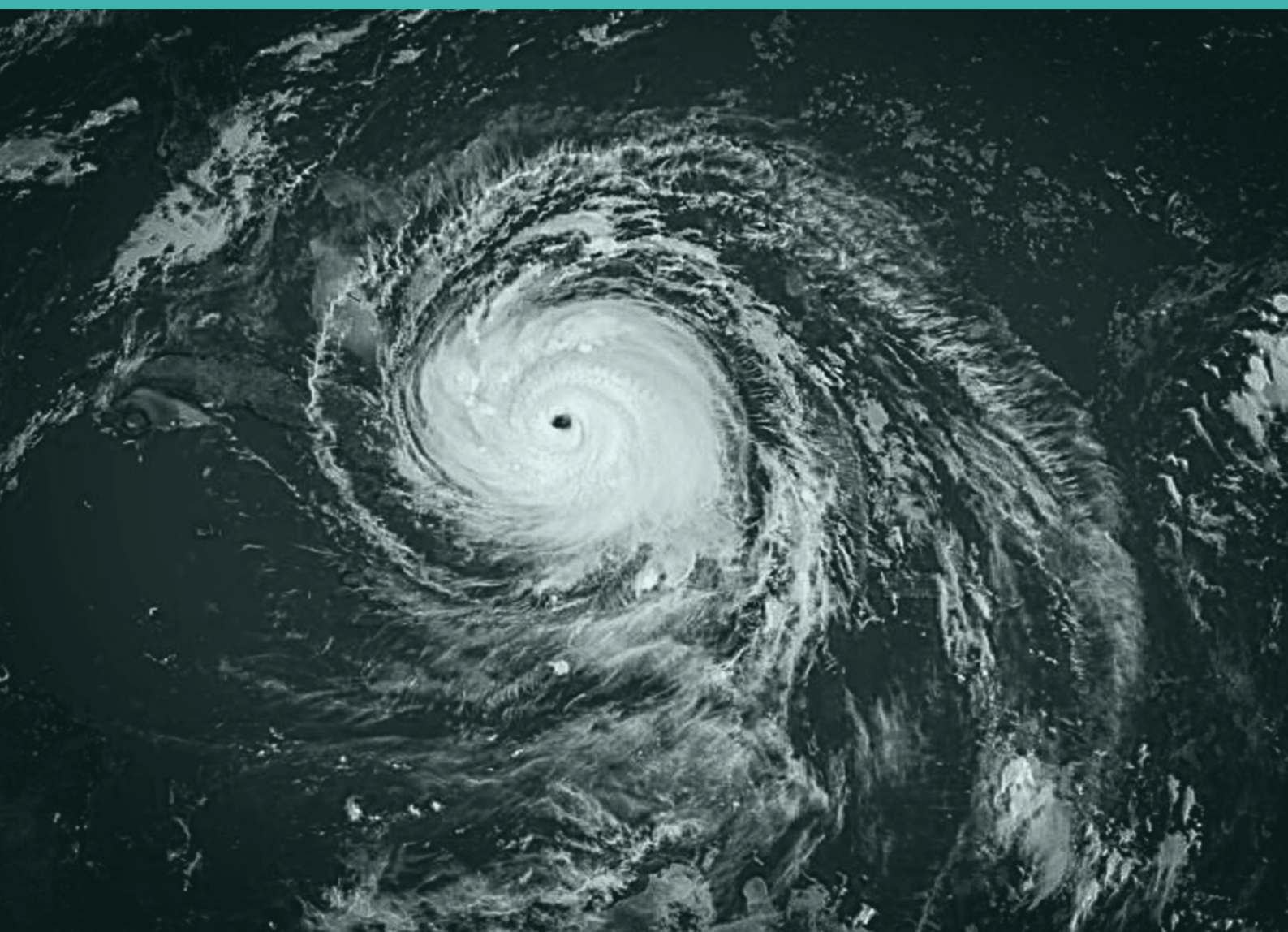


# It takes a hurricane...

## Puerto Rico's yearning for energy democracy

Antonio Carmona Báez



**AUTHOR:** Antonio Carmona Báez

**SERIES EDITOR:** Daniel Chavez

**DESIGN:** Daniel Chavez

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## Introduction

In a televised press conference held on the evening of 22 January 2018, Puerto Rico Governor Ricardo Rosselló announced his definite plans for the complete privatisation of the country's power utility. The public statement came four months after the passing of Hurricane Maria, which devastated the archipelago, leaving over 1,000 people dead, thousands homeless and over 40 percent of the population without access to electricity and running water. Privatisation is supposed to take place in three phases. First, the government would set out the legal framework to allow the sale of the public assets to be sold. Second, the government would receive corporate bids to then be evaluated accordingly. Third and finally, the terms and conditions for the contracts and sales would be defined. In his statement, the Governor said that energy privatisation would lead Puerto Rico to a speedy economic recovery, help guarantee utility workers' pensions, and accompany the country's evolution towards sustainable energy production.

Puerto Rico's energy system was crumbling long before the tropical weather systems of September 2017 hit the archipelago. Hurricanes Irma and Maria only laid bare the unsustainable conditions that have allowed for the extremely expensive, fossil fuel-generated electrical power regime to service the US territory of three and a half million people for decades. Months after the storms, the death toll continued to rise as medical patients awaiting operations and those in need of refrigerated medicines perished. Electrical power restoration in Puerto Rico is clearly a matter of life and death. How power will be restored will also determine the future of this country's demographics, economy and political relationship to the colonial power.

It did not take long after the storms passed before corporate interests revealed themselves to the public as superheroes coming to save the day. Like vultures hovering over a carcass of what was considered to be Puerto Rico's first public industry, inexperienced yet politically connected firms lined up for contracts dispensed by local government. The disaster reeked of big money, as the Puerto Rico Electric Power Authority (PREPA), together with local political leaders, entertained – almost forcefully – private solutions for national reconstruction. Meanwhile, green energy giant Tesla set up pilot programmes for supporting a children's hospital with solar power. Yet for two months, Centro Médico, Puerto Rico's largest (public) hospital, continued to run on an irregular supply of diesel fuel and was continuously crippled by blackouts and interruptions.

Contributing to current international debates on energy democracy (see Sweeney, 2012; Angel 2016a and 2016b; Burke and Stephens, 2017), this paper aims to expose and critically analyse the conditions under which alternatives for power restoration in Puerto Rico are being disputed and implemented after Hurricanes Irma and Maria. We will look at how *disaster capitalism* and the *shock doctrine* (Klein, 2007) are manifested in

the specific context of a non-independent Caribbean country, which has faced a paralysing debt crisis accompanying decades of government negligence towards public services.

After assessing the immediate impact of Hurricane Maria, we will look briefly at the specific colonial relationship between Puerto Rico and the United States (US), and discuss how the island's political status has shaped economic development and modernisation. We will then examine Puerto Rico's energy regime prior to the natural disaster by reviewing the public utility's history, highlighting the impact of the debt crisis on the energy sector. This will entail considering neoliberal discourse and practices, and juxtaposing them to alternative arguments and civil society's concern for finding renewable energy solutions. From there, the paper will delve into the immediate responses presented just prior to and quickly after the tropical weather systems ravaged the country: community, NGO, and humanitarian aid responses, state postures, and corporate meddling into the crisis. A final section of the paper pronounces viable alternatives and future scenarios for Puerto Rico, taking into consideration the much-needed reconstruction in other related areas of public service. To this end, we hope that this paper will serve as an emblematic case study for the topic of energy democracy and sustainable alternatives for the peoples of the non-independent Caribbean.

## The *shock doctrine* comes to Puerto Rico

For years, experts both in the natural and the social sciences have been studying the relationship between natural disasters and human catastrophes. The bottom line is that high levels of inequality, lack of social and economic planning, and poor infrastructure are the precursors to the worst catastrophes instigated by hurricanes, earthquakes, flooding and even fires. Hurricane Katrina and its impact on mainly poor, and largely Black populations, in coastal Louisiana in 2005 was definitely a turning point in public debate concerning climate change and its impact upon society's most vulnerable (Fox Gotham and Greenberg, 2014).

While climatologists might look at how humans actively contribute to meteorological weather changes, leading to an increased number of hurricanes, it is necessary to look also at the socio-economic conditions that guarantee a short-changed arrangement where the ones who suffer most are the poor, the undocumented, and those living in dependent territories. Studies on environmental racism have flourished since Hurricane Katrina, depicting the structural violence committed, particularly to indigenous populations and people of colour historically (Hartman and Squires, 2006).

Taking it a step further is the theory of catastrophic capitalism elaborated by Naomi Klein in her celebrated book *The Shock Doctrine* (2007), which demonstrates how corporate interests behave before, during and after natural disasters, so as to identify how certain sectors of society actually



benefit from human catastrophe. Klein explains how the exploitation of shocking events (natural disasters, war, economic shock) is used to create 'democracy-free zones', where big economic interests benefit from a tabula rasa for markets.

