

Confronting Climate Coloniality

Decolonizing Pathways for Climate Justice

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Introduction

Increased attention to inclusive processes and distributed engagement is essential to ensure injustices are not perpetuated during energy transitions (Bennett *et al.* 2019; Markard, Geels & Raven 2020; Newell & Simms 2021; Sovacool 2021). Energy system change that focuses narrowly on transforming the technical components of the system without transforming the underlying socio-political dynamics reinforces power differentials, preventing a more just and equitable future (Stephens 2019). Crises and disasters provide opportunities for re-envisioning energy systems, but despite the “windows of opportunity” that such moments present, the changes brought on by disruptive events are not guaranteed to lead to more just futures (Birkland 1997; O’Donovan 2017; Ellis 2020; Kinol & Kuhl 2023). The conditions that make either re-entrenchment or transformation more likely are not well understood, particularly in contexts of coloniality in which power dynamics are highly unequal and decision-making authority is external to the local context. Coloniality refers to the “long-standing patterns of power that emerged as a result of colonialism, but that define culture, labor intersubjective relations, and knowledge production well beyond the strict limits of colonial administrations” (Maldonado-Torres 2007, p. 243) and, as de Onis (2018) articulates, energy is a critical system in which coloniality operates, particularly due to the extractive nature of energy production (de Onis 2018). Especially after disasters when change is perceived to be “urgent”, transformation may reinforce existing power dynamics and exacerbate inequalities (Blythe *et al.* 2018; Jones, Kuhl & Matthews 2020; Schipper *et al.* 2021).

Through a case study of Puerto Rico, this chapter explores the ways that crises have influenced the visions of the future of the energy system for different actors, acknowledging that visioning is a critical component of the transformation process. This chapter seeks to understand the role of crises in shaping narratives of energy transitions, and to engage with the literature on climate coloniality to better understand challenges for energy transformation under contexts of coloniality. Hopkins *et al.* (2020) and Ghosh *et al.* (2021) call for sustainability transitions scholarship to engage more deeply with post and de-colonial scholarship, and McGowen and

Antadze (2023) reflect on how attention to coloniality and the “dark side of transformations” (Blythe *et al.* 2018) reshape their own previous analysis of sustainability transitions.

Drawing on 87 qualitative interviews, we examine visions of the future of the energy system among different actors in Puerto Rico. Interviews were conducted both before and after Hurricane Maria, in 2017 (31) and 2021 (56), allowing us to analyze how perceptions of transformation have changed, and the role of Hurricane Maria and subsequent crises in shaping the narratives of the future of the energy system. Participants included government officials at the municipal, territory, and federal levels, community leaders, NGOs, academia, and the private sector. In interviews, participants were asked to describe the current energy system, their visions for the future of the system, who they saw as key actors, and what they saw as barriers to the future they envisioned. See Kuhl *et al.* (2024) for additional details.

The chapter begins by discussing the relationship between sustainability transitions, crises, and coloniality, arguing that coloniality inherently impacts the way these processes unfold in contexts like Puerto Rico. It then connects literature on climate coloniality to discourses on power and empowerment in sustainability transitions, illustrating how the heaviness of climate coloniality shapes people’s sense of empowerment, before introducing the case study of Puerto Rico and Hurricane Maria. The results of the study are described, which compare participant visions of energy futures before and after Hurricane Maria, before concluding with reflections on the implications for rapid, just energy transitions.

Sustainability Transitions, Crises, and Coloniality

In Puerto Rico, calls for a rapid transition away from fossil fuel reliance to renewable energy have been widespread but, as of yet, unrealized (Kuhl *et al.* 2024). Scholarship on sustainability transitions suggests that, historically, energy transformation happens when pressure for change aligns at multiple levels, including the local, regional, and national (and global) scales, and among niche innovations with local experimentation, the dominant socio-technical regime, and exogenous “landscape” developments such as demographic trends or shocks such as an economic crisis (Sovacool 2016; Geels *et al.* 2017). For example, Geels *et al.* 2017 argued that understanding Germany’s transition away from nuclear power requires analysis of the interplay among long-term anti-nuclear sentiments and political party coalitions in support of renewable energy, advancements in innovations in the PV industry that improved performance and prices, and long-term policies such as the 2000 Renewable Energy Act, which provided the enabling conditions for change and allowed for a rapid transition in energy policy in response to the external shock of the Fukushima accident.

