law

US response to disasters had evolved during the previous 50 years, and it would continue changing in the aftermath of Hurricane Maria. The Disaster Relief Act of 1974 laid some of the groundwork, and in 1979, President Carter signed an executive order creating the Federal Emergency Management Agency (FEMA). Almost 10 years later, the 1988 Stafford Act established the statutory framework for disaster response and recovery, merging the past patchwork of laws under the same banner. Under the Stafford Act, state, territory, and tribal authorities could seek a presidential disaster declaration in the wake of a storm, earthquake, forest fire, or other disaster, and FEMA, which later became part of the Department of Homeland Security, could release immediate assistance. Congress could pass a separate appropriation for additional support upon submission of a disaster response and recovery plan. In turn, FEMA required that the government receiving assistance put in place an adequate system for setting priorities, managing disbursement of funds, and accounting for use of resources. Rebuilding to improve resilience was one of the law's requirements.

See: Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, H.R.2617, 117th Congress. <https://www.govinfo.gov/content/pkg/COMPS-2977/pdf/COMPS-2977.pdf> and FEMA, "History of FEMA," FEMA, January 4, 2021. <https://www.fema.gov/about/history>.

progress, problems, and results. Marrero took the ideas as a starting point. He reached out to counterparts such as the director of the recovery division in the Louisiana Governor's Office of Homeland Security and Emergency Preparedness, who had handled similar challenges.

Marrero said he wanted to avoid overburdening public servants who had to carry out their regular responsibilities each day and to ensure that he could enlist people with the right skills to coordinate work across agencies, manage the flow of funds, track performance, and communicate effectively. A discrete agency, separate from Puerto Rico's government departments and with the flexibility to hire its own staff and define its own work processes, would best fulfill the task that lay ahead, Marrero concluded. The agency director would need a direct line to the governor to facilitate collaboration with department heads. FEMA adviser Byrne championed that approach in his conversations with the governor.

In a mid-October meeting with federal officials, the governor announced Marrero himself would lead the effort and set up the required functions within a new division of P3, which Marrero had directed since January 2017. Given the state of the island's finances, it was likely that public-private partnerships would become vehicles for rebuilding the electrical grid and possibly for other types of functions. Attracting private capital was important, and infrastructure investment was already concentrated within P3 (text box 3). The agency had no debt, a clean balance sheet, and a competent core staff well-versed in finance and in business thinking. And Marrero already had a direct line to the governor.

The governor used his emergency powers to establish the Central Recovery and Reconstruction Office of Puerto Rico on October 23, 36 days after the hurricane swept across the island. His executive order stated that the office would exist until explicitly dissolved by a subsequent executive order or law.

**Text box 3: Puerto Rico’s Public–Private Partnership Agency**

Well before the hurricane, the Puerto Rico government had started to build capacity to attract private investment. Private capital, mobilized in part through public–private partnerships, held promise as a way to cope with the island’s limited ability to raise funds on bond markets. The Public–Private Partnership Act of 2009 established P3, an agency designed to manage and regulate public–private partnerships in Puerto Rico. Later, President Obama signed the Puerto Rico Oversight, Management, and Economic Stability Act, which established a Financial Oversight and Management Board. As part of the initiative, the president encouraged Puerto Rico to consider expanded use of public–private partnerships to help meet some of the island’s infrastructure and services needs. In August 2017, just a few months before Hurricane María, the governor had duplicated the responsibilities of the heavily indebted former Infrastructure Financing Agency, which had also previously managed federal disaster funds, to P3.

There was no built-in sunset clause.<sup>6</sup> The Office would eventually become the Central Office for Recovery, Reconstruction and Resiliency (COR3).

Reconstruction was likely to take at least a decade, if past experience was any guide. Because Marrero was a political appointee, he would have to hand off his role to a successor well before reconstruction was complete. Marrero’s challenge—together with the challenge of his successors Ottmar Chávez and Manuel Laboy Rivera—was to build a reconstruction agency that could serve Puerto Rico for the long term.

**THE CHALLENGE**

When weighing options for the design and management of the reconstruction agency, Marrero considered aspects of Puerto Rico’s specific situation. The commonwealth of Puerto Rico was essentially bankrupt and under the supervision of an external financial oversight board. Government departments and counties (known as *municipios*, or municipalities) had little experience with large-scale reconstruction or with the management of federal funds, and it was important to ensure that they delivered effective and transparent projects. Preventing the misuse of scarce resources was essential to deliver quick results for the people of Puerto Rico, to attract private capital, and to allay scepticism in Washington.

Financial constraints loomed large in Marrero’s mind. The Puerto Rican government had no rainy-day fund set aside to assist with reconstruction. Beginning in 2005, annual growth in gross domestic product frequently dipped below zero.<sup>7</sup> As the economy shrank, tax revenue declined, and government’s ability to cover its costs diminished. The 2008 financial crisis had dealt the territory’s economy a hard blow, and the government had increasingly used debt to cover expenses. In June 2016, the government announced it would be unable to cover all of its obligations and was unilaterally refraining from making certain payments.<sup>8</sup> In response, President Obama signed the Puerto Rico Oversight, Management and Economic Stability Act (PROMESA), which established a

seven-member Financial Oversight and Management Board.<sup>9</sup> The oversight board was tasked with restructuring Puerto Rico's US\$72-billion debt and US\$55 billion in unfunded pension liabilities. The board was also assigned to help the government of Puerto Rico develop a fiscal plan that ensured the funding of essential public services and provided for capital expenditures and investments necessary to promote economic growth.<sup>10</sup>

Although the oversight board did not have a role in overseeing federal funds the government received from FEMA, the board set an overall spending cap and influenced how government money was spent.

Geography presented a second challenge. Because Puerto Rico is an island, relief and recovery faced additional difficulties on top of the kinds of problems typically expected on the mainland. All supplies had to arrive by ship or air, which increased costs and created higher risks of extreme weather and shipping delays compared with transport within the continental United States. Supplies were then trucked across the island, through the mountainous interior, on poorly maintained roads. The ports and airports and almost all of the island's roads had been badly damaged by the hurricane, making large parts of the island accessible only via helicopter during the emergency response. In some areas, improvised systems such as shopping carts rigged up on wire pulleys carried supplies over ravines. The early phases of reconstruction would face the same obstacles.

Puerto Rico's capacity to plan and execute such a large reconstruction program was also limited. Years of economic downturn had prompted many young professionals to seek work elsewhere. An estimated 84,000 Puerto Ricans emigrated to the mainland United States or other places in 2015 alone.<sup>11</sup> In the wake of the hurricane's devastation, workers with skills were likely to leave in even greater numbers. As a result, local engineering, architecture, construction, and consulting firms that would normally be the front lines of response and reconstruction efforts were unable to take on significant portions of the work that had to be done.

In addition, the Puerto Rican government itself lacked enough people with the knowledge and skills required to manage reconstruction, and officials with experience in managing procurement and oversight for federally funded construction were especially scarce outside the capital. In many of the municipalities outside San Juan, officials spoke only Spanish and could neither take advantage of English-language-only FEMA guidance nor understand visiting FEMA officials; and very few people had any experience in dealing with federal funding rules.

"When the first FEMA personnel from the US began to arrive, they did not know the language. At least half of the people [of Puerto Rico] don't know how to speak English," said Nayda Bobonis of local nongovernmental organization (NGO) FURIA. "So, obviously, that makes it difficult to receive help to the extent that you can't communicate adequately with the staff."

According to Marrero, lack of capacity was across the board. "We did an assessment with FEMA and found that almost 50% of the municipalities did

not have the internal capacity to manage federal grants,” Marrero said. “This included having just a basic level of English proficiency.” Nonprofits, including churches—accustomed to handling only their weekly congregational donations—struggled even more because they were unfamiliar with application processes and lacked the required procurement or accounting procedures.

Reconstruction also required highly technical expertise and capacity to rebuild the island’s energy system. Decades of underinvestment in Puerto Rico’s infrastructure had contributed to the collapse of such facilities as the power grid, hospitals, and internet and phone lines. In particular, the publicly owned energy utility, Puerto Rico Electric Power Authority (PREPA), had long refused to raise rates or engage in maintenance or system upgrades; it was also heavily mired in debt. Some of the components PREPA used were unavailable anywhere else, making repair expensive. Rebuilding the system would almost certainly require private capital and most likely a public–private partnership.

Trust in government to meet those challenges was low among some members of Congress. Several Republican congresspeople argued for tight restrictions on support, asserting that leaders in Puerto Rico had made a series of bad decisions in the past and that residents had not paid their fair share of the costs of government.<sup>12</sup> Not all Puerto Rican residents paid US federal income taxes either because they were among the 44% of the island’s population living below the national poverty line or because they were exempt under the island’s status as a territory.<sup>13</sup>

In addition to those challenges, Marrero and the governor quickly discovered that the disaster was especially ill-timed. The 2017 hurricane season was one of the most active seasons in US history,<sup>14</sup> and FEMA funds were running low when Hurricane Maria struck. FEMA described the scale, scope, and impacts of hurricane season—combined with contemporaneous California wildfires—as “unprecedented.”<sup>15</sup> Congress would have to agree to provide additional resources, and the need to seek an additional appropriation would delay reconstruction efforts from the very start.

