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Dominican Republic, Cause and Effects of Unreliable Electricity

## **A New Electric Wave Heading for the Shores of DR**

What is the first thing billions of people do when they wake up? Check their phone? Glance at their alarm clock? Turn on a light? Splash some cold water on their face? All these actions have one thing in common, they require stable electricity. For those of us living in the US it's unthinkable to go two hours without assistance from an electric generator. Our country is very blessed to have such an assured power supply that can support our stores, homes, schools and personal luxuries. Unfortunately, not all countries have such a secured system.

La República Dominicana, or the Dominican Republic as English speakers call it, is a beautiful Caribbean country which makes up two-thirds of the Hispaniola Island. With year-round tropical weather and a one-thousand-mile coastline, many would think of this island as a perfect paradise. Yet every day the people of this nation are challenged with long, unpredictable power outages. As the country is trying to economically flourish, these blackouts cause disruption in people's homes and private businesses along with adding pressure within the competitive tourism industry.

Year round the country is submerged in a hot, humid, and hurricane filled tropical climate. Even in the high mountains the temperature hardly goes below 65°F. This hot weather makes the need for stable electricity even greater.

Cheese, eggs, vegetables, and meats are all perishable foods that make up the typical Dominican diet. With all the unexpected power outages, food preservation and refrigeration is a gamble played by families every day. The country's average household includes five members, usually coming from three different generations, yet only three members are typically able to bring in an income. Country Reports explains how in most low-to-middle income areas, a single worker makes about \$250 USD per month, yet for these families, comfortable living requires \$2,090 USD per month (this number includes the cost of providing clean clothing, rent/mortgage, food, water, and gas electricity daily). Even if this can be afforded, reliable refrigeration is never a guarantee, meaning that families must determine whether to buy enough food for the week or just for the day, given it might not be able to be preserved. Now, regardless of the food's time of purchase, many power outages can last up to ten hours. Meaning lots of food and money is guaranteed to be wasted. Because budgeting doesn't allow for spontaneous shopping trips, families unfortunately often must wait until their next paycheck to purchase more food.

Besides overheating the electrical system and causing outages, the extremely hot temperatures can bring health issues to residents of all ages. Maintaining homeostasis is a crucial physical requirement for all living organisms, this process is how the body regulates its internal environment, specifically body temperature. To combat the heat and humidity of the Dominican Republic, residents take multiple cold showers a day to physically help cool them down. As this

has been going on for generations, their bodies have gotten used to this action being a part of temperature regulation. When a power outage occurs, water pumps and air conditioning both stop working, meaning that the residents' key methods of staying cool are taken away. As the frequency of these power outages has increased, so has the rate of heat strokes happening for all generations. Within the past eight years, DICA ( The Dominican Institute of Cardiology Association) has measured that there's been a thirty-one percent increase in the amount of heat strokes happening to those above and around the age of eighteen.

On top of causing these severe health issues, the power outages also knock down public communication methods, which residents rely on to contact emergency medical services. Even if they're able to use a cellular device to place a 911 call (which is the emergency # for urban areas like Santo Domingo, currently not all rural areas have an emergency hotline) to contact a local medical facility, the generators for that facility are always overworked and commonly go into failure as well. This means that not all medical equipment will be effective or available for those in need. This was a large issue during the Covid-19 Pandemic as local hospitals didn't have stable ventilators, so sick residents would have to travel far away from their home communities, to be admitted into expensive privately powered hospitals. The high price put a burden on many families, limiting their spending on other necessities.

Speaking of privately powered companies, the lack of stable electricity also puts the island's small local businesses in high competition with large international corporations. The country's main source of revenue comes from the tourism industry. In 2022, Country Reports marked that around 8.5 million visitors came to the island to enjoy their beaches and tropical weather. Yet given that it's general information that blackouts are frequent and unpredictable, the majority of these tourists would rather stay in their electrically secure resorts rather than explore the rural island areas. The visitors simply don't want to go out where there isn't constant AC or where they'd have to pay extra for cold bottled water. This means the large corporations get an exorbitant amount of money from 'in resort' purchases, while small businesses are left struggling to attract customers.