Within sustainability transition frameworks, crises can be thought of as creating destabilizing pressures on the mainstream dominant regimes that open windows of opportunity for niche innovations, or new configurations of socio-technical systems, to enter the space (Avelino 2017). During disruptions, new voices,

including marginalized voices, can enter conversations where they were previously excluded, which may pave the way to more just transformation processes. For example, the “Great Smog” in London in 1952 served as a crisis that allowed impacted residents to pressure politicians to adopt the Clean Air Act (Newell & Simms 2021). However, past experiences demonstrate that commitment to equity alone does not guarantee that socio-technical transformations will be inclusive or equitable; power is deeply embedded in existing systems, and entrenched interests are resistant to change (Feola 2015; Patterson *et al.* 2017; Ellis 2020; Jones, Kuhl & Matthews, 2020; Stephens 2020).

Critical disaster studies have long cautioned that recovery processes frequently reinforce the unequal power dynamics that drive disasters and caution against apolitical narratives of positive transformations that can arise in such contexts (Klein 2007; Conway & Mustelin 2014; Klein 2018; Collodi *et al.* 2021; Gaillard & Peek 2019). Injustices can accrue as actors undertake recovery efforts on behalf of their community, while also attempting to stabilize their own situation in the context of post-disaster recovery (Hayward & Joseph 2018; Shtob & Petrucci 2021). Repeated disasters often exacerbate vulnerability and reinforce colonialism (Bonilla 2020; Rhiney 2020; Rivera 2022).

Discourses on transformational change typically underestimate the political nature of transformation, which requires investigating who has the power to define and implement change (Beck 1992; Beck *et al.* 1994; Beck 2009; Frischmann 2012; Kuhl & Shinn 2022). All societal transformation – whether the change is predominantly governance practices, economic systems, or social structures – necessitates disruption of the status quo, with inevitable winners and losers, leading scholars to place greater attention on the ethics and politics of transformational change (Shinn 2018; Ajibade & Adams 2019; Bentz, O’Brien & Scoville-Simonds 2022). A diversity of actors, including government officials, corporate entities, advocacy groups, and community members, all negotiate the meaning of transformation and shape transformational processes to meet their own priorities and needs; during these change processes the needs of the most marginalized are often superseded by more powerful actors, even when inclusivity is included as a policy priority (Patterson *et al.* 2017; Blythe *et al.* 2018; Jones, Kuhl & Matthews 2020).

Under conditions of coloniality, the pretext of inclusivity can be particularly limited. Coloniality can be understood as a key “landscape” feature under which energy transitions unfold in many places around the world, both in current colonies and the many places where colonial legacies continue to shape energy systems (de Onís 2021). The same power dynamics that drive coloniality and centrally-controlled, fossil fuel-based energy infrastructure act as mutually-reinforcing forces (Kuhl *et al.* 2024). For example, fossil fuel infrastructure enables centralized control of the production and distribution of carbon-intensive energy, with profits accruing to a small number of powerful companies, while renewable energy infrastructure, such as rooftop solar, offers the potential to distribute production and use of clean energy with the benefits going to individuals and communities (Stephens 2020).

Power, (Dis)Empowerment, and the “Heaviness” of Climate Coloniality

Integrating analysis of power into sustainability transitions helps identify when crises may open up opportunities for most just futures. Avelino (2017) introduced the POINT (POWer-IN-Transition) framework to engage sustainability transition scholarship explicitly with theories of power. She defines power broadly as the “(in)capacity of actors to mobilize resources and institutions to achieve a goal” (p. 507) and argues that it is useful to differentiate between whether power is being exercised to reinforce the status quo, or to push for change.