## FRAMING A RESPONSE

On the same day that Rosselló announced establishment of the new reconstruction agency, news broke that the Puerto Rico power authority board had signed a US\$300-million contract with Whitefish Energy to repair the island’s damaged electrical grid despite Whitefish’s having only two full-time employees and no experience in postdisaster reconstruction. PREPA, which was heavily in debt, said Whitefish’s proposal was attractive because Whitefish had not required up-front payment and would bill on completion of the work. The contract immediately raised suspicion both in Puerto Rico and in Congress.<sup>16</sup> Subsequent investigations revealed the contract had not been properly vetted, that the budgeted labor costs were above the norm and lacked explanation, and that the contract did not meet the standards of the agency that would finance

the project: FEMA.<sup>17</sup> On October 29, Rosselló canceled the contract and requested a federal investigation into why and how it had been awarded.<sup>18</sup>

The outrage in Congress over the Whitefish contract amplified the scrutiny applied to Puerto Rico's post-Maria reconstruction and made demonstrating that the government could handle federal funds responsibly even more crucial.

Faced with needs to craft a strategy and to develop an effective organization very quickly, Rosselló and Marrero sought to learn from others. At the governor's request, in November 2017 Marrero met with the governor of New York State and disaster response officials in New York City, which had sustained damage from Hurricane Sandy in 2012.<sup>19</sup> The budget director of the state of New York, Robert Mujica, who was of Puerto Rican descent, helped open doors and provided advice. Mujica later became executive director of Puerto Rico's oversight board in January 2023. Consulting firm Deloitte and staff at the Open Society Foundation and the Rockefeller Foundation also contributed insight.

Marrero said the governor saw the occasion as a “moon shot opportunity to build back better Puerto Rico.” Marrero delivered the governor an initial strategy by that name—Build Back Better Puerto Rico—in November 2017 by drawing on lessons learned from the New York visit and other research. The report proposed reconstruction goals and objectives and included rough cost estimates.<sup>20</sup> Margarita Mosquera, who joined COR3 as chief project oversight officer in April 2018 and would later become deputy director, said that the title of the report encapsulated the view of many Puerto Rican officials and politicians, who felt that posthurricane reconstruction offered an opportunity to rectify the mistakes of the past, put the economy on a steady footing, and show that the government could effectively manage a major infusion of federal funding.

Meanwhile, Marrero began to assemble the talent he would need to move forward. He said he was “really focused on making sure we established a centralized authority with experts—with professionals—and that we had policies, procedures, and controls as well as transparency measures.” Marrero relied heavily on consultants to help with those aspects and to bring technical expertise during the first few months and years. Such a consultant-based approach also enabled the government to quickly bring in people who were expert in navigating federal funding rules and gave the new agency the flexibility to increase and decrease staff as needs changed. During those challenging times, the team worked from a generator-powered central office.

Marrero also drew personnel from other parts of the government or from municipalities to build core capacity for the long haul. For example, he pulled staff from the Governor's Authorized Representative (GAR) in agreements with FEMA, including Roberto Méndez, who would later serve as COR3 deputy director.

Because its mission was compelling, the agency was able to attract talent. Mosquera, who served as deputy director under Laboy Rivera, recounted that

when she approached Marrero, she told him, “I don’t know what you’re looking for, but I know I want to be part of that office. I’m ready.” With a background in education and architecture and experience in federally funded projects, Mosquera joined as chief project oversight manager.

## GETTING DOWN TO WORK

During the last part of 2017 and the early months of 2018, Marrero focused on refining an organizational plan, developing the procedures that would govern the agency’s work, building capacity, establishing the systems essential for transparency and sound decision-making, putting the systems into operation, and adapting the initial strategy.

Although COR3 primarily oversaw FEMA assistance, it also played a role in helping manage some of the other federal funds for recovery. Resources flowed to Puerto Rico from the Federal Highway Administration, the Department of the Interior, and the Environmental Protection Agency, as well as the Department of Housing and Urban Development (HUD), whose disaster relief funds supported housing, municipal government facilities, and local economic development.

### *Refining the structure*

FEMA adviser Byrne had noted the importance of a structure that would enhance several key capacities: tracking the money, communicating with the public, ensuring transparency, enhancing coordination, and managing interdependencies, while balancing the urgent with the long term. All were lessons Byrne said he had drawn from the Lincoln Institute of Land Policy paper.

There was no single right way to accomplish those goals. Because Puerto Rico was a US territory and financial assistance would flow primarily from FEMA, Byrne encouraged Marrero to harmonize COR3’s structure with FEMA’s work streams so that their teams could collaborate more effectively. FEMA typically organized recovery efforts by sector: (1) economic recovery, (2) health and social services, (3) infrastructure systems, (4) housing, and (5) natural and cultural resources.<sup>21</sup> Initially, COR3 mirrored that approach by establishing three directorates: infrastructure, community services, and municipalities. In the infrastructure directorate were four sectors dealing with power, water, public buildings, and water; and the community services directorate mirrored the FEMA approach with sectors focused on education, health and social services, housing, and natural and cultural resources. Through time, COR3’s structure evolved with the addition of a grant recovery division and a project development division as well as separate project management, compliance, legal, and communications offices (appendix).

Mosquera said the initial structure immediately proved helpful for conducting damage inspections, which required the involvement of three parties: the relevant government department, COR3, and the FEMA lead.

However, she also recognized that the potential downside of such an organizational structure was that it could reinforce silos between different sectors and thereby make it hard to see the interdependencies between projects.

An office to monitor compliance with rules and guidelines also quickly took shape. Under Marrero and his successors, COR3 increased the size of the compliance team from 5 to 18, with the goal of creating a 35-member group. The team conducted site visits, reviewed subrecipient procurement and accounting procedures (providing technical support as needed), collected data on projects for input into a master project tracker, monitored project progress, and carried out audits. Although COR3 did not have formal investigative powers, compliance staff could report complaints and suspected fraud to the police or FEMA.

*Refining the strategy*

Marrero and his new team put COR3 into operation, and advisers continued to generate information and suggestions. Congress required that Puerto Rico submit a revised plan based on a careful needs assessment within 180 days of the February 2018 vote on the appropriation of funds. Recognizing the capacity and capability challenge that reconstruction would pose for the Puerto Rico government, Byrne requested that the Homeland Security Operational Analysis Center, hosted by the RAND Corporation, play a central role in carrying out the needs assessment and in developing strategy. Although many government staff had the capability to perform those tasks, they did not have the bandwidth to do so during the early months of the disaster, when COR3 was also trying to establish itself as an effective organization. In addition, the analysis center had experience in working with FEMA and providing analysis in support of disaster response.

In August 2018, Governor Rosselló presented to Congress a new strategy and plan for Puerto Rico's recovery entitled 'Transformation and Innovation in the Wake of Devastation: An economic and disaster recovery plan for Puerto Rico.'<sup>22</sup> The plan, which drew on extensive work by the Homeland Security Operational Analysis Center, laid out a new strategic vision and goals as well as a detailed framework for achieving them.

The plan opened with Rosselló's vision for the island: "To build the new Puerto Rico to meet the current and future needs of the people through sustainable economic development and social transformation; transparent and innovative approaches to governance; resilient, modern, and state-of-the-art infrastructure; and a safe, educated, healthy, and sustainable society."<sup>23</sup> There were four main goals: one each for society, economy, resilience, and infrastructure. Short-term priorities that could be met within one or two years included reestablished lifeline systems, repair or rebuilding of residential buildings, and clarification of ownership and responsibility for infrastructure and services.

**Text box 4: Helping Turn Vision into Action**

Beginning in January 2018, experts, analysts, and consultants from the Homeland Security Operations Analysis Center (HSOAC), a federally funded research and development center operated by RAND Corporation under contract with the Department of Homeland Security, worked with the Puerto Rico government, municipalities, NGOs, and communities to assess damage, develop courses of action, estimate costs, and identify funding mechanisms. That step was essential in order to prepare the economic and hurricane recovery plan that Congress had mandated.

Cynthia Cook, who led the project for the analysis center, described the work as “unique because of its scale and scope. It was a whole-of-economy recovery plan, not one focused just on rebuilding after a natural disaster.” Cook led a 150-member team of experts that produced a first draft of the economic plan in just four and a half months. However, Cook said, “The time crunch made it hard to consult [with] communities as extensively as we would have liked,” and the congressional deadline meant it wasn’t easy to get as much data as the teams wanted. To support the effort, a dozen HSOAC analysis staff moved to Puerto Rico for the six months and worked closely with FEMA and COR3 officials. Cook and other members of the HSOAC management team traveled to Puerto Rico from Washington, DC, at least every other week.