In attempts to provide constant electricity for themselves and their families, many residents have resulted in making illegal cable connections to government and resort powerlines. Due to this being a crime, people get caught and prosecuted, and family dynamics get disrupted. Many parental or adult figures are taken out of children's lives, even though they were simply trying to provide for their families.

Plus, a large number of wires connected to individual power lines have started multiple fires. Both these fires, and those caused by gas lamps (which are the common light source used during power outages) have led to an increase of wildfires, which spread to local sugar cane, plantain, and coco bean groves. As Encyclopedia Britannica marks these crops as the country's top three agricultural exports, it is apparent how their ineffective electrical system is putting the rest of the country's economy at risk.

Nowadays, most of the country's power grid functions off fossil fuel thermal electric plants. As the price for fuel has risen, so has the price for a single home's electric bill. As of February 2023, the Rocky Mountain Sustainability Institute calculated that twenty-five percent

of an average Dominican family's salary now goes to powering their home. In an attempt to assist their poorest citizens, since late 2021 the Dominican government has been covering sixty percent of their monthly electric bills. Although this helps the families in the moment, it doesn't fix the failing system itself. Even with this subsidy, many rural power plants could only afford to keep power on for twenty out of the twenty-four hours in a day. RMI presents a better solution would be for the government to use this subsidy and purchase individual solar panels for each residence.

In the United States, it costs anywhere from \$50 to \$250 USD to lease enough solar panels for one residency per month. Yet, since a Dominican household uses only about one-fifth of the electricity an average American household would use daily, the Government subsidy would be able to cover the costs for multiple households if combined.

On top of that, solar panels are better for the environment as they are a renewable energy source. This will reduce the nation's carbon output, better caring for their oceanic attractions. Solar Panels can also be easily stored away during storms. Meaning that after hurricanes, less money would be wasted on cleaning electrical debris and their system would be back up sooner.

Most importantly, RMI calculated that once the loan for the solar panel is paid off, the monthly electrical cost would be reduced to ten percent of a household's salary. This would allow families to spend money on other necessities like affording healthier foods, private education, or more modern home appliances.

As for the problem of how to get the panels to the island, there are currently international organizations that facilitate private investments willing to install panels to these impoverished areas. Organizations like the OPEC Fund have been trying to inform residents of these opportunities since 2018. Since then, they've raised the photovoltaic electricity use in the Caribbean by sixty-six percent.

Still, trying to cover the monthly cost would be an issue for small family-owned businesses/farms which aren't being offered the government subsidy. Due to competition with giant resorts and farming companies, making large profitable sales is almost impossible. But given that seventy-nine percent of the population does work either relating to agriculture or customer service, many of these small farms could work out deals partnering with these larger companies. If many tourists still want an authentic Caribbean experience but don't want to venture out to the rural areas, residents bringing locally raised wildlife and native products into the resorts would satisfy the tourists needs and bring income directly to local families. Having a direct connection to the tourism economy would allow residents monthly incomes to rise significantly, helping to take away added stresses of financial survival allowing them to purchase the panels.

As you can see, unpredictable power outages have led to devastating effects on the Dominican Republic. A lack of consistent power makes it hard for the nations families to have fresh and reliable food storage options. Especially putting a strain on low-income families who have no room to waste food in their budget. Outages not only impact their health through their diet, but also makes it harder for Dominican people to maintain physical health. The

longstanding lack of power, strains local medical facility generators, meaning many people can't be treated when they need it most. On top of this, the country is financially suffering as local businesses aren't able to compete with large exuberant corporations. Solar panels can provide a new wave of power that DR desperately needs. Their sustainable manufacturing ensures this solution is economically sound and addresses the need for consistent electricity while solving the other issues caused by their food insecurity.

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