In the POINT framework, perceptions of power dynamics and struggles over power are just as important, or more important, than the resources and influence held by key actors. Understanding how people gain or lose a sense of power is a critical question for sustainability transitions (Avelino 2017). In her work, Avelino observes that actors often emphasize the power of others and their own powerlessness, which creates a vicious cycle of reinforcing the power of regimes and limiting transformative power, particularly for those who perceive themselves to be powerless. Provocatively, Avelino argues that the “perception of powerlessness may be a greater impediment to change than the power of vested interests” (Avelino 2017, p. 512), and that disempowerment can emerge from sustainability transitions narratives and processes. She defines (dis)empowerment as the “process through which actors gain the (in)capacity to mobilize resources and institutions to achieve a goal”, arguing that there are three dimensions: (1) access to resources and institutions; (2) strategies to mobilize them; and (3) the willingness to do so (Avelino 2017, p. 512). Central to the willingness to exercise power to achieve a goal is how the individual envisions the future in terms of anticipating what could happen. Avelino argues that transition discourses can have unintended disempowering effects, through a lost sense of impact (due in part to the long-term nature of transitions), lost sense of competence (given the complexity of transitions), and choice (given that transition discourses can be imposed top-down through policy), each of which has been shown to be critical to empowerment. Others have built on Avelino’s work, including by focusing on community empowerment as opposed to individual-level empowerment (Coy *et al.* 2021), and reflecting on the relevance in Global South contexts, particularly the often-conflictual relationships between communities and the State (Jayaweera *et al.* 2023).

In contexts like Puerto Rico, these processes of (dis)empowerment cannot be isolated from the experience of climate coloniality. It is not only the unequal power dynamics and violence of coloniality that make participation in envisioning a future challenging and transformations likely to reflect the priorities of the most powerful (Nadiruzzaman & Wranthall 2015; Parthasarathy 2018; Rahman *et al.* 2023), but importantly, the “heaviness” of climate coloniality shapes how actors envision the future and their own engagement in transformation (Sultana 2022a). As Sultana articulates, the experience of climate coloniality induces trauma and exhaustion that is re-experienced repeatedly with each wave of climate-induced disaster. Decolonizing energy systems will require engaging with both the power dynamics embedded within existing energy systems, but also the heaviness of climate coloniality that

shapes transition processes under conditions of coloniality. Both Avelino and Sultana point out, however, that disempowerment is not inevitable, and climate coloniality can be resisted; resistance requires acknowledging this burden.

Puerto Rico, Hurricane Maria, and Compounding Crises

Puerto Rico is an archipelago in the Caribbean. It has been a territory of the US since 1898, and was previously a colony of Spain. Puerto Rico is one of five inhabited US territories, along with Guam, the US Virgin Islands, American Samoa, and the Northern Mariana Islands. As a territory, Puerto Ricans are citizens of the US, can vote in national elections, and pay federal taxes, but they do not have a voting representative in Congress, and they are not eligible for all federal benefits. Puerto Rico can be characterized as a settler colony, in which foreign settlers move to and permanently reside in their non-native land, particularly after the passing of Act 60, which exempts businesses and individuals from paying federal income taxes on capital gains, assuming they are based for at least half the year in Puerto Rico. This status as a settler colony shapes all aspects of life in Puerto Rico, including the ways that climate events, such as Hurricane Maria, have been experienced, the recovery process from this crisis, and energy transition processes.

Hurricane Maria was a Category 4 hurricane when it made landfall in Puerto Rico in September 2017 and destroyed Puerto Rico's electricity system, leading to the longest blackout in US history (Kwasinski *et al.* 2019). More than three million people were without power, some for almost a year. The uneven recovery from Hurricane Maria revealed long-standing social vulnerabilities in Puerto Rico, in addition to the vulnerability of energy infrastructure (Rodríguez-Díaz & Lewellen-Williams 2020; de Onís 2021; Lloréns 2021, Sotolongo, Kuhl & Baker 2021).

The fragility of Puerto Rico's energy system is tightly connected to Puerto Rico's colonial status. Even before Hurricane Maria, Puerto Rico's centrally-controlled energy system was plagued by frequent blackouts and insufficient maintenance, challenges that have not been addressed, in part due to the impact of Puerto Rico's debt crisis. This crisis has constrained spending and investment, and, more broadly, limited the Puerto Rican government's options and flexibility (for a more comprehensive discussion see Bonilla & LeBrón 2019; Kuhl *et al.* 2024). The devastation of Maria intersected with ongoing crises of soaring debt, high rates of poverty (57% of children and youth are below the poverty line), and inequality (Puerto Rico has the third highest rate of inequality in the world). Austerity measures and COVID-19 compounded these crises.