In her most recent book, *No is Not Enough: Defeating the New Shock Politics* (2017), Klein actually describes how societal catastrophe is created, planned almost, so as to restrict the preventive measures that mitigate shock. She calls this *The Katrina Blueprint*, following findings after the 2005 weather system that displaced hundreds of thousand of people in Louisiana. In the case of Puerto Rico, the shock came before the hurricanes with the debt crisis that had been crippling the country for some time and assured the installation of a financial control board (*Junta de Control Fiscal*, in Spanish), as explained below. *La Junta*, as it is popularly called, was established in 2016 to reduce the public university's budget by 50 percent, eliminate the public school system, slash pensions and sell off public lands, beach-front public property and forested areas in order to repay a debt that has not even been audited. While mass migration was already taking place for over a decade, due to declining economic performance, the hurricanes sped things up, causing a mass exodus (Duany, 2017).

Worldwide, this scenario has been seen over and over again. However, Puerto Rico has a couple of things that other hurricane-affected regions do not: (a) strong movements of resistance against neoliberal governance and colonialism, and (b) a diaspora committed to helping out back home (Klein and Smith, 2017). From university students holding a three-month strike against budget cuts, to organised public school teachers who struggled against the closing down of over 200 schools within a year's time, Puerto Rico has a tradition of resistance and resilience. Within this context and tradition, the *Unión de Trabajadores de la Industria Eléctrica y Riego* (Electrical Industry and Irrigation Workers Union, UTIER), plays a pivotal role in the fight against privatisation and austerity measures.

### The unnatural disasters of Irma and Maria

The 2017 hurricane season had been particularly rough, seeing 17 storm systems develop on both sides of the Atlantic. It was the fifth most active year since scientists started documenting tropical depressions in 1851, but also one of the deadliest as it bore multiple category 5 hurricanes, three of which hit land. In late August, Hurricane Harvey, which originated in the Lesser Antilles badly affecting Barbados and other islands, made landfall in Texas. The storm left thousands of people homeless and inflicted billions of dollars in damages.

Then came Hurricane Irma on 6 September, which at a category 5 slammed small islands like Barbuda, destroyed much of the modern infrastructure of European territories like Saint Martin and the British Virgin Islands, pushing its way through Haiti, Cuba and Florida and killing hundreds. In Puerto Rico, over a million people were left without

electricity, and the island-municipalities of Vieques and Culebra were completely destroyed (Johnson et al., 2017). This was, however, only a precursor to a deadlier category 4.5 storm system ravaging the smallest island of the Greater Antilles.

After passing through Dominica and other Leeward Islands, Hurricane Maria pounded the US territory of Puerto Rico on 20 September, leaving over three million people without electricity and clean running water. The hurricanes came and left, but the misery continued months after the great shock. Puerto Rico, while often hit with tropical storms, rarely experiences hurricanes. In fact, it had been 19 years since Hurricane George swept through the island.

Within a day after the passing of Maria, electricity workers and later authorities claimed that over 80 percent of the island's electric cables were unbridgeable, hospitals became totally dependent on diesel generators, and for a period of five days, 70 percent of the island was left incommunicado (Hennessy-Fiske and Lee, 2017). While the government of Puerto Rico to this day has only recognised 62 people dead as a direct result of the hurricane, other reliable sources, such as Puerto Rico's Center for Investigative Journalism (CPI), found that way over 1.000 people perished during and throughout the first two months following the hurricane due to lack of water, medicines and electricity at homes and hospitals (Robles et al., 2017). These include diabetic patients who could not keep their insulin cool, those dependent on life support systems, people undergoing surgery and heart attacks induced by home wreckages. What officials and independent analysts do agree on is that the daily death rate in the ten days following the passing of Hurricane Maria was at a much higher percent than the average prior to the storm, and most of this was related to lack of electricity.

The humanitarian crisis in Puerto Rico has been created through misinformation, lack of planning, non-recognition of dire conditions by local and federal authorities, on top of colonial laws barring Puerto Rico from bringing in humanitarian aid from neighbouring countries. Three weeks after the hurricane, 84 percent of the population and most hospitals were still without power, while only 63 percent of the population had access to clean water. The lack of electricity, its link to health risks and the damage to the already struggling local economy caused a mass exodus of over 200,000 people within eight weeks to continental United States, mostly to the state of Florida; and the numbers continue to grow (Resnick and Barclay, 2017).

After three months, much of the country continued to be without electricity and 40 percent of local businesses were not operating. While almost all municipalities had generating posts, over a million people were living without electricity. Le *bouquet* final was thrown in December 2017, when the United States Congress passed a tax reform that will adversely affect the little manufacturing that is left on the island: a punitive 12,5

percent tariff on all manufactured goods 'exported' to the United States (Hernández, 2017; Martínez Otero, 2017).

## Puerto Rico and the United States

### The legacy of colonial industrialisation

In order to understand Puerto Rico's current predicament, it is mandatory to look at its colonial history. Following the Treaty of Paris, which put an end to the Cuban-Spanish and American War in 1898, Puerto Rico, together with Cuba, Philippines and Guam was sold by Spain to the United States as war booty. While Cuba (in 1902) and the Philippines (in 1948) were granted formal independence, Guam and Puerto Rico continue to be non-incorporated territories. Through the Jones Act of 1917, the US Congress imposed second-class citizenship upon Puerto Ricans, allowing them to move freely between the archipelago and the mainland, but island residents do not have voting representation in Congress, nor the right to participate in presidential elections.

A second Jones Act, also known as the Merchant Marine Act, passed by Congress in 1920, served as the basis for cabotage laws concerning maritime shipment of imports. Originally put in place to protect US maritime industries, the Jones Act requires that all merchandise transported by water to US ports be carried by US flag ships, and constructed and crewed by US citizens. This means that all foreign products and merchandise imported to Puerto Rico must either be shipped directly from expensive US mainland ports or slammed with high tariffs. The cost of living for Puerto Ricans living in the island is around 13 percent higher than in the US mainland, while the estimated costs of the 1920 Jones Act upon Puerto Rican consumers are US\$250-300 million annually (Morales, 2015; Denis, 2017). The Jones Act is directly related to the high price of products and essential services in Puerto Rico, including energy. Almost all fossil fuel generated electricity on the island depends on resources imported from the United States or other countries via US ports and ships. After Hurricanes Irma and Maria, Puerto Rico was not allowed to receive humanitarian aid, including water, gasoline and medical help offered by neighbouring countries – in particular Venezuela and Cuba.

Following the second World War, within a period of 20 years, Puerto Rico went from being a rural and agriculture-based economy, managed mainly by US-based sugar monopolies, to an industrial manufacturing powerhouse by way of US direct investment. The development strategy was based on industrialisation by invitation, using skilled but cheap labour, corporate tax exemptions, subsidised rents and infrastructure – including roads and transport, housing for workers, and communications – to create the Caribbean's first industrialised and high-consumer society. Manufacturing began with textiles, later electronics, then oil refinery and

petrochemical production, and finally pharmaceutical manufacturing. Accompanying this process was divestment from local agriculture and population displacement, causing the migration of millions of Puerto Ricans to the mainland from the 1950s until the 1970s. Today, more Puerto Ricans live on the mainland United States than in Puerto Rico itself. That is 4 million on the mainland and 3.4 million in the archipelago prior to the recent hurricanes.

Since 1950, Puerto Rico has been recognised as the Commonwealth of Puerto Rico (or *Estado Libre Asociado*), autonomous with its own constitution and territorial government but subordinated to US federal legislative, judicial and executive powers. While a pro-independence movement has survived years of brutal repression, the two parties dominating the political scene are the Popular Democratic Party (PPD) – traditionally in favour of maintaining the status quo – and the conservative annexationist New Progressive Party (PNP). It was under the governments of these two parties where all service policies, including energy, were carried out and debt accrued. Puerto Rico's dependent modernisation process was achieved under this political structure and colonial relationship. The Electric Power Authority, PREPA, was established in 1954.

In 1974, US Congress imposed the federal minimum wage for workers in Puerto Rico. In order to retain manufacturing industries, Federal Revenue Code 936, allowing for full tax exemption, was approved for 20 years starting in 1976. A sunset phase was allowed for another ten years up until 2006, precisely when Puerto Rico's economy started its downward spiral. For revenue purposes, Puerto Rico is considered to be a foreign territory, enabling corporations to transfer earnings back to the US mainland tax-free. For a period of thirty years, Puerto Rico was considered to be the industrial powerhouse of the Caribbean, manufacturing a significant portion of the world's electronics, petrochemicals, medical devices and pharmaceuticals.

As the manufacturing companies, mostly in the pharmaceutical industry, started to abandon the island, thousands of Puerto Ricans fell into unemployment. Later, in 2012, loopholes were made for foreign investors and individuals interested in buying up property on the island (Law 22), also offering tax exemptions, was an attempt to make Puerto Rico a fiscal paradise (Green, 2017). Until Hurricane Maria, over US\$30 billion of non-taxed income left the country annually (Klinger et al., 2013).

