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Water Access, Climate Justice, and Socio-Environmental Innovation in Rio de Janeiro

Brazil Diplomacy Lab

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Rio de Janeiro is one of South America's most popular tourist destinations and is renowned for its beautiful nature, culture, and landmarks. However, it is also at the forefront of the public discussion on climate change and climate justice. Although Brazil is home to roughly ⅛ of the planet's water, Rio de Janeiro faces many challenges to maintaining and distributing clean water to its citizens, especially residents of the city's many informal settlements known as favelas, who are already the most vulnerable to the effects of climate change. Recent changes in the management of the water system leave many hopeful for change, but we believe that the strongest source of inspiration and innovation come from the favelas themselves. Favelas should be looked at as solutions to Rio's water crisis based on the high level of community action and innovation that is currently taking place.

Water pollution can create extremely dangerous conditions. The situation in Flint, Michigan, demonstrates the severe health consequences that can result from water pollution, particularly through lead contamination, emphasizing the critical importance of ensuring safe and clean drinking water for all communities. This crisis underscores broader issues of environmental injustice and the urgent need for equitable solutions to prevent similar disasters in the future. Although Brazil is one of the most water rich countries on the planet, it has historically struggled with the management and distribution of clean water for its citizens. In order to make recommendations for climate innovation in Rio's water system, we must first address the question of why there is such a problem with water.

To begin with, Rio's water system is separated into two systems: the Guandu-Lages-Acari system, which supplies the west, and the Imunana-Laranjal system, which supplies the east. The larger of the 2 is the Guandu-Lages-Acari system, which supplies water to

around 9 million people, while the Imunana-Laranjal system supplies water to around 1-2 million. This system has created massive inequality within the distribution, but that will be elaborated on later. The main problem with this system is the lack of access to clean water due to poor water conditions due to dumping of waste in the surrounding area and bodies of water. that would require extensive treatment to be safe for consumption and lack of treatment of the waste. In 2016, only 34% of waste was properly treated while the rest of the waste was improperly disposed of in ways such as dumping into the surrounding rivers and bodies of water(Hosek). This practice has created the massive problem we see today with companies and citizens within cities dumping into the Guanabara Bay, and the less fortunate communities(Reporter) without proper disposal systems dumping into the river. While this issue affects all in Rio, it disproportionately affects the lower income communities and people living within Favelas.

Rio de Janeiro state recently privatized its water and sewage utility, Cedae, after years of broken promises to improve sewage treatment in the Favelas and clean up the state's polluted Guanabara Bay. The privatization aimed to bring in private investment and expertise to address longstanding infrastructure deficiencies and environmental challenges. Sanitation company Aegea won concessions for two of the four blocks, presenting bids totaling 15.4 billion reais ($2.8 billion). Another company, Igua, secured a concession for a third block with a bid of 7.3 billion reais. Their plans likely include investments in infrastructure, technology upgrades, and operational improvements to expand access to water and sewerage services, particularly in underserved areas like favelas.

The beginning of the contracting process for privatizing water and sewerage services in Rio de Janeiro sparked fierce debate. Some members of the public support privatization, hoping it will lead to improvements in service quality and infrastructure. Others are skeptical, expressing

concerns about potential price hikes, reduced accountability, and exacerbation of existing inequalities, particularly in marginalized communities like favelas. Critics of privatization raise concerns about potential drawbacks such as increased costs for consumers, reduced accountability, and prioritization of profitable areas over marginalized communities. There are also concerns about ensuring environmental standards are upheld, protecting the rights of workers and consumers, and avoiding exacerbation of social inequalities. Balancing the benefits of private sector involvement with these potential challenges will be crucial for the success of the privatization effort.