The crisis caused by Hurricane Maria arguably created the conditions for rapid transformation, with some even calling Puerto Rico a "blank slate" (Klein 2018). While there was hope that the disruption would lead to a just and equitable transformation of the energy system, the recovery process revealed that injustices continue to shape Puerto Rico's energy transition (Bonilla & LeBrón 2019; de Onís 2021). Many saw the failure of the American federal government response as a stark reminder of the disposable nature of Puerto Rican lives and persistent "Othering" of Puerto Ricans (Bonilla & LeBrón 2019).

Significant policy developments, including a call for 100% renewable energy, regulations to allow the development of microgrids, and the formation of community energy cooperatives, compete with ongoing discussions about the financing of Puerto Rico's debt, fiscal control and austerity measures, government corruption, and the bankruptcy of the Puerto Rican Electric Power Authority (PREPA). Hundreds of renewable energy projects have been implemented since Hurricane Maria, but many of the benefits have gone to private equity investors, and communities have not realized the benefits of the significant energy investments that have been made (de Onís 2021). Far from being a new beginning centered on justice and equity, existing hierarchies of power and coloniality have been reinforced with the privatization of the electricity grid through a contract with LUMA Energy, increasing costs, and generating instability. While at this moment Puerto Rico's energy transformation does not appear just, it is still unfolding, and competing visions of its future remain active. For these reasons, Puerto Rico is a particularly important case to understand the challenges for decolonizing energy systems and the ways climate coloniality can impede rapid, just energy transitions.

Comparing Visions of Energy Futures Before and After Hurricane Maria

A diverse set of interviews at two different time periods (2017 and 2021) reveal how crises impacted the visions of energy transitions in Puerto Rico.

Visions of the Future of the Energy System in 2017

Interviews in 2017 show how actors in Puerto Rico envisioned the future of the energy system *before* Hurricane Maria. Overwhelmingly, pre-Maria visions were optimistic that the future would be renewable and participation in the energy system would be more inclusive. Participants described a future based on renewable energy where the key barriers were understood as cost, technology (particularly in terms of battery storage), and cultural acceptance and education.

A key feature of the visions articulated by participants in 2017 was one of technological optimism. Comments such as this were emblematic of the ways participants talked about the future:

Well, look, I am a true believer that we have to move to advanced renewable technologies – that maybe today are still being worked on and are being perfected, but that in the future these renewable technologies will have been perfected.

While many suggested that their visions were not currently achievable, there was a high degree of confidence that this was the direction that the energy system would move, and the technological advancements would take place to enable this. Advanced technologies in this vision would “provide the consumer with a low cost and high reliability, which is what we are looking for”. Energy technologies were

not the only technologies seen as critical to this vision; many stakeholders spoke of smart grids and linking energy systems to broader technological change.

This technological optimism was very much tied to a vision of a “modern” state. Through the articulation of this vision, visions of the energy system in Puerto Rico were deeply embedded with broader visions of the future of governance on the archipelago. A former leader of the Puerto Rican legislature stated:

Electric technology is today the hottest thing that is happening in the world ... Everything that is coming now is electric ... I believe that whoever is going to govern the Electric Power Authority has to be someone who is totally open to modern trends and to look for a way of not clinging to what have been the practices of the past.

This vision very much places Puerto Rico’s energy future in a global context, in many ways abstracted from the particularities of the energy challenges facing Puerto Rico. Techno-optimism, or the “enduring belief that technology use and production are promising for humanity” has been widely harnessed for nation-building, and as a tool of colonization (Avle *et al.* 2020). The promotion of techno-optimistic visions of energy system change is consistent with colonial strategies of technical control, and demonstrates how deeply embedded coloniality is in Puerto Rican energy discourse.