Puerto Rico's development strategy has always been oriented towards attracting foreign investment. Access to US markets, federal transfers, and the possibility that Puerto Ricans have as US citizens to migrate back and forth to the mainland, has rendered certain economic benefits that other countries in Latin America and the Caribbean do not have. Puerto Rico has the fifth lowest poverty rate in Latin America (Martínez, 2005). Nevertheless, 46 percent of the population lives in poverty by US standards; this compared to 15 percent on the mainland. The mean



income amounts to 37 percent of that in the continental US; that is, US\$19.183 versus US\$52.250. According to the Puerto Rico Institute for Statistics, the GINI Index rate for inequality is .559, the greatest income disparity in all of US territory and Latin America (Quiñonez-Pérez and Seda-Irizarry, 2016).

The lack of economic and trade sovereignty has kept the Puerto Rican economy under a straitjacket. As new markets for manufacturing production and cheap labour opened up in Asia, decades of economic dependency and an unsustainable economic model (industrialisation by invitation through tax exemption incentives) has kept the island from finding growth alternatives. What was previously showcased as a beacon of capitalist development and democracy for countries of the Global South, has in the last decade been falling into the abyss of post-development catastrophe. Since 2006, the average economic growth rate has contracted by -1,5 percent per year, while economic forecasts continue to display negative growth for the coming years. This was before the tropical weather systems of 2017 hit the archipelago. Workforce participation was at 40 percent, which is 20 percent lower than that of the mainland US, and the official unemployment rate remained at 12 percent (Quiñonez-Pérez and Seda-Irizarry, 2016). While the tourism sector did grow between 2006 and 2016, in no way can Puerto Rico compete with the more experienced and low-cost labour of neighbouring islands. Likewise, the country's agricultural sector would have to receive massive state-sponsored or foreign investment in order to make this sector relevant for the local markets.

Between 2007 and 2016, 10 percent of the island's population left for the mainland (Quiñonez-Pérez and Seda-Irizarry, 2016). Approximately the same number of people fled the island during the first two months following Hurricane Maria. Moreover, in the aftermath of the hurricanes, poverty increased by 8 percent, over 200 public elementary schools were closed, the healthcare system is falling apart, and the quality and reliability of all essential services continues to decline (Martínez Orabona et al., 2017).

### Debt and economic crisis

For decades, Puerto Rico's local administrators have also accumulated debt whose burden has been placed upon the people of the territory. Often, these loans were handed out as a reward for implemented conservative fiscal or neoliberal policies, reducing public expenditures whether it be personnel payroll or direct services for the population. For instance, in 2009, shortly after taking office, Governor Luis Fortuño signed a package of fiscal emergency measures that dismissed over 15,000 public employees and forced early retirement upon another 12,000. Within his four-year term, Fortuño raised public debt by over US\$16.5 billion, most of which were ridiculously high-interest loans taken out to pay for previous debts, and sold bonds to vulture funds (*El Nuevo Día*, 2014).

Current public debt now stands above 100 percent of Puerto Rico's GNP; that is US\$72 billion not including the debt owed to public pension funds, which is an additional US\$43 billion (Quiñonez-Pérez and Seda-Irizarry, 2016). This debt has never been audited, and government officials and the court system have systematically denied any chance of it to be audited. Economic justice activists claim that a large part of the debt is most likely unconstitutional or illegal, and certainly odious. Previously, under the administration of Alejandro García Padilla, Puerto Rico's local senate did have a Commission to Audit the Debt but this was dismantled when Ricardo Rosselló took office in January 2017. Out of the total public debt, PREPA owes US\$9 billion to its bondholders (Williams Walsh, 2016).

### New actors and high-level colonial politics

In 2016, under the administration of president Barack Obama, US Congress passed the Puerto Rico Oversight Management and Economic Stability Act, or PROMESA (ironically meaning promise in Spanish), which established a federally-run financial control board to guarantee payback to bondholders by way of imposing austerity measures in the public sector for a period of five years. Officially called the Financial Oversight and Management Board (FMOB), this control board is comprised of seven non-elected officials, appointed by the president of the US for a five-year term, holding plenipotentiary powers within the PROMESA framework over the government of Puerto Rico and all its finances. This body, which is administered by New York City, is empowered to dismiss public workers indiscriminately, raise water and electricity tariffs, impose cuts on public health services and education, and facilitate the sale of public land and natural resources. Prior to the hurricanes, a policy report for PROMESA (Krueger et al., 2016) considered exempting Puerto Rico from federal minimum wage, reducing it by 25 percent (or to US\$4.25 per hour) for workers under the age of 25. The FMOB board (*La Junta*) continues to be empowered to do so.

Four of the FMOB members are Puerto Ricans well known to both local politics and corporate management. These are Carlos García, José Carrion III, José R. González and Ana Matasantos; each identified as either working for previous administrations responsible for the debt crisis and/or lobbyist for privatisation schemes. For instance, Carlos García, was the architect of Governor Luis Fortuño's Law 7, which dismissed thousands of public sector workers.

As president of the country's Governmental Development Bank under Fortuño, he ensured the accruing of bond debt that Puerto Rico can never pay back. García, a former executive of the Caribbean Financial Group Holding, was also director of the Economic and Financial Restructuring Board – a body comprised completely of the local corporate business community that consumed public funds in order to push Private Public Partnership (PPPs) in public services, roads, infrastructure and energy (Costa, 2016).

However, perhaps the most bizarre appointment to FOMB was that of Executive Director Natalie A. Jaresko. A US-born technocrat who served as Ukraine's Minister of Finance between 2015 and 2016, she was appointed by president Donald Trump in March 2017. Jaresko's annual salary for serving as Executive Director is US\$625,000 plus travel benefits, lodging and daily allowances. In a Washington congressional hearing on the emergency situation following the hurricanes, Jaresko admitted that she had no idea of the impact that the Jones Act II had upon the Puerto Rican economy, nor did she know when the Jones Act was instated (Gutiérrez, 2017). FOMB costs Puerto Rico tax payers over US\$20 million annually, including consulting services provided by the likes of CitiGroup and McKinsey and Co., among other firms closely linked to the profiles of board members.

In June 2017, the government of Puerto Rico finally announced that the US\$72 million debt was unpayable and declared bankruptcy. It was the largest bankruptcy filing in US history; that is, four times more than the city of Detroit. Supreme Court Chief Justice John Roberts then named Judge Laura Taylor Swain as the life-tenured judge of the Southern District of New York to preside over the case. Swain has presided over high-profile corruption cases, the most prominent of which are the SAC Capital Advisors hedge-fund scandal and the Madoff cases that led to prolonged criminal proceedings and jailing of Bernard Madoff's employees (Goldstein, 2017). Since July 2017, Swain has been the sole authority to consider litigation between local government officials, bondholders and the Financial Oversight and Management Board. As will be recounted below, Swain intervened in the government conflicts concerning the restructuring of the Puerto Rico Electric Power Authority (PREPA).

## The energy sector before the hurricanes

There are big challenges to running an electric grid on a tropical island. Maintenance is certainly costly, as salt vapour from the sea corrodes electric equipment. There are also geographical and topographical considerations to be taken. Historically, most of Puerto Rico's energy has been produced on the island's southern coast, whereas the bulk of consumption is found in the northeast part of the island. Lush forest growth, especially in the mountainous rural areas, limits access to power lines. Still, there is no excuse for the decades-long lack of investment and maintenance of infrastructure. The average age of the country's power plants is over 40 years. Experts say that standard operable plants should not be older than 20 years old without substantial replacements (Conca, 2017).

Although power outages were commonplace in various parts of the country, the tipping point preceded the hurricanes by one year and a day. On 21 September 2016, following a failure at the Aguirre Central Thermolectric, the entire country experienced a power outage that lasted

two days for most urban areas and up to a week in isolated rural areas. The public utility's trade union UTIER reminded the country that for years it had been warning public officials that this day would come.

Divestment, or defunding, and the abandonment of public utilities are considered to be typical tactics used in neoliberal governance to pave the way for privatisation. This has been documented in many reports concerning cases of both privatisation and the entry of public private partnerships to the public sphere (see Kishimoto and Petitjean, 2017). What is unique in the case of Puerto Rico is that not only has PREPA been set up for privatisation, but also that its debt problem has been used as an excuse to privatise other services and public entities. The biggest example is the forced sale of Puerto Rico's main airport Luis Muñoz Marín International to private foreign investors, due to the Puerto Rico Port Authority's US\$1 billion debt – owed mostly to PREP (Williams Walsh, 2016).

### In the beginning...

From 1893, when local private businessmen imported small-line generators from Spain, until 1915, when the government of Puerto Rico inaugurated the first hydroelectric power plant in Carite (Carite 1), electric production remained in private hands. In 1908, the colonial government decided to use electricity to pump waters into an irrigation system in the southern part of the island, in order to benefit agriculture. A second hydroelectric power plant (Carite 2) was set up in the central mountain region in 1922. This would serve as the main source for electric power production and distribution across the country.

By 1926, the government of Puerto Rico established a regulating board for the use of water resources. From then on, private generating plants were bought up by the government, which in turn developed large operations in the mountainous central regions to service the entire island. In 1937, when thermoelectric power was becoming popular, the government bought the Ponce Electric Power Company and extended lines providing 34,000 volts each. Until this point, electricity production was decentralised and operated on the basis of prototype microgrids.