HSOAC also assisted Puerto Rico’s government officials to define an overall strategic direction for the recovery plan, providing support for policy deliberation. The center worked closely with government officials to collate data on damages and needs and then developed nearly 300 potential courses of action based on hundreds of ideas that sector teams considered, vetted, and improved through an iterative engagement process in conjunction with stakeholders. The evaluations considered each option’s “relative alignment with government of Puerto Rico goals and priorities, as well as their sensitivity to uncertainty, their cost implications, and their potential benefits,” one report noted. A separate cost team developed a method for estimating the cost of each action—a standardized approach that would ensure comparability across a very wide range of initiatives.

As part of that work, the HSOAC team also designed a decision-making tool that enabled government officials to view different portfolios composed of options for each strategic objective along with projected costs. By comparing and prioritizing options and identifying those that best aligned with overall goals, the government could refine its overall strategic plan for recovery in consultation with FEMA.

Information drawn from interview and from the report noted: Nicholas E. Burger, Cynthia R. Cook, Melissa L. Finucane, David G. Groves, Justin Hannah Hodiak, Anu Narayanan, Karishma V. Patel, Lara Schmidt, Aaron Strong, and Katie Whipkey. Developing Recovery Options for Puerto Rico’s Economic and Disaster Recovery Plan: Process and Methodology. Homeland Security Operational Analysis Center, operated by RAND Corporation, 2020. [https://www.rand.org/pubs/research\\_reports/RR2597.html](https://www.rand.org/pubs/research_reports/RR2597.html).

Longer-term priorities focused on encouraging economic growth; improving social services, including education and health; rebuilding infrastructure to comply with modern codes; and improving the information available to the public about reconstruction. The governor also committed to improving transparency and promised to “work closely with municipal governments to help them increase the transparency and accessibility of

services—for example, by instituting e-government portals, 311 [hotline] systems, and other technology-based systems”<sup>24</sup>—as well as to create an online digital platform that would enable citizens to track contracts, completion benchmarks, and key performance in a standardized format. The report set out many of the indicators the government planned to use.

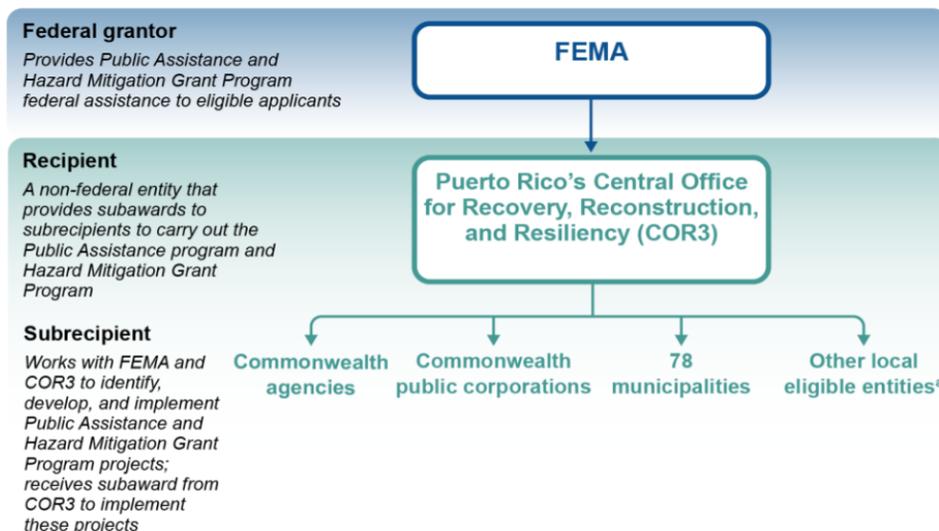
The report became the blueprint for subsequent activities. Further, as the government obtained additional data about the scale of the disaster, it could put the information into the models the Homeland Security Analysis Center had built and could begin to prioritize more effectively (text box 4).

The oversight board also had a role in shaping the overall strategy. Alejandro Figueroa, a former director with the oversight board, said the board tried to encourage the government to take a long-term perspective and to push back against the short-term political pressures that had contributed to some of the same mistakes of the past. “Without the oversight board, the government would likely not have focused on the long term,” Figueroa said. “Because the oversight board was apolitical, it could transcend Puerto Rican politics and political cycles and instead emphasize consistency and continuity.”

*Establishing rules and procedures*

To ensure strong performance, comply with federal rules, and build trust, COR3 needed comprehensive policies and procedures to govern procurement, expenditure, project management, and reporting, which were important from the very outset of COR3’s work. “I said I wanted a system that would enable us at the touch of a button to provide all the documentation for the auditors,” said

**Figure 2: FEMA Disbursement Structure** (entities involved in implementing Federal FEMA Public Assistance Program and Hazard Mitigation Grant Program)



Source: GAO analysis of Federal Emergency Management Agency documents. | GAO-21-264

<sup>a</sup>Other local eligible entities include eligible private nonprofit organizations that provide eligible services such as education, utility, emergency or medical, among others.

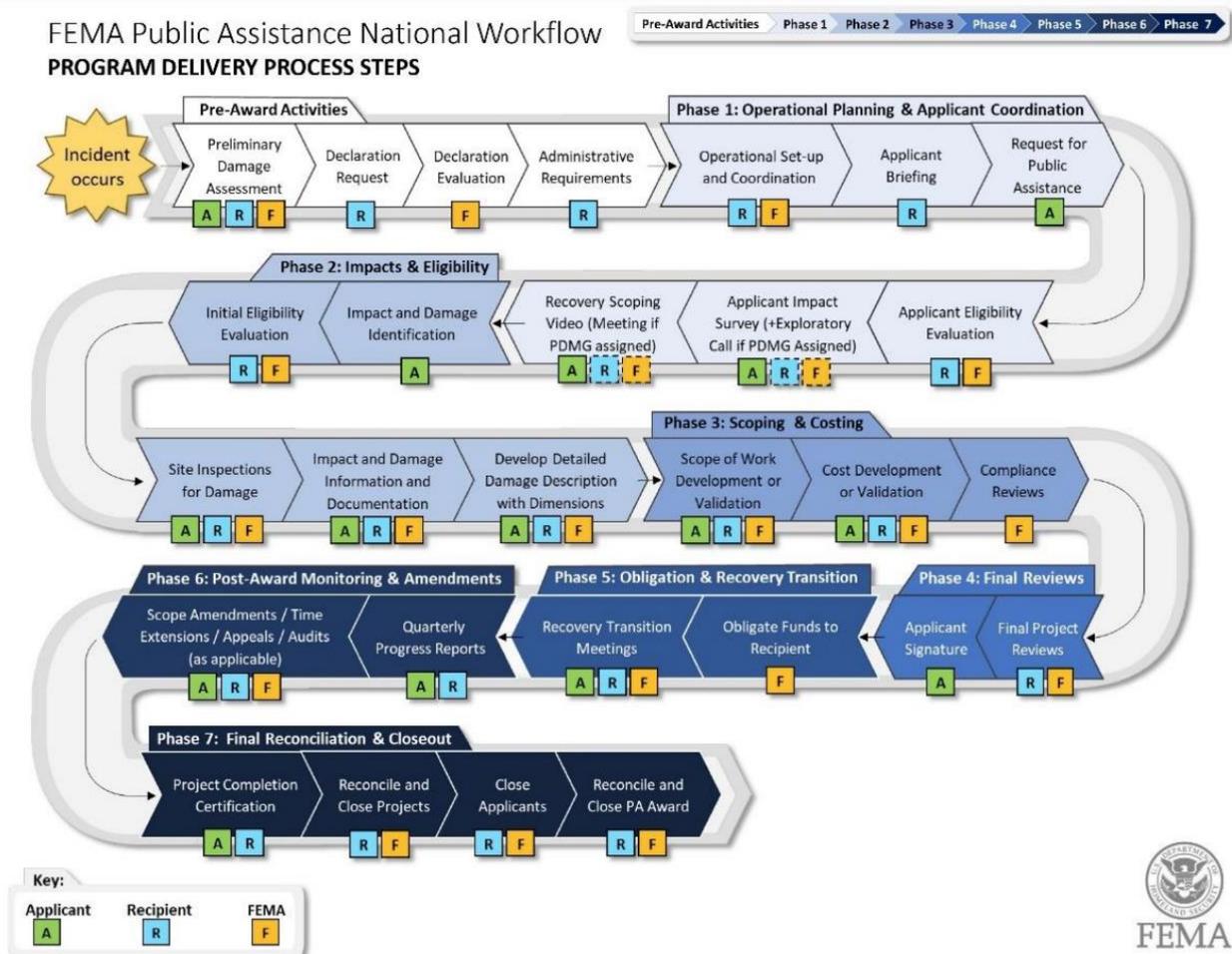
Source: Government Audit Office report: Puerto Rico Recovery: FEMA Made Progress in Approving Projects, But Should Identify and Assess Risks to the Recovery, p. 10.  
<https://www.gao.gov/assets/gao-21-264.pdf>.

Marrero, adding that with such a system in place, the information should still be available 10 to 15 years later to anyone who wanted to see it.