In addition to understanding how the water system of Rio is managed and what issues the water system faces, it is crucial to consider how lack of access to clean water impacts the most vulnerable parts of the population. Out of every Brazilian city, Rio de Janeiro has the highest percentage of people living in subnormal housing clusters. This term describes informal housing that is often built with fragile material in communities with a " lack or inadequacy of basic public services such as water supply, sewage and rubbish collection services, in addition to generally being locations that are laid out in a dense and disorderly manner" (Malta 3). Many subnormal housing clusters are built up the hillsides of the city, leaving them highly vulnerable to landslides that result from flooding. These subnormal housing clusters are more commonly known as favelas, and are home to roughly ⅛ of Rio's population (Malta 3). Studies confirm that Favelas in Rio de Janeiro have high levels of socio-environmental vulnerability and thus bear the brunt of the negative effects from rapid urbanization and climate change (Malta 3). Thus when conceptualizing climate change and its effects on access to water, there are many unique challenges to remedying this problem in the favelas of Rio.

Clean water is a building block to healthy and secure lives, and lack of sanitation creates a slew of social, environmental, and health problems. Many diseases are spread through water pollution such as Cholera, Giardia, Legionnaires' disease, mercury poisoning and Typhoid from unsafe drinking water(Melissa). According to RioOnWatch, every year "217,000 workers in Brazil miss work due to gastrointestinal problems linked to poor sanitation, each missing an average of seventeen hours of work…Studies show that children with access to sanitation have 18% higher educational attainment than those without access." (Hosek). Lack of proper sanitation has even been linked to lower expectancy, further proving that when basic needs are not met, the people of Rio are unable to perform to their full potential and their health and futures are jeopardized. This becomes a vicious cycle when there are no public works to dispose of sewage and garbage they are dumped into waterways, which further pollutes the rivers and bays and thus makes access to clean water even more precarious. This also does not mention the adverse effects on the local species which could be continually damaged until a potential bottleneck event, dispersal, or even extinction event takes place due to tbe destruction of the niche and loss of suitable habitat which would further devastated surrounding communities and ecosystems (Croteau).

Rather than aiming to create sewage and water lines that mirror those in the more developed parts of the city, policymakers should consider the unique innovations and community based solutions that are taking part in favelas across Rio. One example is a water and sewage system installed at a Favela in The Enchanted Valley. The entire system cost $42,300 to provide clean, free fresh water to 40 families in Rio, reported by the Associated Press. This is how the Favelas should be able to run. Yes, it is an investment, but it would help so many families. It

would save lives and hopefully inspire more young people to invent things for their communities to better serve its people.

Although Rio faces many challenges to equitable and sustainable clean water access, there are many examples of climate innovations taking place across the city. One example of an organization that has been leading the charge on socio-environmental improvement in the favelas is Catalytic Communities Sustainable Favela Network. The Sustainable Favela network believes in locally-led, cost effective solutions, and we truly believe that is a great way to combat the lack of access to clean water. We believe that if they could be funded as a government project and have government reach for their solutions that it would change the Favela communities for the better. The Sustainable Favela Network has managed to gain contact with almost 200 Favela communities in Rio! “The new map includes a total 120 initiatives, located in 183 favelas across Greater Rio, some projects working in multiple communities.” (CatComm). The SFN already has the ideas and plans for the communities.

One compelling example of a successful community solution partially funded by the Sustainable Favela Network comes from the Enchanted Valley community, a small and isolated neighborhood that is home to about 40 families. The neighborhood backs up to the rainforest and boasts a beautiful waterfall, but it was contaminated with raw sewage. A community leader fought for several years to get the money and support to build a biodigester that treats water for the entire community and restored the natural beauty and utility of the waterfall. According to Associated Press, the biodigester cost $42,300 which is just ¼ of what running new pipes to the existing sewage network. This is a powerful reminder that there is no one size fits all solution to the water and sewage problems in Rio, and that people that live in communities know the best way to help those communities. Identifying other communities that could be eligible for similar

biodigester projects would be a valuable continuation of this project by future diplomacy lab work or the state department itself.

In considering how to allocate aid to Rio de Janeiro, we advise that the State Department seeks smaller scale projects that fit the unique needs of specific communities to maximize investment. The grants corner of the embassy website and the outreach about available grants through the embassy instagram are a great start to this type of investment and we would recommend an expansion of grants offered to include a grant specifically aimed at combating urban climate change.

In conclusion, our examination of the state of water access in Rio de Janeiro leads us to conclude that the best way to approach this issue of climate justice is to look to the leadership of an innovation that is already taking place and replicate these models in communities across the city.

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