The nascent industrialisation process that Puerto Rico underwent produced an explosive demand for electricity. In 1941, the still non-autonomous government passed Law 83, establishing the foundations of a new agency: the Puerto Rico Water Resources Authority (PRWRA), responsible for the electrification of the entire archipelago. In 1949, the agency bought the Puerto Rico Railway and Light Company, and the Mayaguez Light Power and Ice Company, to create a state monopoly ushering Puerto Rico to modernisation.

Imitating the US model of provision of power to rural areas, the agency started using petroleum to generate electricity for roads and new housing settlements in addition to areas reserved for manufacturing production. By Law 57 of 1979, the agency changed its name to the Puerto Rico

Electricity Power Authority (PREPA), as production and distribution was separated from hydroelectric generation and water pumping for irrigation. In 1981, PREPA purchased the last autonomous generating plant from the Municipality of Cayey, in the central mountains. This consolidated all electrical power into public hands. Today, PREPA serves more customers than any other public electrical utility in all of the United States. For this reason, the post-hurricane disaster is considered to be the largest and longest blackout in US history.

As manufacturing became Puerto Rico's main driver of economic development, electricity started to play a more essential role. The production of pharmaceuticals and medical devices accounts for approximately 65 percent of the country's energy demand. Today, most of the island's population continues to be concentrated on the northern coast and the metropolitan area of San Juan. Puerto Rico's biggest electricity generators are found on the island's southern coast, concentrated near the town of Aguirre. There were four main high-capacity lines that brought electricity upwards, passing through Cordillera Central mountainous region, lush with forests and water streams. In the aftermath of the hurricanes, during the power restoration effort, workers had to be brought in by helicopter to repair the fallen lines.

### **Generation, distribution and privatisation**

Up until Hurricane Maria's landfall, two-thirds of Puerto Rico's electricity was generated by burning petroleum at six stations with steam and combustion turbines, and combined cycle technology. Almost a third of the electricity was generated by gas- and coal-fired plants, run by private, independent producers. In short, Puerto Rico's power generation was 98 percent non-renewable, fossil fuel based (EIA, 2017).

The entire power system has six fossil fuel plants owned and operated by PREPA. The public utility also owned seven hydroelectric plants. Private producing plants include two wind parks and five solar farms. The grid itself consists of 2,478 miles of transmission lines, 31,485 miles of distribution lines and 334 substations. Prior to the storms, electric power capacity was at 5,839 MW. Of these, 961 MW were provided by private EcoElectrica (gas-fire) and AES (coal-fire) who hold a 20-year power purchase operating agreement.

More than half of the electricity PREPA generated and distributed was destined to the commercial sector. Industry, including agriculture accounted for one-eighth of consumption, similar to the amount used for the lighting of public spaces, streets and roads. Residential sector (private and public housing) accounted for little more than one-third of electricity consumption. That is, per capita electricity consumption amounts to two-fifths of the average in US states and territories.

PREPA rates, however, are higher than anywhere in the United States except for Hawaii, which is also subject to the Jones Act of 1920 and until recently has been forced to import fossil fuels in order to generate



electricity (EIA, 2017). PREPA has the capacity to provide the country with 5,838 MW daily, but usually generates half of that. Ideally, PREPA would be producing between 3,600 and 4,000 MW daily, especially during the summer months, when air conditioners are used more often for longer hours. Still, many of the power plants – both public and private – are deficient and outdated, leading to frequent blackouts (Alvarado León, 2017).

### Gas

In 2005, under the administration of governor Aníbal Acevedo Vilá, the government of Puerto Rico planned to construct the Southern Gas Pipeline from Peñuelas to Salinas. The project was interrupted by a popular environmental movement that opposed a gas line running through the southern coast and flat agricultural areas. In 2012, under governor Luis Fortuño, the government entertained the idea of setting up a Northern Gas Pipeline, also known as the Green Way Project (*Vía Verde*), which would deliver gas from south to north through the Cordillera Central, providing just over 70 percent of the island's electric energy needs. This was also opposed by local community and US-based environmental groups, and representatives in the US Congress.

To reduce fuel costs, PREPA decided to add natural gas combustion capability at its largest generating stations, starting in 2012. This depended on the construction of Liquefied Natural Gas (LNG) import terminals and natural gas distribution infrastructure on the southwestern coast. LNG is imported mainly from Trinidad and Tobago on US ships. Beginning in 2012, LNG imports increased to support the power generation. The US Federal Energy Regulatory Commission (FERC) approved a truck-loading facility at Peñuelas terminal so that LNG could also be used in transportation. These plans were obstructed temporarily, but are now considered again by the government and FOMB.

### Coal

Perhaps the dirtiest and deadliest power generation in Puerto Rico comes from coal burning. AES has been servicing Puerto Rico's power authority as a limited corporation since 1993. In 2002, Puerto Rico government officials signed a 25 year contract with AES to burn coal for electricity in the southern coastal town of Guayama, and since has provided the country with 454 Megawatts to PREPA. The annual earnings ring to the tune of US\$300 million. The coal is imported from Colombia, but the dumping of toxic ash residues continue to be a problem for broad sectors of Puerto Rico's society.

Originally, the 25-year contract included a clause promising not to dump residue toxic ash anywhere on the archipelago. But in July 2015, AES signed a deal with PREPA, eliminating clauses to prevent the company from dumping residues in local landfills. Since 2014, undetermined quantities of waste have been found in residential and commercial areas, exposing the local population, soil and aquifers used for drinking water.

The major concern for public health considerations is the amount of heavy metals deposited into the soil and found in the aquifers, especially arsenic. As has been demonstrated in an investigative journalism project entitled *Toxic Ash: A Caribbean time bomb*, to get information about the presence of toxic ash in Puerto Rico, was like pulling teeth without anaesthesia. It took the mobilisation of tens of thousands of protesters, residents and cancer patients, throughout 2016 and 2017, to get federal and corporate media attention (Alfonso, 2016).

Between 2014 and 2015, 350 million tons of toxic coal ashes, also known as fly ash, were dumped illegally, violating all previous agreements with local governments and Puerto Rico's Environmental Quality Board. An additional 7,000 tons were dumped at Peñuelas' Valley Landfill, the site of large citizens' actions organised by local residents, environmentalists and human rights activists. On 17 August 2017, activists symbolically laid ashes on the stairs of the Capitol building in San Juan, in protest against environmental deregulation and neoliberal austerity measures imposed by the Financial Supervisory Board. Their slogan: *"the only ashes that we want are those of the Junta"*.

### Non-regulation

At the behest of US federal regulations and in response to the ever mounting crisis of unsustainable energy production and pricing, in 2014, Puerto Rico's legislature passed Law 57, with the intention of reforming the country's energy sector and improving the efficiency of fossil fuel generation by 60 percent within a three-year period. The law established the Puerto Rico Electricity Commission to regulate the state monopoly, oversee wholesale and retail rates, set efficiency standards and ensure compliance with the 2010 Renewable Portfolio Standard (RPS). Other entities, such as the Centre for a New Economy, also suggested that an independent non-politicised body should regulate the public utility. The Commission was created in the midst of labour conflicts between PREPA administration and the utility union. As PREPA authorities started contracting private power generation, UTIER demanded more transparency and respect for collective bargaining.

It was precisely in 2014, under the administration of Alejandro García Padilla, when PREPA's US\$9 billion debt was set to be restructured separately from the rest of Puerto Rico's unaudited US\$72 billion public debt. PREPA entered into forbearance with its lenders, renegotiating agreements up to 14 times until 2017. In September 2014, PREPA hired a Chief Restructuring Officer who would be responsible for designing a business plan to get PREPA out of debt, improve infrastructure and service, and find solutions for reducing the costs of energy for residents and consumers. The officer did design a business plan, which would require investment into new generators, to the tune of US\$3.5 billion – a recommendation that UTIER has long called for but then at only a fraction of the cost (Collazo, 2016).

In mid-2015, PREPA paid its creditors US\$415 million. To provide cash for operations, insurers of PREPA's power revenue bonds agreed to purchase US\$128 million in short-term notes, scheduled to be paid in full by December 2015. PREPA struck four similar deals across the next two years. Later in 2015, PREPA signed restructuring support agreements with an ad hoc group of bondholders but the agreement was extended seven times up until early 2017. Throughout this period, the Chief Restructuring Officer – Lisa Donahue – repeatedly argued in favour of the privatisation of the company and rejected alternative rescue plans submitted by the bondholders (Schoene Roura, 2017).

In the end, debt renegotiations did not provide PREPA any relief, nor was infrastructure improved or service prices reduced. On the contrary, within a two year period, prices increased by 15 percent, close to 300 percent higher than the cost for electricity in New York. With various contract renewals in a 24-month period, Donahue was awarded a grand total of US\$36.7 million for her 'work', leaving the country with nothing to show for the employment of a foreign representative of a private consulting agency. In May 2017, The *Wall Street Journal* published an open letter written by four of the seven board members, straight-out calling for the complete privatisation of the public utility (Biggs et al., 2017).