Marrero’s small team did not have to develop new rules or practices, because FEMA already had a suite of required procedures for accessing and managing federal funds, but COR3 did have to integrate the FEMA guidance into existing systems and train personnel. While COR3 developed those capabilities, FEMA disbursed funds directly to subrecipients—an arrangement that lasted until mid-2019, when COR3’s own systems had proven reliable and its staff could assume that role (figure 2).

FEMA required COR3 and other agencies to “follow the snake,” the term used to describe the funding disbursement process (figure 3). COR3 staff assessed whether subrecipients were eligible for funding, reviewed the requests for public assistance, sent the requests to FEMA, negotiated the costs with FEMA and the subrecipients, provided technical assistance or support as needed

**Figure 3: FEMA Public Assistance National Workflow, The Snake**



Source: Public Assistance’s Consolidated Resource Centers’ New Hire Training, PA 101 (March 2022)

Source: Review of FEMA’s Public Assistance National Delivery Model, January 2023, p. 11.  
[https://www.fema.gov/sites/default/files/documents/fema\\_review-public-assistance-national-delivery-model\\_012023.pdf](https://www.fema.gov/sites/default/files/documents/fema_review-public-assistance-national-delivery-model_012023.pdf).

during the project implementation, and helped subrecipients submit claims for reimbursement from FEMA. Once COR3 received FEMA funds, it supervised the release of funds to subrecipients, which included municipalities and NGOs, some of which operated essential infrastructure such as schools and water systems.

In mid-2018, COR3 moved to FEMA's Validate-As-You-Go (VAYGo) system, which enabled FEMA to draw a sample of recipients' and subrecipients' expenditures for review in order to ensure compliance. For fiscal 2018, FEMA reviewed US\$1.7 billion of expenditures (approximately 93% of expenditures during the year) and found 14% did not completely align with funding criteria and rules, but compliance improved as familiarity with the process increased,<sup>25</sup>

As COR3 harmonized practices with FEMA, it also began working with municipalities to help them secure HUD disaster assistance to correct damaged housing, damaged public buildings, and suspension of economic services. HUD's rules and procedures differed from FEMA's, and the disparities, coupled with the local focus of the funds, pushed COR3 to expand its staff and expertise so that it could assist local officials to tap the funds (addendum).

In the design and introduction of standard operating procedures, procurement came in for special attention because it was the point at which resources were most likely to go astray. Federal regulations contained procurement rules.<sup>26</sup> Puerto Rico's legislature also spelled out required practices. If the two sets of rules differed, then the federal rules prevailed, unless the Puerto Rico rules were more restrictive, said Sebastian Batista, chief of staff and chief legal counsel at COR3. Among other things, the rules required that the government bid out projects. As a general matter, single sourcing was allowed only during emergency response, not during subsequent reconstruction. In 2020, Puerto Rico amended its own procurement laws after extensive consultation with the oversight board, further narrowing the scope for single-source contracting, irregularities, and inefficiencies.<sup>27</sup>

### *Capacity building*

Marrero's team also began to build its own in-house capacity and knowledge, moving away from its initial consultant-based model, although 700 outside experts were still active in mid-2019. Finding Puerto Ricans to fill those positions was not easy. COR3 had to compete with FEMA and private companies to hire the best people, and often, it couldn't match the salaries those organizations paid. To address that staffing challenge, Marrero's team innovated. "We decided that we wanted to bring back people who perhaps were no longer in the workforce but had construction experience," Mosquera said. "To me that's a perfect pairing: You bring in people with, maybe, 10 or 15 years of construction experience, and you pair them up with the young ones—the new ones coming out of school." Tatiana Lorenzo, who played a role in that transformation and later helped lead-compliance at COR3, recruited lawyers, accountants, and other professionals who had relevant analytical skills and then

trained them in the specific policies and procedures the agency followed to ensure everyone adhered to the rules so as to maximize compliance with federal regulations.

Both Chávez and Laboy Rivera, who each in turn succeeded Marrero as executive director of COR3, made capacity building a focus. From 2019 to 2021, Chávez amplified the effort to move from consultants to permanent staff, and from 2021 to 2023, Laboy Rivera focused on increasing the capacity of municipalities and NGOs: the subrecipients. COR3 provided its own training on conducting audits, leading site visits, and using the VAYGo program, which required that funding recipients submit documentation to show that resources associated with a project were being properly disbursed; grant recipients who achieved and maintained low error rates in their VAYGo reviews were eligible for a simplified closeout process. COR3 also took three additional steps: it offered a basic orientation to help personnel navigate the Disaster Recovery Solution platform and upload information properly; it encouraged its own staff to earn FEMA certificates in emergency management; and it set up systems to help staff learn from the expert consultants.

From 2019 to 2021, COR3 grew from 40 to 160 permanent staff. Although it continued to rely on consultants for specific expertise, the consultants exclusively provided technical advice instead of assisting with the agency's day-to-day work, as they had earlier. It took about six months for each new person to come up to speed, said Méndez, the previous COR3 deputy director. "Every engineer, every architect, every lawyer we brought in throughout the life cycle of the disaster recovery—it took a couple of months for them to get their ground and to know everything and to move fast," Méndez recalled, "so we tried to avoid turnover of employees—specifically due to the learning curve of disaster recovery."

Mosquera said COR3 faced criticisms that progress was slow and the government was not doing its job. She recalled wanting to remind Puerto Ricans that "the government is *people*. The government is the people who went through the hurricane, who have families that are living the same needs that everybody is living." The families of some of the COR3 directors had no electric power in their homes for a full year, and the same was true of many other staff members. During that crucial first year, circumstances made it especially difficult to assemble people with the right skills who could devote extra work hours.

#### *Data and project tracking*

Information was a central component of recovery management—essential for tracking projects, reporting, communication, and accountability. Because of the scale of reconstruction, especially with regard to the large number of relatively small projects, FEMA encouraged COR3 to focus on information collection and management from the start; COR3 had to hire firms to help set up data systems and electronic portals. The governor's commitment to transparency and accountability as embedded in the August 2018 recovery plan

reaffirmed that priority. Marrero's aim was to ensure that all project management and data were held securely online, backed up by cloud storage.

Creating a central reconstruction database was also important to ensure continuity as consultants and staff members rotated in and out. During the first few weeks and months, data about damage assessments disappeared each time a key staff member moved on. Mosquera said COR3 had to ask for each agency or government department's inventory of damages several times over, and re-creating lost information was time-consuming and expensive.

One of the first requests for proposal that COR3 issued in the beginning of 2018 called for a company to provide data management services. CGI Inc., a large information technology and business consulting firm that had experience in data management for disaster recovery, won the contract.<sup>28</sup> CGI had created a similar system to help track reconstruction after Hurricane Sandy hit New York and New Jersey a few years earlier. Building on that experience, CGI developed and implemented the online system that tracked project funding and enabled COR3 to track projects, benchmarks, and completion. Tatiana Lorenzo, later part of the compliance team, noted that bringing information about all the projects into one life cycle tracker made it easier to spot problems, share information across divisions, and troubleshoot quickly.

CGI also developed and maintained the COR3 transparency portal, which provided the public with information about disbursements and projects across the entire island. "The portal was very important because we wanted to showcase to the world what we were doing with the funds," Marrero said, adding that he also used the information to help him prepare his reports to Congress. When he joined as COR3 director in 2021, Laboy Rivera saw opportunities for the portal—which initially focused on "obligations and disbursements"—to provide better information and transparency for citizens. What people really wanted to know was when their road or school would be fixed, he said, so he set about increasing the types of information the portal made available. By 2023, he said, "anyone could double-check a project, pinpoint that project in our system, and learn when the project was supposed to begin, what it was supposed to achieve, and which benchmarks it had reached."

However, despite those aspirations, the portal also had a number of flaws that made it difficult for people and civic groups to access information and assess progress. It did not always present all the information required, it was slow to update, and it sometimes used file formats that made it impossible to download data for quick analysis. Instead, users had to pull information from files and create parallel datasets that were more amenable to review. Issel Masses, founder and executive director of NGO Sembrando Sentido, noted those problems and others, including (1) discrepancies across information sources in the funds allocated for larger programs as well as specific projects, (2) missing or limited information about who is responsible for project implementation and progress, (3) missing information such as links to specific contracts and contract information, and (4) reliance on English-language documentation, making the

information inaccessible to a majority of residents in Puerto Rico. Masses also noted delays in posting certain kinds of information.

The COR3 staff acknowledged the shortcomings and actively tried to improve access to information, but Batista, COR3 chief of staff and chief legal counsel, said subrecipients—municipalities, departments, and NGOs—were required to upload their quarterly performance reports to the portal but were not obligated to publish their calls for bids, which led to information gaps.

Information management was a work in progress—everywhere. International standards for construction portals evolved further during the years after Hurricane Maria struck Puerto Rico. Together the Open Government Partnership and the Open Contracting Partnership helped lead that effort and began to promote new standards beginning in 2022.<sup>29</sup>

#### *Building the capacity of subrecipients*

FEMA public assistance grants and HUD disaster-recovery grants were disbursed to municipalities and NGOs, known as subrecipients. Project proposals tended to originate at the subrecipient level, and it was the responsibility of local officials and staff to monitor project performance.

