



Weaponizing vulnerability to climate change

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ABSTRACT

As scores of climate change adaptation measures are implemented around the world, there have been growing calls among academics and practitioners to also address the processes that underpin human vulnerability to climate change. However, there is mounting evidence that adaptation and vulnerability are linked, such that ostensibly adaptive responses can have negative consequences and augment people's vulnerability. We analyzed several climate change responses at various scales and developed a typology of five discrete but related modes by which the vulnerability of already vulnerable populations is being [re]produced. Crucially, this work suggests that for at least one of these modes, the vulnerability of other groups is perversely inverted, such that relatively secure populations perceive *themselves* to be at risk. The cases we present illustrate that people's vulnerability is being used against them, or put another way, is being weaponized—exacerbating their precarity by excluding them from much needed and due assistance, while directing resources instead to bolstering the well-being of those already well-positioned to respond to climate threats. Our typology provides a theoretical intervention by illustrating how climate vulnerability and security are co-produced, as well as a practical tool to help decision makers to adopt more just and equitable climate policies.

1. Introduction

Some aspects of the climate crisis have catapulted from the relatively cloistered academic and policy arenas into the public limelight. These include the United States' intention to withdraw from the Paris Agreement and the more recent Intergovernmental Panel on Climate Change estimate that radical action must be taken by 2030 to cap global warming to 1.5 °C (e.g. [Volcovici, 2017](#); [Watts, 2018](#)). These are significant concerns. However, there is another, equally troubling process underway that has failed to garner equivalent attention among any audience: the systemic [re]production of differential vulnerability to climate change. We describe several modes whereby stakeholders [re]produce differential vulnerability, and we focus particularly on the worst of these: the weaponization of vulnerability to climate change. This emergent process hinges on the discursive, administrative, and legalistic transfiguration of *threatened* populations into *threatening* populations through climate change securitization. Weaponizing vulnerability marks an extreme along a spectrum of political, institutional, and infrastructural responses to perceived climate change threats that mitigate such threats for some while producing or reproducing the vulnerability of others.

Vulnerability has long been a central, if notoriously ambiguous,

factor guiding climate interventions. Indeed, the United Nations Framework Convention on Climate Change has prioritized the most vulnerable populations for climate change adaptation efforts and support since 1992 ([United Nations Framework Convention on Climate Change \(UNFCCC, 1992\)](#)). Directing attention and resources to vulnerable groups is well-justified given their relatively meager contribution to atmospheric greenhouse gases. However, a comprehensive approach to climate change adaptation necessitates examination of why such groups are vulnerable in the first place ([Ribot, 2011](#)). Such an approach “must focus on the exploration of ‘vulnerabilisation’ as a relational process in which vulnerability is produced and reproduced over time between social groups within the active production of their lived environments...” ([Taylor, 2015: 8](#)). Here, we develop a typology of modes by which such vulnerabilization is enacted through climate change adaptation measures at multiple scales. Crucially, the typology reveals that vulnerability and security are interlinked, such that some groups justify adaptation on the basis of redefining vulnerable populations as security threats. In other words, they *personify* climate threats by viewing vulnerable people, rather than environmental hazards, as posing the greatest danger from climate change.

Over the last 30 years, climate change impacts have been largely characterized by risk—this construction leads to a diffuse sense of

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unease but does not justify substantial or radical adaptation (Corry, 2012; Goede, 2008). Security threats, on the other hand, are existential, direct, and urgent and require substantial adaptation because they have to be eliminated or, alternatively, a strategy of defense against the threat must be developed (Von Lucke, 2018). Hence, through securitization, wealthy and politically connected elites break the rules of normal politics (Buzan et al., 1998) and effectively relocate issues like adaptation beyond normal politics or public debate (Schmitt, 1985; Williams, 2003). Coercion is justified and safeguards against human rights abuses are circumvented as climate threats are personified, or shifted from environmental to social factors. In the name of security, powerful groups may then pursue extreme structural, institutional, and linguistic measures to protect themselves from other, more vulnerable groups of people.

We build from research showing that climate change threats can be redistributed through adaptation (Atteridge and Remling, 2018; Barnett and O'Neill, 2010; Bose, 2016; O'Brien and Leichenko, 2003; Warner and Kuzdas, 2016) and employ a multi-sited case study analysis to document and explain the [re]production of differential vulnerability through climate change adaptation. Our typology of modes of vulnerabilization provides a theoretical contribution for researchers working on climate change, security, justice, and vulnerability by incorporating securitization processes and the personification of climate threats into a vulnerability framework. This shows how climate security and vulnerability are mutually constituted. It also serves as a practical tool to help decision makers incorporate climate justice into adaptation programs. We reserve space to focus on the most egregious of these modes in terms of climate justice—weaponizing vulnerability—to explain the coproduction of vulnerability and security.

2. Research approach and case locations

We analyzed multiple case studies to understand vulnerabilization and produce general categories of its modes of production through adaptation. Our approach is designed to relate specific cases and identify themes across them that are generalizable and suitable for the development and testing of a theoretical frame (Stake, 2010). Our five cases were carefully selected based on their effectiveness in illustrating the diverse means by which differential vulnerability has been [re]produced at different scales (Fig. 1). Our case study research involved extensive data collection with several types of data. The study included a combination of document analysis—e.g., of state agency publications, press releases, studies by international organizations, and government commissioned think-tank reports—participant and site observation, semi-structured interviews with international development practitioners, and multimedia sources.