### Private Public Partnerships

Promising to advance improvements in infrastructure and public services through privatisation schemes, in January 2017 governor Ricardo Rosselló passed legislation to amend the 2009 Puerto Rican Public Private Partnership (PPP) laws. Private companies would be allowed to approach the government with unsolicited proposals for joint ventures, fast-tracking PPPs through a separate authority. The new law was followed up by a PPP summit (P3) held in San Juan in April, where corporate interests in public services were exposed. By the end of May 2017, seven proposals were brought to legislature for consideration, three of which concerned power generation and distribution. However, it would not be until after the passing of Hurricane Maria that three PPP arrangements would be revealed to the public.

### A preliminary summary

What remains clear is that before the hurricanes, Puerto Rico's energy regime suffered from:

1. *Decades of divestment and abandonment of infrastructure, from power generation to distribution.* The failing infrastructure had been publicly denounced by the UTIER union, but all the criticisms and proposal were consistently ignored by the Puerto Rican government.
2. *A renewable energy investment deficit that is guided by local and federal low-outcome energy transition plans.* Following measures implemented in 26 states and territories of the United States,

Puerto Rico's local legislation requires that the public utility and eventual private distributors reach the 'hard target' of 15 percent renewable energy sources for electric generation by 2020 and 20 percent by 2035 (O'Neill and Borges, 2014). These targets were decided in 2010, but more recent technological innovations would now allow renewable energy to (almost) completely replace fossil fuels for electricity generation, as other Latin American countries such as Costa Rica and Uruguay testify.

3. *A lack of democratic and transparent governance, whereby external bodies representing corporate interests are brought in to solve energy issues.* These external and newly created regulating bodies, are not accountable to the citizens, nor have they developed practical solutions for the energy crisis that preceded the hurricanes. Seeing that all financial administration is now under the unelected Financial Oversight and Management Board (FOMB), and bankruptcy measures are handled by a US judge, we can also conclude that the lack of democratic governance is directly linked to Puerto Rico's colonial condition.

### Civil society ignored

In June 2015, the University of Puerto Rico (UPR) established the National Institute for Energy and Island Sustainability (INESI), whose purpose is to put local knowledge and research resources at the service and for the benefit of the country, exploring also themes related to development policy and energy democracy. Participants in its foundational assembly included professors, students and researchers from UPR and other universities, trade unionists, community leaders and other representatives of civil society.

In March 2016, INESI signed an agreement of collaboration with the Solidarity Programme (ProSol) of the UTIER union to build or improve aqueduct systems for 32 low-income communities. This agreement aims at facilitating access to potable water using renewable energy sources. INESI and UTIER have affirmed that communities should be more involved in knowledge appropriation around energy sources and alternatives. Additionally, researchers at INESI have taken an explicit position of opposing the privatisation of PREPA and its grid (*Diálogo UPR*, 2016).

INESI's steering committee has also been vocal against austerity measures imposed by the *Junta*. The government has traditionally used third (private) sources for consulting and innovative projects, costing taxpayers hundreds of millions of dollars annually. Experts involved in INESI-sponsored research have insisted that the country should use the resources and knowledge produced at the public university to help resolve the problems affecting welfare, energy and infrastructure. In a two-year period, PREPA shelled out US\$60 million in consulting contracts for projects that could have easily been executed by researchers based at the University of Puerto Rico (UPR) (*Primera Hora*, 2017). INESI has also been a

strong advocate for making the transition to renewable energy sources, denouncing the country's 'oil slavery' (Orama Exclusa, 2017), and has publicly questioned the supposed benefits that PPPs can offer to the Puerto Rican energy sector (Castillo Polanco, 2017).

For years, UTIER has been warning the country of the government's negligence and intent on destroying PREPA in order to make way for privatisation. The government and private interests' response has been a public smearing campaign against the workers, and a reduction of employees by 30 percent within five years since 2012 (UTIER, 2017). After employees retired, PREPA has refused to hire new full time, pension paying workers.

A major UTIER's action took place in August, just prior to the hurricanes, when militants carried out a series of protests to denounce government plans to privatise operational services. Union leaders stated publicly that their organisation had presented lower cost alternatives that would be beneficial to both consumers and workers. PREPA director, Ricardo Ramos, said that since the utility was in a state of emergency, he welcomed fast-track PPP contracts because there the company did not have enough employees with the talent and training needed to restore the failing grid, and that contracting out human resources was necessary to avoid another blackout like that of 21 September 2016. UTIER estimates that the initial costs for such type of employment –outside of collective agreements – would amount to US\$78 million (author's interview with UTIER's President, Angel Figueroa Jaramillo).

## The immediate responses to the disaster

How energy production and distribution is restored will shape what form recovery takes in Puerto Rico. With competing political and economic interests, as well as diverging visions for what a sustainable and just society should look like, neither the island's government nor the federal administration have a coherent plan for reconstruction. Nevertheless, the lack of plan might very well serve the complete dismantling of PREPA and the turn to decentralised solutions. The varied first responses to the largest blackout ever experienced in US history included individualised solutions, responses from the diaspora, governmental corruption, the shuffling of political players and corporate entries.

### Individual solutions

When catastrophe hits, everybody tends to fend for his or her own safety. The first response to a natural or manmade disaster is individual. This has been especially true in a society where integrated planning was absent, infrastructure had not been maintained, and the burden of debt was put on the backs of ordinary people. This is not to say that there was a lack of solidarity when the island was hit by hurricanes twice in 2017. On the contrary, compassion and camaraderie, and not federal aid or government



attention, is what kept most of the population alive in the weeks and months following the storms, but many life saving functions were mostly left to the individual. Generators are always on sale at hardware stores and anyone who is able to afford one or two for their home or store will have them readily available, especially during hurricane season. The most common generators operate on lead-free gasoline and diesel, available at local gas stations. These can provide limited electricity specifically for electronics and household appliances like refrigerators and air conditioners. Some homes had solar panels, but many of them were destroyed. These individualised solutions are meant to keep people afloat for days or weeks, not for months.

### The government

Observers of the tropical weather systems were clearly and publicly wary of the survival of Puerto Rico's electrical grid. Under the impression that Hurricane Irma was to hit Puerto Rico full-force, public officials warned that it would take six months to restore electricity to the entire archipelago. Irma scathed Puerto Rico and only a few of the municipalities were affected, but catastrophe was announced weeks prior to the second, deadly hurricane. Watching Maria's imminent landfall entailed recognising the end of the power regime and the final days of the Puerto Rico that used to be.

On 17 September, just three days prior to Maria making landfall, governor Ricardo Rosselló declared a state of emergency, mobilising the National Guard and resources to support emergency operations. The day after, US president Donald Trump followed up on declaring states of emergencies for Puerto Rico and the US Virgin Islands, authorising the Federal Emergency Management Agency (FEMA) to mobilise essential resources. Refugee shelters were set up in community centres and sport complexes, and batteries, food and bottled water were purchased by public entities. During the days following the storm, truck drivers and supplies transporters were for no apparent reason, not allowed to enter the ports of San Juan. Residents of the capital city and mayors of other towns were found screaming on whatever social media channels they could access. Puerto Rico's largest public hospital, Centro Médico, run by the University of Puerto Rico, operated on an irregular supply of diesel fuel to service emergencies, including surgeries and dialyses, much of which were conducted under the lamps of mobile phones. All the while, the colonial Jones Act was kept intact, barring direct help from other neighbouring countries like the Dominican Republic, Mexico, Cuba and Venezuela. President Trump approved an exceptional 10-day waiver, but the government of Puerto Rico did not record a single foreign ship entry during that time.

On 22 September, the US Army Corp of Engineers (USACE) was mobilised. Working with FEMA, USACE was then authorised to identify private contractors to help restore power in Puerto Rico. The state of emergency

was guided (and restricted) by the Robert T. Stafford Disaster Relief and Emergency Act of 1988, which allows federal authorities to restore and rebuild infrastructure to the original state in which it was found prior to the disaster; therefore, Puerto Rico's electrical grid would be built back up to what it looked like prior to hurricane Maria, disregarding damage inflicted by Hurricane Irma. On 16 October, USACE contracted private corporations to begin emergency power relief, grid repair and the restoration of transmission lines. By November, over 300 temporary generators were set up throughout Puerto Rico.

Earlier in October, FEMA released US\$128 million for emergency reparations and restoration. This followed president Trump's infamous visit to Puerto Rico, by which he minimised the number of deaths and other effects of the catastrophe. The images of a president throwing paper towels to hurricane victims will be remembered as one of the most degrading post-disaster responses in world history. While entertaining options for recovery efforts and strategies for getting more help from a federal government that demonstrated very little interest in Puerto Rico, governor Ricardo Rosselló publicly announced his endorsement of seven private-public partnerships (PPPs) for kick-starting the economy, three of which were aimed at generating energy independently of PREPA. The first is a hydroelectric project by Cube Hydro, the second is a proposal offered by Bostonia Group for financing energy system projects, and finally, the governor spoke of "energy diversification", signifying more gas importation, which was presented by Puma Energy (Ruiz Kuilan, 2017).

Governor Rosselló then revealed his plan for complete recovery. This involved help from FEMA, USACE and contracted corporations, in order for PREPA to provide 95 percent of its original capacity of energy distribution to the country by 15 December. Here, a public debate concerning the terms *electricity generation* and actual *electrical service* was unleashed. Civil society organisations and UTIER made the point that percentage of generation is not the same as the percentage of clients and homes served.