Building the capacity of the subrecipients and local officials was crucial to successful reconstruction. Most of the local officials and NGO staff lacked experience in handling federal funds or complying with complex federal regulations. In addition, although the situation presented an opportunity to improve infrastructure and enhance resilience, few local governments had economic development plans in place prior to the hurricane, said Mosquera, and as a result, she added, “although there was a will, there was not a lot of vision for change.”

At the beginning of the recovery, the lack of capacity, coupled with the need to work in English instead of Spanish, impeded the use of federal resources at the subrecipient level. The Homeland Security Operational Analysis Center report of September 2018 outlined additional challenges municipalities faced, including prior default on debt obligations that curtailed access to financial markets, dwindling municipal revenues and shrinking budgets, rising poverty levels, and emigration away from the island.<sup>30</sup> The analysis center report found that 40% of municipalities lacked a completed strategic recovery plan, and approximately one-third did not have staff with professional degrees or training in planning or economic development.<sup>31</sup>

Municipal officials also acknowledged the institutional lack of capacity for the task set before them. From the start, they pointed to struggles in managing the grants process. Although many municipalities had experience with small-scale infrastructure projects such as fences around schools, none had developed and managed projects on the scale required. Few municipalities had the compliance measures required to effectively monitor contractors and ensure project efficiency.<sup>32</sup> Moreover, local governments rarely had money to match federal support when matching was required.

“Municipalities had small recovery departments managing multiple federal funds with different requirements and deadlines,” Batista, legal counsel at COR3, said. For that reason, supporting those subrecipients was crucial to get money moving, and capacity building at this level became a priority. Every municipality was assigned a COR3 project manager who could provide the technical support for navigating the complexities of federal funding. In some instances, COR3 also supplied specialist consultants or staff directly to municipalities, and it continued finding new and innovative ways to provide municipalities with technical assistance.

When Laboy Rivera took over as COR3 executive director in 2021, he conducted a survey of all 78 municipalities to learn about the challenges they continued to face, nearly four years into the reconstruction effort. “There were a lot of doubts and confusion about the procurement process and a lot of questions and doubts about how to actually manage compliance with FEMA requirements,” Laboy Rivera said. “Some municipalities still struggled to understand what project management was.” Laboy Rivera and his team spent two and a half years educating subrecipients by convening training events and conducting workshops at the Puerto Rico Convention Center in San Juan, taking training out to regions across the island, hosting webinars, and creating the materials needed to help fill the knowledge gaps identified in the survey. “It yielded incredible results,” Laboy Rivera said. “We feel that our subrecipients today are in a very different position—way better than two and a half years ago.”

Helping increase NGOs’ capacities proved even more challenging, and dealing with that problem was not a high priority for COR3. For instance, Batista pointed to the difficulties places of worship encountered because they had no procurement procedures in place when the hurricane struck and had no experience in handling large amounts of federal funds. Places of worship had traditionally been ineligible for public assistance from FEMA. But in 2018, that rule was amended, and places of worship became eligible.<sup>33</sup> In Puerto Rico, places of worship provided vital community services for citizens, including in the aftermath of Hurricane Maria. “For the first time in US history, FEMA allowed houses of worship to apply for assistance, and we had 2,000 applications. Because many were small in comparison to state agencies and municipalities, they came together in several groups,” Méndez, previously deputy director of COR3, said. “The Catholic churches, for example, were represented by one organization that coordinated work with close to 700 individual houses of worship.” Allowing churches to group together to access and manage federal funds helped harmonize practices and generate economies of scale.

### *Engaging Private Enterprise*

The government was not alone in facing capacity challenges. Puerto Rico’s private sector had similar issues. Laboy Rivera said that although he “support[ed] a hundred percent to have our local companies, all our smaller-to-medium-sized enterprises, and the whole local construction industry to maximize these

opportunities, they were at the limits of their capacities.” The construction sector, like many other sectors of the economy, had suffered in the years before Maria hit. It had lost employees to more-lucrative work on the mainland, and it was small and underresourced for the scale of posthurricane reconstruction required. Even in 2023, six years after the hurricane, the president of the Puerto Rico Economic Development Bank estimated the need for an additional 40,000 construction workers.<sup>34</sup>

The construction sector was mainly made up of small-to-medium-sized companies, Laboy Rivera said, and the demand for construction services would outstrip what could be provided. He added that “more and more projects would go on the market every month—large, complex projects—that might average 100 million, 200 million, 500 million dollars. There was no way we could tackle those projects by depending solely on our local contractors.”

Ensuring that companies outside Puerto Rico could compete for projects, coupled with occasional use of public–private partnerships, helped bridge the gap. Outside companies sometimes had personnel, capital, and essential technical expertise that local firms lacked. Laboy Rivera said the aim was to attract those companies to the island.

A public–private partnership was a distinctive type of long-term relationship between a government and a firm for the construction of a road, water system, power system, or other utility. Such partnerships could also be used for provision of a service, whereby the private party assumed substantial financial, technical, and operational risk in the project.<sup>35</sup> Such contracts required substantial skill to construct and manage, and international financial institutions like the World Bank cautioned governments that contemplated taking that approach, pointing to the challenges of assessing future risk, regulating effectively, consulting with affected communities, and protecting public finances if the private partner was unable to deliver.<sup>36</sup>

Rebuilding the electrical grid and supplying power to the island posed particular challenges for Puerto Rico that made a public–private partnership attractive. The hurricane had badly damaged the entire grid. Poor maintenance and use of components not sold in mainland United States made repair especially difficult and expensive. FEMA and the US Army Corps of Engineers provided US\$3.9 billion to help restore electric service in the immediate aftermath of the hurricane, including temporary repairs such as attaching electrical lines to damaged poles.<sup>37</sup> It took 11 months for electricity to be fully restored across the island. But neither Puerto Rico nor FEMA had the resources to build a new system from the ground up.

To replace the failing grid with a new system, some of the capital and much of the expertise would have to come from outside the island. PREPA, the island’s energy authority, was a poor candidate for a partnership. When Maria hit Puerto Rico, PREPA was US\$9 billion in debt and close to bankruptcy.<sup>38</sup> Its decision to contract with Whitefish threw the quality of the institution’s decision-making into question.

By July 2019—almost two years after Hurricane Maria—it was still unclear what kind of financial package the government could put on the table in its negotiations with a plausible private partner. No federal funding had been allocated for replacement of the old grid with a new, more resilient and efficient system.<sup>39</sup>

In September 2020, Puerto Rico’s legislature agreed to a budget for rebuilding the grid, and in June 2021, the grid was privatized through a public-private partnership with LUMA Energy. LUMA would rebuild and operate the system, although PREPA would still own the infrastructure. The arrangement brought much-needed expertise, capital, and investment into the electric sector but was not without its problems. LUMA told regulators it had underestimated the level of damage to the grid and was struggling to find the skilled labor needed to carry out the repairs.<sup>40</sup> In January 2023, the government selected Genera PR to take over the operation and maintenance of state-owned power generation units.<sup>41</sup>

In US states, the private sector played a central role in electricity generation, water supply, and provision of several other core public services. But in Puerto Rico, the new engagement of private firms and the use of tax incentives<sup>42</sup> to encourage private investment attracted criticism. For example, NGOs called out the subsequent increases in electricity prices for consumers, LUMA’s increased use of natural gas (despite a government pledge to move to 100% renewables by 2050),<sup>43</sup> a perceived reduction in transparency,<sup>44</sup> and, later, two substantial outages in April and August 2022.<sup>45</sup>

### *Managing disruption*

The middle of 2019 brought the first in a series of potentially disruptive events. In late July, Marrero stepped down from COR3 and became head of the Puerto Rico Fiscal Agency and Financial Advisory Authority. Rosselló quickly picked Chávez as COR3’s new executive director. Chávez had moved from the private sector to the government only a week before Hurricane Maria struck, in order to help handle negotiations with the oversight board and to introduce procurement reform. At the time of his appointment to COR3, Chávez was also serving as receiver at the troubled Puerto Rico Electric Power Authority, where he was already deeply involved with COR3. At the power authority, he had introduced new procurement practices and accountability and transparency measures in the aftermath of the Whitefish scandal.

At the beginning of August 2019, just a few days after the change in leadership at COR3, Rosselló resigned his post as governor. He had faced widespread popular protests prompted by what the *New York Times* called “fury over years of recession, mismanagement, natural disaster and corruption.”<sup>46</sup> Pedro Rafael Pierluisi Urrutia, whom Rosselló had appointed secretary of state only two days before his resignation, briefly held the office of governor. But Pierluisi himself stepped down five days later, when the Puerto Rico Senate challenged his appointment in court, claiming that although the secretary of

state was next in the line of succession, the legislature had not yet confirmed Pierluisi in that role. Secretary of Justice Wanda Vázquez Garced, second in the line of succession, became governor with only one year to go before the next election.