Another key theme that emerged was the importance of increased participation in the energy system, and particularly a vision of consumers as producers. Participants articulated a vision of solidarity and empowerment, with comments such as “we’re all in this together” and “we can control the system”. For many respondents, it was *through* technological innovation that this empowerment of the people and change in the governance of the energy system would occur. They described a transition to renewable energy as much more than just a technological change, and technology offered a sharp divide between past and future. One academic described “how I envision it, it would be a highly open system, more than an electrical system, an energy system, where we are all responsible for the system and at the same time contributing to the system”. Even fossil fuel producers envisioned a future renewable system, as this former CEO of a fossil fuel company stated:

If I have it [a solar energy system] on the roof of my house, I feel more ownership of that generator versus having a central system that delivers the energy to me. That is a drastic change ... perhaps, it helps us to be participants in controlling the energy system that supplies us.

In keeping with the generally optimistic perspective offered in these interviews, many participants suggested that the transition to this future in which consumers are empowered to shape the energy system is already in motion. Perspectives from community leaders and NGOs, while sharing a similar vision of a future based on renewable energy, placed more emphasis on the social benefits and

community-organizing aspects of the system compared to the focus on the technologies themselves seen in the visions articulated by other actors.

An NGO leader was the only stakeholder to frame her vision of the future not in terms of what renewables can offer, but rather in terms of what would no longer be a part of the system. She remarked:

Within those twenty years I swear to you that, in the next five years, we hope that the coal plant will be closed. I guarantee you that, because, first, it is already inefficient. It is not necessary in Puerto Rico. In other countries they are already closing coal plants because of the problems, especially health problems that they have generated and that we are going to have to pay for many years.

Community leaders were the only stakeholders that raised distributional and equity concerns about how the presumed transition to renewables would take place. One leader cautioned that it is important to ensure that as renewables become more prominent in the system, the vision of inclusivity and community control over the system isn't lost, reflecting that it is important that:

The renewable energy projects that are necessary do not hinder other activities as it is happening that these large farms of solar panels are placed on agricultural lands that lose the possibility of being used for what they were originally thought for when they were classified in that way, and that besides that, these large farms concentrate again the whole project of electric energy generation in a few hands. This is a little bit like throwing away what was originally, at least conceptually, the idea of a public power generation system, which is that it should be in the hands of everyone.

However, despite their potential concerns, the overarching perspective of community leaders and NGOs was one of optimism.

While participants generally expressed optimism regarding the future, they also acknowledged the significant challenges with this envisioned transition. They were under no illusion as to the existing weaknesses of the current system. As another community leader expressed:

Making a change to the system is very difficult, as I say, asking God to help us confess [and prepare] because if there is a storm we will be three or four months without electricity due to the poor maintenance of the lines. God willing it is not like that, but if it happens, you are going to see it. You will see that restoring service again is going to take us a long time, because there has been no maintenance.

His recognition of the role of a hurricane in exposing the vulnerability of the existing system and the prediction of the degree of disruption that a storm could cause was particularly salient, given that this interview took place shortly before Hurricane Maria.

Visions of the Future of the Energy System in 2021

Visions of the energy system in 2021 presented a sharp contrast to those articulated, sometimes by the same participants, in 2017. In some ways, the visions presented in the 2021 interviews were similar to the 2017 interviews: in both cases, participants articulated a vision of a solar energy future controlled by the people. But, while the outcomes envisioned in both sets of interviews were similar, the motivations were distinctly different. In the 2021 interviews, the outcome of a solar-powered system was driven not by optimism about the future, but by a stark fear of the recent past. There was a fierce conviction that the system must change to avoid experiencing the devastation of Hurricane Maria again. As one participant articulated:

The electrical system has to improve – it has to change. We cannot continue to have what we have now – it is not an option. I believe that better infrastructure is needed, resilient infrastructure, infrastructure capable of allowing us to cope with situations equal to or worse than Hurricane Maria.

This quote from an engineer perhaps posed this position most starkly:

I trust that if we had a whole system, if there were a million homes in Puerto Rico with a basic photovoltaic solar system, I don't think we would have 5,000 deaths in the next Hurricane Maria.

The heaviness of climate coloniality permeated these interviews; not as an abstract concept, but as a defining feature of the Puerto Rican energy transition, with the trauma of Hurricane Maria shaping the visions of the future.