To date, PREPA has 1,48 million clients, counting both homes and business. By 31 December, only 55 percent of the population had access to electricity, and as this report went to press, mountain municipalities were still without power.

On 7 November 2017, Governor Ricardo Rosselló announced to US Congress that it was his desire to have 20-25 percent of electricity generated by solar power. This was only after much public debate and pressure, and when questionable contracts were investigated by the Federal Bureau of Investigations (FBI). Moreover, the gesture seemed to be part of a political play with San Juan Mayor, Carmen Yulín Cruz, who two days earlier had ordered that all municipal power restoration initiatives be based on solar power. While the governor suggests 20-25 percent, experts, trade unions and civil society groups are demanding 100 percent clean, renewable energy. But that is not realistic in the short term.

Towards the end of November, US Senator from Vermont and former presidential candidate, Bernie Sanders worked with San Juan Mayor Carmen, Yulín Cruz, and other US Congressmen to present a comprehensive recovery plan for Puerto Rico and the US Virgin Islands to the federal government. After completing a fact-finding mission, Sanders served the legislature with a bill that would include a massive investment of US\$146 billion targeting health, housing, infrastructure development, debt relief, and funds to be used by FEMA to reconstruct the territory's power grid (Marans and Kaufman, 2017). Needless to say, the Republican-dominated Congress did not give the bill a chance.

On 21 November, Puerto Rican Independence Party legislator, Denis Marquéz, organised a public debate entitled *The Energy System that Puerto Rico Needs* at the UPR. Panellists included four professors of electrical engineering working for INESI and the Tropical Institute for Energy, Environment and Society (ITEAS), and representatives of the electricity workers union UTIER. The experts highlighted the country's potential for the development of renewable sources, as the country's potential production of solar energy per square kilometre is double that of Germany, the world's largest producer of solar-based electricity. Furthermore, some experts recommended the installation of decentralised microgrids to be managed locally or regionally; this means not to dismantle the national network, but to use microgrids for everyday use and maintain the national network for backup. Such proposal remains a contested issue: while some privileged citizens may be able to afford placing solar panels on their homes, there are many who would not be able to afford it or pay for maintenance. As UTIER's ex-president Ricardo Santos stated, "the use of microgrids can not excuse the government from making sure that residents in rural areas have access to electricity."

### Not-for-profit NGOs

In the hours following the landfall of Hurricane Maria, the Coastal Marine Resource Centre (CMRC), a non-profit focused on issues of social and environmental justice, set up the website 'Resilient Power Puerto Rico', to gather funds for the purpose of providing generators to the most underserved areas of the island as a "relief measure to get communities powered up and back in contact with a planned evolution into long-term disaster-preparedness and clean-energy solutions to impact the entire island" (see <<http://resilientpowerpr.org/resilientpr>>). CMRC has experience setting up temporary solar panels and disseminating batteries for weather-stricken neighbourhoods in the New York City area following Hurricane Sandy in 2012. Churches, community organisations universities joined in on supporting such efforts.

### The diaspora

The Puerto Rican diaspora also played a vital role, drawing attention to the dire situation the country was facing and contributing immeasurable donations that were mobilised through crowdfunding. From New York and

Chicago, to Madrid and Amsterdam, Puerto Ricans abroad set up websites and forums dedicated to helping their homeland. Peculiar to this moment was the commonplace recognition that local and federal governments were not reliable sources of information, and secondly, that large NGOs are notorious for collecting money, food, water and services that are never delivered. Through the use of social media and alternative communications networks, grassroots community organisations were capable of guaranteeing that help would be delivered without making profit. This, of course, also depended on an army of volunteers mobilised on Puerto Rico itself. One of the biggest examples of the diaspora mobilising resources is the *Red de Apoyo Mutuo Para Puerto Rico*, which became a digital platform coordinating decentralised efforts to communicate, collaborate and coordinate relief.

A week after Maria, engineers, health workers, architects and municipal workers throughout the world came together via Skype to discuss what resources they had at their behest. From these meetings and the initiatives of Puerto Rican collectives worldwide, some key community-based organisations were identified as the preferred beneficiaries of solidarity. These were: Casa Pueblo, the communities of Caño Martín Peña, Taller Salud, Comedores Sociales, Brigadas Solidarias del Oeste, and the national Puerto Rico organic farming group network Boricué. All of these not only received funds for purchasing and delivering first aid to communities, but also the places and organisations to which solar panels, power batteries and makeshift homes were distributed.

### Fishy contracts

On 26 September, just six days after the storm passed, PREPA signed a contract with an obscure company headquartered in Whitefish, Montana to take the bulk of the money made available for immediate work on reparations. Out of nowhere, PREPA's executive director Ricardo Ramos announced that he had awarded a US\$300 million contract with Whitefish Energy (Robles, 2017). However it did not take long before whistleblowing journalists and concerned legislators found out that the two-year-old company only had two full-time employees on the day Maria hit Puerto Rico. Later on, it turned out that Ramos and Whitefish Energy CEO Andy Techmanski had contacted each other shortly after Irma passed through the Caribbean, discussing 'what if' scenarios. Suspicion grew as independent journalists revealed that Whitefish, in Montana, is the hometown of US Interior Secretary Ryan Zinke.

The little-known corporation had previously won expensive US federal contracts for what can be considered minuscule jobs, such as US\$172,000 for replacing a metal pole structure, and US\$1.3 million to replace a 4.8 mile transmission line in Arizona (Vardi, 2018). The fact is that Whitefish had no experience in dealing with anything near the magnitude of Puerto Rico's grid disaster; that is, 2,400 miles of transmission lines and 300 substations, 80 percent of which had been permanently damaged.

The debacle went from fishy to foul when Puerto Rican legislators, UTIER and the US Army Corps of Engineers looked at the details of the contract. PREPA gave Whitefish Energy an initial payment of US\$3.7 million for mobilising personnel (280 mostly subcontracted workers) and equipment. Linemen began receiving US\$462 per hour and supervisors US\$319 per hour, not including food and accommodation. This contrasts to willing and able public workers who would earn US\$21 per hour for doing exactly the same jobs. Social media burned with indignation, putting both governor Rosselló and PREPA's board in the spotlight. Finally, the US Congress Natural Resources Committee ordered an investigation into the contract. Findings demonstrated that the contract had numerous illegal clauses. One finding revealed how Whitefish could not be held accountable to any timeline and that the company could not be audited (Democracy Now!, 2017). Following public criticism, San Juan mayor Carmen Yulín Cruz called for the cancellation of the contract, something which governor Rosselló and PREPA's executive director reluctantly did on 29 October, on the basis of irregularities in competitive bidding procedures.

### Zamot and the FOMB

Following the Whitefish Energy company scandal, on 25 October 2017 FOMB appointed a retired Air Force colonel as Chief Transformation Officer for Puerto Rico's bankrupt public energy company. The newly created position would place Mr. Noel Zamot on top of PREPA higher authority – Ricardo Ramos, who had been appointed by the governor of Puerto Rico and who later resigned his post, in November 2017. Civil society groups and the electricity workers union UTIER criticised Zamot's appointment as a means to fast-track privatisation schemes in the power sector, in the context of a huge energy crisis. Indeed, FOMB Executive Director, Natalie Jaresko stated publicly that the appointment of Noel "is an essential step in achieving the goals of reliable, competitively priced electricity and attracting the private capital we need to revitalize the economy of Puerto Rico", and adding that "it is common practice in reorganization cases for a debtor in possession to name a chief restructuring officer to effectively manage the entity while it is in bankruptcy" (FOMB, 2017). Zamot was in favour of 'eco-friendly' privatisation, welcoming an offer by green energy giant Elon Musk (see below).

FOMB has publicly affirmed that its "main priority" has been "to privatise PREPA as soon as possible", arguing that by "depoliticising PREPA and allowing it to receive an injection of millions of dollars from abroad, clients would receive better service at a lower price", as Board president José Carrión III has stated. In his words, the *Junta* "firmly believes that PREPA's business culture is rotten and that it is time to get out of it, and inject private capital", taking PREPA "out of the hands of politicians and beginning the process by which private capital can be invested" (*Metro Puerto Rico*, 2017).



## Tesla steps in

On 5 October 2017, Puerto Rico governor Ricardo Rosselló exchanged friendly words on Twitter with Tesla CEO, Elon Musk, about the possibility of collaboration in rethinking Puerto Rico's energy regime. Musk offered to "revamp" the entire energy grid, in what was perceived by local observers as an all or nothing suggestion. "The Tesla team has done this for many smaller islands around the world, but there is no scalability limit, so it can be done for Puerto Rico too", Musk wrote on Twitter (Estevez, 2017). He was referring to cases like a small island in American Samoa, where Tesla eliminated the need of using diesel run generators by developing microgrids of solar panels and the installation of Tesla battery packs. The system can go three days without sun and has a recharge capacity of up to seven hours (Vincent, 2016).