Because COR3 executive directors were political appointees, the churn at the top risked disrupting continuity and leadership within the reconstruction program. Moreover, at the federal level, the political turbulence in Puerto Rico once again raised concerns about the government's ability to manage money wisely. In response, FEMA briefly resumed its earlier practice of disbursing financial resources directly instead of passing them through COR3.

"FEMA saw red flags after Governor Rosselló's resignation in 2019," Chávez said. In Washington, officials began asking further questions about Puerto Rico's capacity to manage recovery—just as COR3 was moving from emergency-rebuilding projects to longer-term reconstruction. Chávez flew back and forth between Puerto Rico and Washington to meet with members of Congress and the White House to assure the federal government of Puerto Rico's commitment to continued compliance as well as focus on the execution recovery process.

Political disruption wasn't the only source of turbulence, however. In early January 2020, a series of earthquakes struck the island, including a 6.4-magnitude quake that triggered landslides, destroyed buildings, and caused new damage to power generation plants and distribution systems.<sup>47</sup> Most of the island was again without electricity. Tremors persisted, totaling more than 900 separate incidents in the ensuing weeks. One expert said the earthquakes could cost the Puerto Rican economy as much as US\$3 billion.<sup>48</sup> The governor declared a state of emergency, and FEMA allocated additional assistance, which flowed through COR3. Chávez set up a team to handle earthquake-related reconstruction.

Less than three months after that second major natural disaster, the COVID-19 pandemic forced Puerto Rico to shut down schools and workplaces. The pandemic further disrupted supplies of materials and the expertise needed to rebuild, and stay-at-home orders slowed the pace of reconstruction. Most COR3 staff had to work remotely. Even aspects of building inspection moved online, Chávez said. With systems for managing federal funds already in place, COR3 assumed a central role in allocating pandemic relief—a task made easier by the greater flexibility provided for the use of those resources.

As Chávez sought to make progress against the unexpected obstacles, politics again promised to interfere with leadership continuity at COR3. In the primary election held just a few months after Chávez's appointment, New Progressive Party voters selected Pierluisi over Vázquez as their preferred candidate for governor. Pierluisi emerged the victor in the November 2020 general election.

With a new administration coming in, again the COR3 directorship changed hands. In January 2021, Secretary of the Department of Economic

Development and Commerce Laboy Rivera took over as COR3 executive director. In his previous role, Laboy Rivera had interacted extensively with COR3. He brought his training as an engineer and lawyer to the job, as well as his private-sector experience.

COR3 deputy director Méndez described his task during this period as “steadying the ship,” which included ensuring that COR3’s human resources strategy provided certainty and continuity for operations and prioritized the needs of applicants and the general public. The new governors left the rest of the COR3 reconstruction team intact, thereby boosting continuity. Professionalism helped ease leadership transitions and enabled COR3 to tackle persistent problems that had impeded progress. All three executive directors had the kinds of experience that could ease entry into their roles, and all three knew one another, thereby facilitating effective handovers.

## OVERCOMING OBSTACLES

When Chávez took over in 2019, the Puerto Rican government had spent only US\$14 billion of the US\$18 billion earmarked—or obligated—for specific projects.<sup>49</sup> Contractors had finished clearing most of the debris, but only 1,588 projects were in progress.<sup>50</sup> Identifying the main obstacles to effective disbursement of funds was a top priority, along with continuing to build essential capacity at COR3. Laboy Rivera continued that work when he took over in 2021.

Chávez and Laboy Rivera said they thought the main reason for slow progress lay in FEMA’s rules. There were two distinct problems. First, for the kinds of larger projects that COR3 oversaw, FEMA almost always provided financial support on a reimbursement basis. That is, municipalities and government agencies had to use their own resources to pay contractors and then seek reimbursement from FEMA via COR3. But the fiscal predicament the Puerto Rican government already faced meant there was no money in the coffers to kick-start the process. Austerity created a cash flow problem that effectively blocked new projects from getting off the ground.

The rationale behind FEMA’s reimbursement-only policy made sense in many settings. Reimbursement enabled disaster-affected governments to proceed with work without having to wait for agreement on an acceptable price. Most US states set aside money they could tap in emergencies in order to begin relief and recovery work; therefore, they were in a position to realize the advantages of the reimbursement policy and quickly begin reconstruction work.

When Hurricane Maria hit, however, the Puerto Rican government had no reserves or rainy-day funds it could use to begin reconstruction. That kind of fiscal challenge affected the municipalities as well as the territory’s central government. In the year before the hurricane, almost two-thirds of municipalities ran budget deficits, with many carrying deficits for many years. The Homeland Security Operational Analysis Center reported that “the amount

of municipal debt had increased by more than 50% since 2007.”<sup>51</sup> Across the island there was simply no money with which to begin reconstruction.

The second rule-related problem came from a requirement to use fixed-cost estimates for procurement of projects costing more than US\$123,000. Under regular procedures, FEMA and state officials identified and documented damage, formulated a scope of work, and covered the actual expenditure. But that practice could lead to spiraling costs, and in November 2017, FEMA recommended that all large projects in Puerto Rico should use the alternative procedures elaborated in Section 428 of the Stafford Act that provided incentives for timely and cost-effective completion of projects. Under those rules, COR3, the subrecipient, and FEMA had to develop a fixed-cost estimate for each project. Covering any costs that were more than that estimate was the responsibility of the subrecipient, but if the actual costs were less than the estimate, the subrecipient could use the saved money for other eligible purposes. An additional advantage of Section 428 was that it allowed infrastructure to be rebuilt to a higher standard and with greater flexibility.

However, in Puerto Rico’s specific situation, that approach generated substantial delay. Shortages of personnel to develop the estimates slowed reconstruction to a crawl—especially when coupled with the difficulty of generating accurate figures in an island context, in which shipping problems could delay materials and there were no contractors from neighboring jurisdictions eager to compete for bids.

During an oversight hearing in November 2017—well before reconstruction started—Rosselló had warned members of Congress: “The Section 428 estimation process is cumbersome and slow, as the estimation process alone will take months, and then be subject to appeal. Delaying response activity for 18 months will cripple recovery.”<sup>52</sup> He added that FEMA had further reduced the flexibility available under Section 428 by directing that cost estimations for certain types of large projects be validated by expert panels. Negotiating the costs between FEMA and the government would inevitably result in each side’s accusing the other of overestimating or underestimating how much a project would cost.<sup>53</sup>

“No one had ever used 428 for a jurisdiction-wide disaster,” Marrero said. New York had used Section 428 for just a few projects in the wake of Hurricane Sandy a few years earlier. “So, we were the first, and FEMA didn’t have the policies in place,” Marrero added. “FEMA and Puerto Rico had to develop the Section 428 guidelines in the middle of the response. It was like designing a plane while you were flying it. At first, the introduction of Section 428 had seemed like a blessing in that it gave Puerto Rico more flexibility, the authority to control where and how the government spent FEMA funds, and, crucially, the ability to build back better. But the government was unable to start the projects to which Section 428 applied until a fixed-cost estimate was readied with FEMA, Marrero said, and the rules applied to the entire disaster response instead of specific projects the way it did in most situations.<sup>54</sup> In October 2018,

further amendments to the Stafford Act reinforced the requirement that the use of alternative procedures under Section 428 be optional for states.<sup>55</sup>

Marrero's successors—Chávez and Laboy Rivera—made it their goals to relieve the pressures those provisions had generated and to tackle the backlog of obligated but unspent funds. In 2020, COR3 worked extensively with FEMA to develop the FEMA Accelerated Awards Strategy (FAASt). That approach to assessing damage and developing fixed-cost estimates for repair involved the use of a statistical-sampling method. For example, instead of assessing the damage to every single streetlight across Puerto Rico, a team assessed a sample of damaged streetlights and estimated a standard cost of repair. The approach significantly increased the speed of damage assessments and accelerated the obligation of funds for projects.

In addition, the FAASt approach grouped smaller projects into larger portfolios of projects focused on four commonwealth agencies: the Puerto Rico Electric Power Authority, the Aqueduct and Sewer Authority, the island's Department of Education, and the Public Housing Administration. The approach gave the agencies more flexibility with regard to where and how they spent the obligated funds. It also enabled agencies to agree to fixed-cost estimates for projects across the entire portfolio and then move unspent funds around within that portfolio if projects fell below their fixed-cost estimates.