Technology continued to play a role in the 2021 visions, but in contrast to 2017, rather than being driven by desires to “modernize”, saving lives emerged as clear motivation across the 2021 visions, as an academic articulated:

First and foremost, for us to survive and ensure our systems are resilient enough to withstand a Category 5 hurricane, the ideal scenario would be for the government to report, “We have solar system installations, and out of a million, 900,000 are operational the day after the hurricane”. What then becomes our priority? In the aftermath of a hurricane, instead of addressing the needs of one and a half million customers, we would already have 900,000 operating independently, leaving only 100,000 in need of repair. Imagine, from a governmental perspective, not having to worry about 900,000 customers – that is the future I envision. Within a month, we could address nearly all outstanding issues. But what about the losses, and how many lives are lost? I believe it is unacceptable for more than 100 people to die if a Category 5 hurricane hits. Official estimates put the death toll at almost 3,000 from such events. For me, any number above 100 is not acceptable. While it is tragic and sometimes inevitable for accidents to occur, such as a tree falling on someone or drowning incidents like those during Maria, it's intolerable for deaths to result from the lack of essential services. For

instance, people should not die because they cannot undergo dialysis, or because they lacked electricity for months, preventing them from storing medication in refrigerators, like insulin, which needs to be kept cool. Such situations are unacceptable, especially when we have the technology to prevent them.

In this vision, the participant drew a sharp contrast between what technology can do – or could solve – with the experience in Hurricane Maria, calling attention to the ways that technology has not been deployed to meet the needs of the most vulnerable.

These experiences and the disillusionment with technology as a solution led to visions of radical changes to the governance of the energy system. Participation here was not framed in terms of people's roles as producers or consumers, but as vulnerable communities. As one participant reflected:

I would love for our system to be participatory, even decentralized, because I believe there are decisions that can be made better if we had a system that responded to the needs or the realities of particular communities, or of particular regions, or of particular geographical areas ... The area where I live was without electricity for ten months. The reality of this area – of the mountain – is different from the experience that other parts of the island have had, and ... our area deserves systems that respond to that particular area. By having a centralized system where if a transformer ... is damaged, and suddenly Adjuntas is left without electricity, then that is a problem. It is a very big problem because you cannot solve it at the local level, and the reality is that when there is a crisis situation, the first responders are the local communities. So, the more localized you can have decision-making and control of infrastructure, the easier it is to be able to solve or respond to those needs.

While participants continued to present a vision of a decentralized future, here too the experiences of Hurricane Maria changed dramatically the motivation for this desired future. By centering community needs and vulnerabilities, this participant articulated a decolonial understanding of an energy transition, driven not by global policy priorities or technological advances, but by local priorities and control.

In contrast to the pre-Maria interviews, the 2021 interviews were overall much more pessimistic about the future, and envisioned continued reliance on fossil fuels. One private sector actor reflected:

I am seriously worried. Due to the energy future of the country, with the decisions that are being taken, the government is choosing if it follows the route that we have been seeing because we will be chained to fossil fuels for much longer than 2050.

This vision was presented despite the commitment in public policy to a transition by 2050 to 100% renewable energy. The former president of the PR Energy Bureau echoed this sentiment, responding: "Well, in an ideal world and complying with the

energy public policy law, in four years we should have 40% renewable generation, which I think will not happen". This policy was seen as a step in the right direction by many, but even among those who supported the goals of the policy, there was widespread acknowledgement that the goals would not be met, and tensions between the ambition of the policy and reality on the ground. In his reflections, a representative of the renewable division of one of the largest energy companies in Puerto Rico presents this tension:

By 2050 it has to be 100% renewable. However, we are in 2021 and I understand that this number barely reaches 3%. So, how could I tell the government and the decision makers that this goal cannot be met. We are prone to fail again, and it looks bad if 2050 arrives and we are not there. That is why for me it is important that the goals that are established are realistic and coherent, right. In the next ten years, realistically, 30% of the houses will have a solar system and that will start to have an impact on the grid, but at least today it is costly.

As Avelino (2017) warned, transition processes themselves can lead to disempowerment, particularly when there is clear evidence of the lack of success of transition thus far. Here, though, the sentiments are perhaps less appropriately described as disempowerment, and instead could be described as disillusionment with the transition process under climate coloniality.

In keeping with this sense of disillusionment with the promise of a rapid energy transition, the post-Maria interviews included a much more explicit discussion of power dynamics and recognition of the contested nature of energy transformations, as one private sector representative shared.