Tesla was not the only one who rushed to Puerto Rico seeking new business opportunities after the hurricanes struck the country. *Bloomberg* and *Fortune* reported that Sonnen, Arensis Corp. and Sunnava Energy had also landed on the island, bearing gifts of solar batteries. But TESLA CEO Elon Musk stole the show when a day after the storm he started sending hundreds of the company's Powerwall battery systems to Puerto Rico. The billionaire also made a donation of US\$250,000 to hurricane victims (Korosec, 2017). This was followed up by Musk setting up a model of a self-sufficient energy system at San Juan Children's Hospital, a private health facility, using the clinic's parking lot to install a mini solar farm.

Let down by local and federal government, most Puerto Ricans were happy to believe the promise of swift solutions offered by private corporations. In an article published in *The Nation*, Naomi Klein and Avi Lewis (2017) have warned that salvation – meaning climate justice – cannot come from billionaires like Musk, and that there are issues such as labour rights, prison labour and corporate welfare which need to be dealt with. One outstanding question is why do local governments offer subsidies to company's like Solar City, also founded by Musk, but not invest in public energy utilities like PREPA directly. In any case, the technology needed for a new robust, resilient and sustainable power regime resides in the hands of these corporations.

## A colonial tax reform and concerted effort

On 11 December 2017, the Puerto Rico Energy Resiliency Working Group, comprised of 14 public and private entities, including the Office of the Governor of New York State, released its 63-page report *Build Back Better: Re-imagining and Strengthening the Power Grid of Puerto Rico*, with a US\$17,6 billion electric restoration plan to be executed within 10 years (Cuomo, 2017). The report was prepared for the Office of the Governor of Puerto Rico and FEMA. While the report contained very important technical information about energy grid conditions before the hurricane and the costs of damage and potential repairs, it suffers from flawed presumptions. The first of these is the notion that PREPA will continue to

exist as a public entity; whereas, FOMB president José Carrión III made very clear his intentions to have the utility privatised.

Secondly, the report makes projections for a Puerto Rico that continues to be industrialised, in terms of production (manufacturing) and the lifestyle of its residents. Earlier, we explained how Puerto Rico suffered from industrial collapse as result of the disarray in which manufacturing companies found themselves after tax exemptions disappeared in 2006. On 21 December 2017, US Congress passed a tax reform initiative that will impact not only US business-worker relations but also decimate the vestiges of manufacturing on the island. The new law imposes a 12.5 percent tax upon all manufactured goods imported from outside the United States. As mentioned earlier, although a US territory, Puerto Rico is considered to be a 'foreign country' as far as federal tax purposes are concerned. What was thought to be the pinnacle of Puerto Rico's successful industrialisation process has now become a curse, especially because its colonial status bars the island-nation from trading directly with other countries. Prior to this law, San Juan Mayor Carmen Yulín Cruz minced no words stating that "this measure will be worse than Hurricanes Irma and Maria put together" (Gillespie, 2017), meaning that there would be virtually nothing left upon which the country's economy could be rebuilt. In this sense, to contemplate the making of a 'hardened' and 'resilient' energy grid for an industrialised Puerto Rico would be to underestimate the impact that continued colonialism would have upon the Caribbean nation. Moreover, the report does not contemplate the massive emigration that took place in the months following the hurricanes, and neither the drastic drop in the residential demand for electricity.

The Puerto Rico Energy Resiliency Working Group did recognise that a multiple microgrid route needs to be taken, whereby a decentralised power generating system (preferably away from coastal areas) with centralised management and monitoring would supply the bulk of residential areas and clusters of economic activity. However, most of the recommendations fall in sync with federally recommended projections, whereas only 20 percent of energy sources would be renewable between now and 2035. This basically entails shifting from petroleum dependence to a gas dependent power generation. Finally, the report diverges from UTIER's recommendation of temporarily reopening the Palo Seco station in order to provide support for electricity generation in the metropolitan area of San Juan.

The Puerto Rico Energy Resiliency Working Group recommends that Palo Seco be shut down permanently and turbines be completely replaced, paving the way for further privatisation. With Palo Seco in the spotlight and a trade union holding all evidence that the power station can operate with enough support, authorities were forced to reopen the plant on 29 December 2017.

## Energy democracy and sovereignty

Puerto Rico's energy crisis has been spawned by three contributing factors, which have been discussed throughout this report. First, the country lacks a collective vision for socio-economic development, which in turn is due to the negation of sovereignty. What kind of businesses are allowed to operate, which natural resources are to be used and with which countries is Puerto Rico allowed to trade (or from which to receive humanitarian aid) are matters that are handled by US Congress – an entity in which islanders have no voice nor vote. Secondly, local government has been complicit in abandoning public service infrastructure and divesting from maintenance in order to privatise the public utility. A dying energy grid, which was finally wiped out by the hurricanes, makes the perfect case for energy privatisation. This is the essence of *disaster capitalism*. Finally, there is the disregard or closing of spaces where alternatives are thought about and developed. The governor pays more attention to a report prepared by private and external entities than any analysis provided by Puerto Rican experts, scientists and representatives of local civil society organisations.

Puerto Rico needs *energy democracy*, meaning a transition to renewable power resources, reclaiming public and social control over the energy sector and opening the design and implementation of energy policy to the participation of all sectors of society. Energy democracy in a non-independent Caribbean nation entails much more than just inserting the participation of local communities at the vortex of state-owned enterprises and corporate intentions. In Puerto Rico, there is a need for an in-depth discussion about the kind of sustainable society that people envision, how knowledge should be shared, what sovereign rights island-nations should be able to enjoy, and how are all of these affected by climate change.

The conditions under which Puerto Rico is currently carrying out reconstruction and contemplating the alternatives for building a 'resilient', 'robust' and 'sustainable' energy regime are far from favourable. Hurricanes Irma and Maria were preceded by a crippling debt crisis and decades of neoliberal austerity measures that have exasperated economic decline, leading to the closing of public schools, joblessness, a failing health care system, the abandonment of public services like water and electricity, and mass migration to the United States. These circumstances are aggravated by colonial trade relations, and the post-disaster application of a tax reform that will pulverise what is left of the manufacturing sector in Puerto Rico.

The prospect of energy democracy faces many challenges: the local administration favours public-private partnership solutions while ignoring the voices of organised labour, and the federally appointed Financial Oversight and Management Board is bent on dismantling the Puerto Rico Electric Power Authority in favour of privatising energy production and distribution throughout the archipelago. Following the 'Katrina Blueprint',

the government's strategy so far has been *not to have a strategy*, while island residents remain in shock. Puerto Rico's energetic landscape has indeed become a *Wild, Wild West* for investors who enjoy seeing PREPA's decomposition and imminent disappearance.

Currently, Puerto Rico's power grid is being reconstructed by the US Army Corps of Engineers. In order to re-establish a working power grid similar to what existed before the storms, the public utility would have to continue to depend heavily on the importation of expensive fossil fuel. For the current government, imported gas continues to be favoured over public investment in renewable sources like wind and solar energy. However, in order to make an easier, less expensive transition to an energy regime, based mostly on renewable sources, the country would have to respond to solutions hailing from private 'green' corporate interests with great prudence.

One example of potentially amicable private investment opportunities is the interest that Dutch-owned Wind Energy Solutions (WES) has expressed in bringing more wind power generation to Puerto Rico's eastern and southern coasts. By providing 50KW per hurricane-safe turbine, the company intends on servicing industry, community and agriculture (WES, 2018). WES plans on taking advantage of current local tax incentives for building a turbine production industry on the island of Puerto Rico, making it a hub for the rest of the Caribbean. Companies like WES, of course, would have to find its way around the Jones Act.

In November 2017, the philanthropic foundations Rockefeller, Ford and Open Society committed themselves to helping Puerto Rico with an initial injection of US\$5 million to set up a 'Resilient Puerto Rico Advisory Commission' for an equitable recovery. Modelled after the Hurricane Sandy Commission, this new entity will be composed of local, national and international experts. The Commission is managed by Puerto Rico's Centre for a New Economy (CNE) and chaired by CNE Executive Director Miguel A. Soto Class, Executive Chairman of Banco Popular Richard Carrión, the Executive Director of Instituto Nueva Escuela, and the Chair of the University of Puerto Rico Department of Planning. By the time this report went to press, the Commission had yet to deliver an opinion or offer recommendations on the future of Puerto Rico's energy crisis.

So far, concrete alternatives have not yet been articulated in writing, neither by the trade union UTIER, which champions energy democracy, nor INESI, a local think-tank leading the design of sustainable policy alternatives. Since INESI depends on institutional support from the University of Puerto Rico, which itself is experiencing major cuts imposed by FOMB, spaces for discussing and developing concrete and viable alternatives to the privatisation of the energy regime are starting to close.

### **It's all about the microgrids...**

If there is one thing that everyone can agree upon, it is that a robust, resilient and sustainable energy regime can no longer depend on

centralised fossil fuel-dependent power generation and distribution. Puerto Rico's topography is too rugged and climate conditions are becoming more and more unpredictable. Furthermore, health facilities serving an ageing population will require reliable access to energy, and future economic projects will require the employment of renewable sources at the lowest cost possible. It literally took a hurricane for the authorities to come to these conclusions.