Recognizing the challenges the island faced in beginning work projects, in July 2019 FEMA agreed to further changes that helped Puerto Rico manage additional and unpredictable costs related to labor and material. Two amendments involved (1) approval of an adjustment to accommodate the higher costs of local labor, equipment, and materials in Puerto Rico and (2) a future price factor and price curve that would accommodate anticipated increases in construction costs.<sup>56</sup> In 2020, FEMA also agreed to allow municipalities to choose to use the regular FEMA rules for some projects already in progress, provided that FEMA also agreed to the changes.<sup>57</sup>

Further adaptations of rules and procedures took place to spur progress. By 2021, FEMA had given COR3 sole responsibility for disbursement and said it would continue to monitor samples of the COR3 transactions through the VAYGo process. Pierluisi, the newly elected governor, said that such a step “demonstrates the confidence and credibility that this government has earned” and that “with this increased flexibility, Puerto Rico is being treated equally alongside the rest of the states.”<sup>58</sup> Laboy Rivera highlighted the utility of the new system for accelerating reconstruction. He said the change “allows COR3 to streamline and make its disbursement processes more flexible as long as it continues to comply with the federal provisions that apply to us.”<sup>59</sup>

Despite those changes, however, by 2022—five years after Hurricane Maria—Puerto Rico had spent significantly less than half of the US\$28 billion obligated by FEMA, though statements about exactly how much it had expensed ranged from 19% to 41%.<sup>60</sup> The tracking systems at COR3, FEMA, and the Government Accountability Office, which exercised oversight, all varied (text

box 5). Adapting again, FEMA and COR3 agreed to pilot the Working Capital Advance program.<sup>61</sup> The program allowed municipalities and eligible agencies to receive up to 50% of obligated funds within 7 to 10 days of a successful project proposal, thereby providing the necessary liquidity to start projects, some of to

### Text box 5: The Challenge of Proving Homeownership

Citizens who wanted to repair or rebuild their damaged homes dealt with FEMA directly. FEMA required that applicants first tap insurance and only after that, turn to FEMA for help with the balance. The speed with which insurance adjusters could mobilize, assess damage, and provide payment affected the pace of repair for certain types of buildings, such as housing. In Puerto Rico, that process moved forward slowly. Furthermore, although many homeowners and small businesses did not have insurance, they could not easily obtain federal assistance for which they were eligible because they could not show they had clear title to their properties.

In Puerto Rico, it was estimated that more than half of all properties lacked clear owners with appropriate documentation. That predicament usually arose when one of three things happened: the land had been subdivided generationally within families without formal documentation, heirs to property failed to declare their inheritances and formally register their ownership rights or a citizen bought the land or property lawfully but still had no formal legal claim because the previous owner lacked a registered title. Historically, many people had moved closer to their places of employment and had settled informally—without permission. In a few instances, there were multiple claims on the same land parcel. Inability to prove ownership challenged recovery after Hurricane Katrina devastated part of the southern United States in 2005, but Puerto Rico faced that problem on a much larger scale. (See ISS case study *“A huge problem in plain sight”: Untangling Heirs’ Property Rights in the American South, 2001-2017.*)

Hurricane Maria had damaged 1,138, 843 homes, or about 92% of the total housing stock and approximately 788,000 people applied for FEMA assistance to rebuild, but almost 336,000 of those requests were denied, a FEMA spokesperson told NPR. FEMA also told NPR that the main reason for denial of the grants was that applicants had not been able to prove homeownership, and as a steward of public funds, the agency could not disburse money to people who could not show they were rightful owners. In July 2018, FEMA modified its rules on proof of ownership, allowing individuals to self-declare that they owned a property. The signed self-declaration included information about how long the occupant had owned the house and why more-formal documentation regarding ownership could not be provided, alongside a standardized set of words provided by FEMA. In 2022, the rules were modified again, and FEMA accepted additional alternative documentation in lieu of formal proof of ownership.

See: FEMA. “Eligibility Criteria for FEMA Assistance.” October 3, 2023.

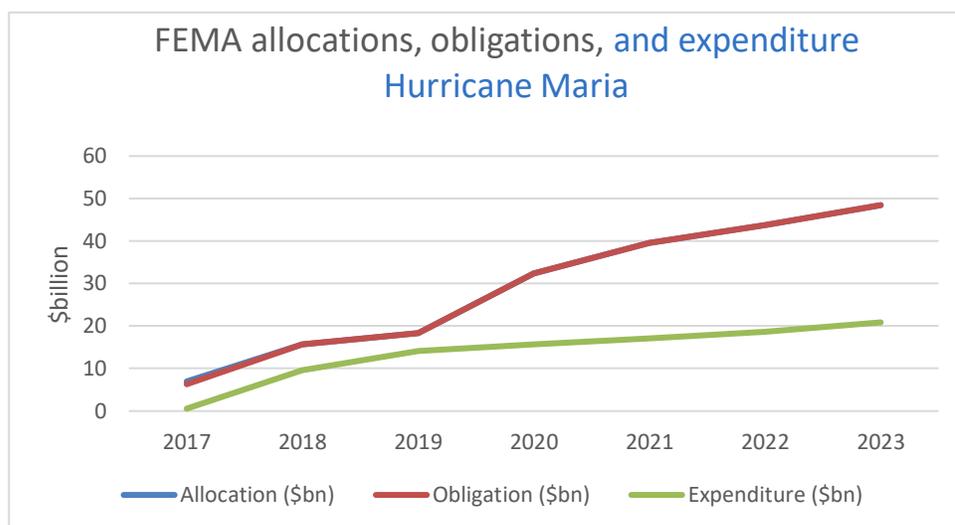
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**Figure 4: FEMA Obligations, Allocations, and Expenditures in Response to Hurricane Maria, 2017–23**

	2017 <sup>62</sup>	2018	2019	2020	2021	2022	2023
Allocation (\$ billion)	6.97	15.75	18.39	32.33	39.54	43.70	48.45
Obligation (\$ billion)	6.31	15.75	18.39	32.33	39.54	43.70	48.45
Expenditure (\$ billion)	0.56	9.62	14.09	15.73	17.08	18.68	20.87



which had been stalled for years.<sup>63</sup> Compliance and project management requirements remained rigorous, but the approach enabled the government advance up to US\$375 million to municipalities to begin much-needed reconstruction projects.<sup>64</sup>

The Working Capital Advance program made a significant difference in the speed at which projects could begin and reach completion. In September 2023, Laboy Rivera announced that from July 2022 to July 2023, COR3 disbursed more than US\$1.2 billion through the Working Capital Advance pilot program.<sup>65</sup> During the first quarter of 2023, the scale of disbursement increased further (figure 4).<sup>66</sup>

## ASSESSING RESULTS

It is always difficult to generalize about the impact of agency structure, procedure, and capacity on performance—that is, on speed, quality, cost, integrity, equity, and alignment with strategic priorities—while controlling for the effects of the underlying context. Every disaster is different, and each context has distinctive features. Simply put: one size does not fit all.

In the case of Puerto Rico, evaluation of COR3’s performance was especially difficult because the island experienced subsequent calamities during

the years immediately after Hurricane Maria: an earthquake in 2020, the outbreak of the COVID-19 pandemic in 2020, and other, slightly less-powerful hurricanes in 2019, 2020, and 2022. The cash flow problems, too, slowed the rate of progress during the first few years.

At the beginning of 2023's fourth quarter, FEMA reported to Congress that it had allocated and obligated US\$48 billion of federal assistance for Puerto Rico<sup>67</sup> and that COR3 had disbursed US\$19 billion.<sup>68</sup> As part of the US\$19 billion, in August 2022 COR3 disbursed US\$147.5 million under the Working Capital Advance pilot program for the purchase of materials and equipment necessary for the rehabilitation of Puerto Rico's electrical grid.<sup>69</sup> (Differences in the data agencies provided about amounts authorized for expenditure and amounts actually expended led the US Government Accountability Office to try to make sense of the top-line numbers and its numbers were lower than some of the others reported.<sup>70</sup>)

Despite Congress's concerns Congress and press skepticism, there was no evidence of significant corruption in the use of federal funds provided for Puerto Rico for reconstruction following Hurricane Maria. The only exception was a FEMA official who was arrested for taking bribes from a company that had secured federal contracts to repair the electrical grid.<sup>71</sup> All three executive directors of COR3 made transparency and propriety key pillars of their approach to managing funds, and they succeeded in ensuring a corruption-free approach.

The establishment of the transparency portal (<https://recovery.pr.gov/en>) was a significant step forward for displaying information in an accessible format about the status of fund disbursement and project progress despite the portal's flaws and the need to adapt to global standards later introduced. The portal proved a useful tool for communicating with potential suppliers and for providing procedural information for subrecipients. As Méndez explained the importance of the portal: "You have to have transparency and staff who are very knowledgeable about what is going on and who are able to explain things in laymen's terms. The recovery portal and recovery PR were big parts of the response." Centralizing data and project management in one place helped break down silos in the government and encourage greater cooperation between different parts of the response. Tatiana Lorenzo, compliance deputy director at COR3, said the dashboards and trackers also helped her office spot problems.

The system did not work perfectly, however. COR3 and FEMA sought to set a standard for maintaining and communicating real-time—or even quarterly—information about allocations, obligations, expenditures, procurement, and project completion. However, six years into the reconstruction effort, the portal was still difficult for civic groups and residents to navigate; it was inconsistently updated; and it lacked key information. For example, it was not possible to find an annual report or annual figures for disbursement, and subrecipient data was incomplete. Furthermore, the FEMA, HUD, and COR3 data systems and reporting standards did not align. Although

the top-line figures presented to Congress were fairly similar in most instances, there were sometimes significant disparities on other dimensions. At the end of 2023, the Government Accountability Office was still working to make sense of the numbers.