There's going to be a lot of conflict, and also conflicting views on how the system should be modernized. We have already seen some of these conflicts between some organizations that are pushing more into the area of renewables and others that want to maintain a certain amount and even increase fossil fuel generation with natural gas because they understand that it is more stable, at least in the short term. A lot will also depend on the relative political power of each of these groups here in Puerto Rico.

Acknowledging the power imbalances and conflicting visions of the future may be critical to overcoming disempowerment and decolonizing the energy transition in Puerto Rico.

While interviews expressed many concerns about how the transition would unfold, they were not necessarily disempowered – hope continued to pervade the visions of the future despite the disillusionment with the transition process. As one participant concluded:

The other thing that is very important is the right to the sun, to wind, to win, to battle, the legal framework that the sun is a right. That the government cannot put a tax on the sun, that the sun that falls on my head, that falls on my

car and that falls on my roof is mine, and that this is as natural as the rain ... There are things that are basic, that are vital, that are intimate, that the government cannot enter. The citizens – the power supposedly – the democracy of power emanates from the people. If we take power and say “government, look at this line – you cannot cross it”. I have been preaching that for several years and I have seen more people taking up the issue and I have begun to see politicians – the message is reaching them. The message is reaching them because people are talking about it and they are already beginning to say: “No, you don’t get in here, you don’t get in here!” That issue is not detached from the other social transformations or from all these movements, nor are you. The fight against eradicating sexist violence, the thought of belonging, and the privacy of your data. All of those things support the framework that it’s mine and the sun is mine, and I believe that if it goes in that same way we can win that battle.

A unifying sentiment across the 2021 visions was the conviction that transformation of the energy system was necessary, and that this transformation would necessarily be much more profound than the technological changes envisioned before Hurricane Maria.

Conclusions

This research shows how central the colonial context is to understanding energy system change in Puerto Rico. The devastation of Hurricane Maria and the response of the US government resulted in a more pessimistic view of the future – a future not driven by technological promise, but rather mired in and reproducing the existing colonial structures that have governed the energy system. The strongest contrast between the 2017 and 2021 interviews was that visions of the future of the energy system were no longer only of a transformation of the energy system, but transformation of Puerto Rican society as a whole, including the colonial power relations that many articulated as driving the disaster that was Hurricane Maria.

Despite the motivation for change that crises can inspire, many actors were disillusioned after Hurricane Maria. The visions that participants presented of the future of the energy system were much less optimistic than the pre-Maria visions. Rather than a future characterized by technological advancement and inclusive empowerment of the people in controlling their own energy system because it was “modern” and an inevitability, after Hurricane Maria, participants articulated visions of the future motivated by necessity, and the need for an alternative to the clearly broken system that currently exists. Unlike in 2017, when these visions were presented fairly apolitically, in 2021, there was widespread acknowledgment and concern that the power dynamics and politics associated with these future visions were a significant barrier, large enough that such visions were no longer presented as inevitable outcomes, but rather as imperatives for the very survival of the people.

The pessimism that came through in the 2021 interviews is concerning for enabling just and equitable transformations. While participants did not feel disempowered, per se, as many still expressed conviction regarding the path that must be taken, the heaviness that Puerto Ricans have experienced through Hurricane Maria was palpable across these interviews. The rapid transformations driven by technology and democracy envisioned in 2017 have not yet come to be, and the path to these visions will be much more hard-won than any could have imagined.

As climate crises become more frequent and intense in communities around the world, the unbearable heaviness of climate coloniality will continue to influence energy transformations. Energy system change that focuses narrowly on transforming the technical components of the system without transforming the underlying socio-political dynamics will not result in a more just and equitable future. It is increasingly clear that larger societal transformation, including change in political and economic power structures based on coloniality, is an essential part of energy transitions. Until structural changes focused on redistributing the benefits and costs (economically, environmentally, and politically) of energy production and consumption are prioritized, coloniality will be reproduced and reinforced, thwarting climate justice (Stephens 2022; Sultana 2022b). Until sustainability transitions confront the reality of climate coloniality, and truly decolonize not only energy systems, but also the societal systems that underpin these processes, crises will perpetuate and exacerbate injustices.

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