Microgrids has become the magical word constantly pronounced by legislators, policy analysts, grassroots activists and even the representatives of corporate interests. A microgrid is a local energy grid with capacity to connect to and disconnect from a larger traditional grid and operate autonomously. They can vary in size and production from a few MWs to serving, for instance, the entire metropolitan area in and surrounding San Juan, which holds a population of 2,3 million. A basic structure for microgrids already exists within PREPA management, as Puerto Rico is divided into seven regions for power distribution: San Juan, Carolina, Bayamón, Arecibo, Mayaguez, Ponce and Caguas.

The concept became popular after Hurricane Sandy hit New York in 2012. Microgrids are considered to be a good solution principally for isolated or remote areas where transmission lines may find difficulty in being serviced and maintained. Microgrids can operate on solar panels with batteries and a backup diesel generator for emergencies. Microgrids are already operating in Puerto Rico, run by grassroots environmental groups in cooperation with the University of Puerto Rico, as well as by communities that have received direct aid from the diaspora in the aftermath of the storm (Beaubien, 2017). Tesla, which is reportedly not sitting at the table with other agencies in discussing the future of energy in Puerto Rico, has announced plans to set up solar panel farms on the island-municipalities of Vieques and Culebra. Several other private companies, such as E&E News, IBM, Schneider Electric, NRG Energy and AES Corporation, have already expressed their interest in building microgrids throughout Puerto Rico (Ferris and Behr, 2017).

The problem, of course, is the question of regulation, which would be necessary in order to provide all residents and communities of Puerto Rico equal access to reliable, affordable and safe power. As PREPA is currently decomposing and the Energy Commission – the public entity that was set up to regulate energy in the island – is practically defunct, due to political conflicts, investors and potential donors are wary about inserting themselves into the grab bag of microgrid solutions.

The experimental presence of microgrids and the debates surrounding this option facilitate further discussion about the prospects of energy democracy in Puerto Rico and other non-independent Caribbean islands. A network of community owned and operated microgrids, regulated and supported by a public national power authority, using updated technologies and renewable sources, seems to be possible. The question

is: is privatisation necessary in order to accomplish a more sustainable energy regime?

#### 4 Ps, with community control

Due to the desperate need of financial and technological support, and the lack of a sovereign power willing to channel public funds into building a proper state-owned energy authority, private investment would be ineluctable if Puerto Rico were to see a consistent and operable power restoration. PREPA, as well as the government of Puerto Rico, is completely bankrupt and currently being forced to pay unaudited debt. Furthermore, most of the infrastructure for electricity transmission has been destroyed by decades of neglect and two catastrophic climate disasters. Even if US Congress would favour a cancellation of the debt, a significant capital and technological injection would be necessary in order for the country to get a kick-start on building a resilient energy regime. The Puerto Rico Energy Resiliency Working Group made this clear in its report.

A reformed PREPA at the service of Puerto Rico and its communities, and not at the behest of corporate interests, could facilitate and even execute much of the technical duties entailed in the Working Group's report, including but not limited to: management of mobile power generators, remote monitoring of power transmission and service balance, maintenance, wholesale purchase of back up emergency energy sources, and forest growth control around posts and cables.

Another option to consider would be to divide power generation and service into two blocs: residential and public versus commercial and private. In the first instance, access to reliable energy would become the responsibility of both the community and the general power authority, with electricity at homes and hospitals considered a human right. The production and service of electricity for private enterprise could then develop according to market principles regulated by a public authority, which would also ensure knowledge transfer and sustainable policies. A private company 'donating' a microgrid and maintenance tools to a community project would then be compensated by being offered access to a market providing renewable energy to remaining industries and new for profit economic projects.

While current PPP solutions might rest exclusively on negotiations between governmental agencies and multinational corporations, a move towards energy democracy would bring key sectors of civil society to the bargaining table for regulation. These sectors would include organised labour – as no other workforce knows the local landscape as much as that which is on the ground – and community leaders that have been involved in advocating for better access to essential public services such as energy but also transportation, water, education and housing. A regulating Energy Commission at the service of energy democracy would have permanent representation of both labour and residents, but also the presence of bodies like INESI, which could facilitate the development of new technologies and knowledge transfer from investing corporations to local



management sites. Attaching a 'C' for Community and an additional 'P' for participation to the equation could represent a real working alternative.

### Towards Energy Democracy

While not in favour of privatisation, UTIER President Ángel Figueroa Jaramillo has expressed his willingness to sit and talk with Tesla President CEO Elon Musk, in order to explore possibilities of investment and collaboration (interviewed by the author). UTIER's solidarity programme and INESI have already signed agreements to work on the establishment of solar microgrids to support community aqueducts for clean drinkable water in over 30 underserved communities on the main island. Fundamental, however, to any future arrangement is the inalienable right that communities have to own their energy and determine their needs. These need to be coordinated nationally in order to ensure equity. Figueroa Jaramillo calls this *energy independence* or *energy sovereignty*, which would signify a step towards the self-determination of the people of Puerto Rico. Corporate intentions and the conditions that bind them, however, need be transparent.

Besides state ownership of a national power utility, another model that might be relevant for Puerto Rico is the cooperative system. In North America there are plenty of models for community owned and/or cooperative utilities. The National Rural Electric Cooperative Association (NRECA) in the United States, for instance, represents the interests of hundreds of member-owned – and supposedly non-profit – local companies that provide affordable and reliable electricity to more than 42 million users in 47 states (Office of Energy Efficiency & Renewable Energy, 2017). In Europe and Latin America there are many examples of similar models to consider. Reliable studies, recognised by power authorities, demonstrate that community-owned energy projects actually produce and deliver 12 to 13 times more community value for local areas, than privately owned schemes (Balch, 2015).

## Conclusion

In January 2018, the government of Puerto Rico, in cooperation with the Federal Control Board, FOMB, finally revealed its original intention of decentralising and privatising the archipelago's energy grid. Out of disaster, a market is born. Energy production and distribution are now in danger of losing their social mission, placing profit above needs and a general concern for sustainability. The presumed need for privatisation has proven to be a long-term project that entailed defunding and divestment from the public utility. Fully public-owned resources and infrastructure are no longer. However, this does not mean that public responses and initiatives cannot flourish and take the lead in providing alternatives. Communities operating housing, education, business and recreation should be those that determine the contours of the alternatives. These communities, in turn, are found with the need to organise themselves nationally in order to coordinate preferred models.

The response will essentially be political and will require bridging alliances with lobby groups in the region and in the metropolis. Alliances can be found in organisations such as Trade Unions for Energy Democracy (TUED), a global network initiative that promotes a transition to more democratic and sustainable energy policies, promoting progressive solutions to the climate crisis, energy poverty, the degradation of land and people, and the attacks on workers' welfare.

The privatisation of Puerto Rico's power utility, if completed, would take up to two years, as the legal framework for dismantling PREPA has yet to be constructed and no single private entity is willing to take over such a responsibility without government guarantees. Therefore, the struggle against privatisation is still – perhaps more than ever – relevant and must be linked to similar struggles to defend socio-economic justice (defending public education, access to water and health). However, the struggle together with the circumstances in which Puerto Rico finds itself have taken on a new form, going beyond the public-private straight jacket. Citizens are demanding that communities play a larger role in defining their needs, while utility workers familiar with the field of energy production and distribution are now participating in debates concerning sustainable technical innovation.

When a private multinational energy company, be it Tesla or WES, says that it wants make a particular country 'the model' for sustainable energy production and service, the offer should be taken seriously but critically. This is especially true when the public utility is found tossed and destroyed between political interests and natural disasters. Following the September 2017 tropical weather devastation, Puerto Rico and many other island-nations in the Caribbean were presented with a forced opportunity to rethink and redesign their energy regimes and collective lifestyles. Overcoming the initial shock will require thinking beyond doctrines and securing spaces for developing alternatives. At the same time, advancement in sustainability would require more self-determination. For Puerto Rico and the non-independent Caribbean, energy democracy presents itself not as option but as an urgent necessity.

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On the evening of 22 January 2018, the Governor of Puerto Rico announced the complete privatisation of the island's power utility. The public statement came four months after hurricanes Irma and Maria, which devastated the archipelago leaving thousands of people homeless or dead and over 40 percent of the population without access to electricity and running water. Puerto Rico's energy system was crumbling long before the tropical weather systems of September 2017 hit the archipelago. The hurricanes only laid bare the unsustainable conditions of the extremely expensive and fossil fuel-generated electrical power regime.

This report provides an in-depth analysis of the current situation of the power sector, the proposals for energy democracy, and the struggles against disaster capitalism and the shock doctrine in the Caribbean. After assessing the immediate impact of the hurricanes, it describes the specific colonial relationship between Puerto Rico and the United States, and discusses how the island's political status has shaped economic development and modernisation. It then examines Puerto Rico's energy regime prior to the natural disasters by reviewing the public utility's history, highlighting the impact of the debt crisis on the energy sector. This entails considering neoliberal discourse and practices, and juxtaposing them to alternative arguments and civil society's concern for finding renewable energy solutions. The report then delves into the responses presented just prior to and quickly after the tropical weather systems ravaged the country: community, NGO, and humanitarian aid responses, state postures, and corporate meddling into the crisis. A final section of the paper asserts viable alternatives and future scenarios for Puerto Rico's power sector and related public services.

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