Masses, director of NGO Sembrando Sentido, also launched an initiative with research organization PolicyLink to create the state-of-the-art Federal Funding and Impact Tracker, which would enable residents to see how people were using federal funds at the local level in their communities while also capturing the top-line figures. Supported by the US Census Open Innovation Labs initiative, Sembrando Sentido reached out to other groups for additional expertise in the pursuit of a new system.

Despite those difficulties, COR3's relentless focus on process, policies, and procedures helped build trust with FEMA and may have helped persuade FEMA to adapt when policies did not suit local conditions. The modifications of reimbursement and cost estimation policies were cases in point.

Furthermore, many staffers at COR3 emphasized how the systems and structures that had been established to respond to Hurricane Maria enabled the government to respond more effectively to subsequent crises such as COVID-19 in 2020 and Hurricane Fiona in 2022. The digitization of records and the development of clear processes during the first year of operation enabled COR3 to adapt effectively when the COVID-19 pandemic required government employees to work remotely. In addition, the systems in place for managing federal funds did double duty and enabled Puerto Rico to manage COVID-19 assistance in 2020 and 2021.

Several civil society organizations, including Sembrando Sentido and Furia Inc., remained critical of COR3 and the wider government's approach to reconstruction, however. Complaints centered on delay and on lack of transparency. Ariadna Godreau of Ayuda Legal Puerto Rico described COR3 as "PR for the reconstruction effort." Another NGO said it had asked to collaborate with COR3 in some areas where it had specific expertise, but COR3 had declined the offer. Still others claimed they had to sue COR3 to get information. And some were critical that COR3 had not engaged with NGOs, claiming a need for more community outreach. Méndez recognized that in an area where COR3 had not done as much as it could, explaining that its approach had been to prioritize municipalities and government agencies rather than NGOs because of the critical services those organizations provided.

## REFLECTIONS

Seven years into Puerto Rico's recovery program, memories of Hurricane Maria were still vivid. Margarita Mosquera, deputy director of COR3 from 2021 to 2023, said that every September 20, the anniversary of the storm, she started her day with a cold shower to remind herself what it was like when residents lived without power for months. She recalled how communities pulled together after the disaster and how the government of Puerto Rico prepared to navigate the immense task that lay ahead.

The US Federal Emergency Management Agency's (FEMA's) initial one-size-fits-all approach did not work for an island with unique geographic and economic challenges. Ottmar Chávez, second executive director of Puerto Rico's Central Office for Recovery, Reconstruction and Resiliency (COR3), said: "Puerto Rico needed a more tailored solution. Being able to advance funding from the start would have made a big difference." FEMA's initial expectation that a government with no rainy-day funds and on the verge of bankruptcy could fund reconstruction without going into further debt was misplaced. More flexibility in the early months and years after the disaster might have enabled projects to begin more quickly. Over time—and partly as a result of COR3's demonstrated ability to effectively manage funding—FEMA became able to adapt its policies and procedures so it could work closely with COR3 to design and implement innovative solutions to challenging issues, but that change in approach took years and had a significant impact on the speed of disbursement.

Roberto Méndez, deputy director of COR3 from 2019 to 2021, reflected that "COR3 was built to meet FEMA requirements under law and regulations rather than necessarily being the most efficient organizational structure to respond to and recover from a disaster." The decision to organize COR3 so that its work teams aligned with FEMA counterparts enhanced communication between FEMA and COR3, but did not facilitate collaboration across sectors. Mosquera added that in a few instances, the siloed decision-making led to duplicative support for reconstruction of the same facility.

Cynthia Cook, Head of the Homeland Security Operational Analysis Center team, noted that COR3's openness to learning and to collaborating with others aided in the recovery process. She reflected that "because the government of Puerto Rico was so deeply engaged in hurricane response, it did not have the necessary excess capacity to create detailed recovery plans" at the outset of the response. But, she said, "COR3 leadership welcomed the support of outside experts to help develop the congressionally mandated economic and disaster recovery plan."

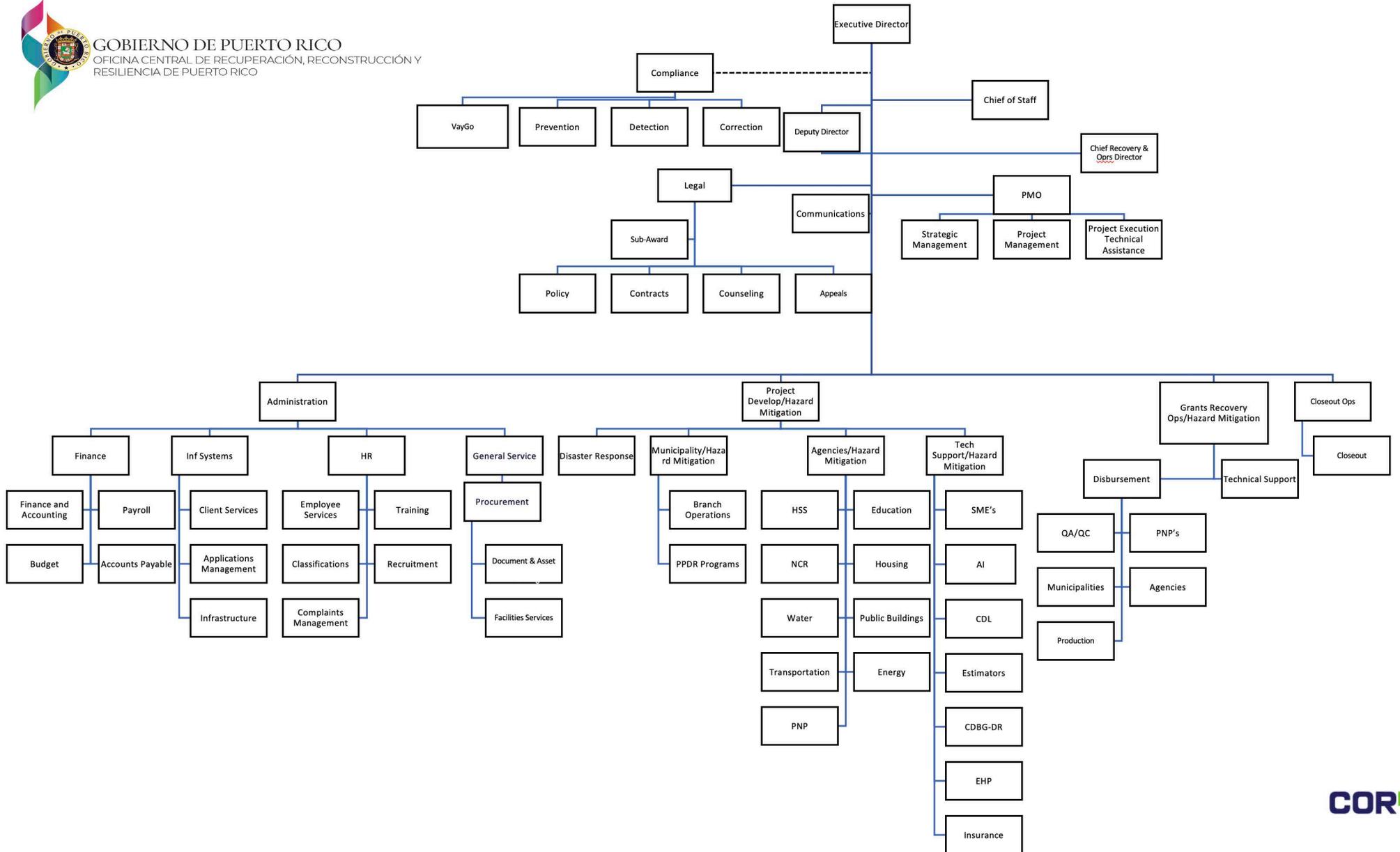
Further, both the Program Management Unit and the Compliance Department at COR3 took creative approaches to building and maintaining in-house expertise. Capacity building for municipalities experienced variable levels of success, and nongovernmental organizations (NGOs) had not really begun capacity building. Luis Gallardo, of the NGO Center for Habitat Reconstruction, advocated for "capacity-building and community-planning processes from the very start" and funding for local NGOs and community groups, realizing that a moon shot opportunity required broad-based commitment and professionalism within a reconstruction agency.

In capturing that sentiment, Alejandro Figueroa, who earlier served as director on the Federal Oversight Board, emphasized the need to "think and plan as a single unit and try to transcend party politics and interests in order to seize the opportunity to fix the mistakes of the past." Beyond the reconstruction effort, COR3 also had a broader impact on the island, reflected Méndez. "At the

macro level, the best success story is the capacity that COR3 created in Puerto Rico, because that capacity affected everybody in some way or another,” Méndez said. “It created a new industry and new jobs. It changed life in a good way for many people. It helped us give back to the island and rebuild so that the island would be better than it was before.”

# Appendix

## COR3 Organizational Chart, September 2023



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