Drawing on these data sources, we followed a multiple case study comparison approach (Yin, 2013), first reconstructing each case in order to organize information on who was involved, what people were doing at different stages of each project, and why (guided by the exploratory framework). Obtaining and verifying difficult-to-access information (on threats, subversive and violent actions, etc.) required a multi-faceted approach in order to ensure accuracy and gain multiple perspectives from involved groups. To do this, we triangulated primary data with secondary information for each case to the extent possible. Secondary information included meeting logs, legal proceedings, and government reports.

3. Modes of vulnerabilization

Many factors influence the types of adaptations taken by actors to mitigate climate change threats, and not all adaptations render other populations worse off (Milman and Warner, 2016; Tompkins and Eakin, 2012). For example, public health initiatives designed to curb increases in the transmission of vector-borne diseases often have public benefits that are distributed beyond those implementing such initiatives

(Frumkin et al., 2008). More recently, research has shown that adaptation processes have the potential to [re]produce vulnerability of others (see Atteridge and Remling, 2018; Warner and Kuzdas, 2016). To date, much of this work depicts a form of vulnerability [re]production that often conceptualizes the redistribution of climate change threats as an unfortunate side effect of adaptation that may be corrected through better policy. This latter group of adaptive actions falls under the umbrella of maladaptation because such actions disadvantage marginalized groups while meeting the needs of others (Barnett and O'Neill, 2010).

In our exploration of vulnerabilization, we acknowledge and include such [re]production in our typology. But crucially, we document an emerging trend in which powerful stakeholders use climate change to justify extensive coercion and, in the most extreme cases, their adaptation efforts target *social* rather than *environmental* threats. The preponderance of climate adaptation work has focused on mitigating exposure and sensitivity to physical hazards such as floods, severe storms, wildfires, and droughts. However, it becomes apparent through a comparison of several climate response mechanisms that novel forms of “adaptation” identify people and social hazards (e.g. social disorder, violence, crime) as the principle dangers emanating from climate change.

We describe any climate change response that [re]produces, or has a high likelihood of producing, differential vulnerability to climate change as a *mode of vulnerabilization*. In this section, we introduce and discuss each mode—threat displacement, climate gentrification, elite fortification, disaster capitalism, and weaponizing vulnerability—as case studies to provide concrete examples of each. We visualize the relationships among the modes as existing along a spectrum, whereby threats are perceived as more environmental (left) or social (right) in nature (Fig. 2). Modes that focus on addressing physical hazards rank low on the spectrum, while those that render climate threats in primarily social rather than environmental terms (i.e. that personify threats) rank high on the spectrum (x-axis, Fig. 2). We also find that the emphasis on environmental versus social threats affects the spatial scale (s) across which each mode operates. Modes of vulnerabilization that focus on environmental threats are more localized, whereas those that focus on social threats operate across a greater range of spatial scales (y-axis, Fig. 2).

3.1. Threat displacement

This mode is defined by the unintentional or indifferent relocation of climate threats across space or institutions, whereby the provisioning of environmental amenities places excluded populations at greater risk of climate change impacts. For instance, well-intentioned infrastructure-based adaptation projects can introduce environmental instabilities and unintended negative outcomes (e.g. Atteridge and Remling, 2018; Käkönen, 2008; Renaud et al., 2013; Lebel et al., 2007). The case of an urban development in Lagos, Nigeria corroborates this finding by illustrating how climate impact resistant development may exacerbate differential social vulnerability to climate change impacts by redistributing, or redirecting environmental threats. In this case, developers mitigated risks of storm surges and flooding in an urban space designed for wealthy elites in Lagos. In doing so, developers redesigned the coastal hydrology of the city in a way that exacerbated storm surge risk in an adjacent, low-lying area of the city predominantly inhabited by the landless poor.

3.1.1. Eko Atlantic, Lagos

Lagos, Nigeria is the largest city in Africa and has struggled to overcome massive housing deficits in which nearly 70% of the city's population of 21 million people live in slums (Ajibade and McBean, 2014). Much of the low-lying coastal metropolis was built on wetlands and floodplains, and the expansion of impervious surfaces and poor drainage in these environments has contributed significantly to



Fig. 1. Map indicating the five case study locations. From West to East: Miami (USA), Lagos (Nigeria), Hanoi (Vietnam), Tokyo (Japan), and Manus Island (Papua New Guinea).

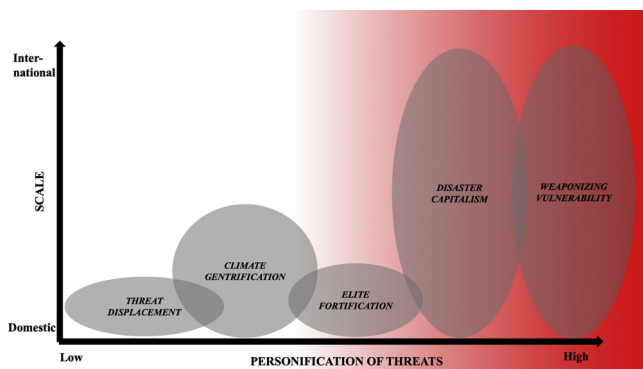


Fig. 2. Modes of [re]producing differential vulnerability to climate change. The x-axis depicts the degree to which threats are perceived to emanate from primarily environmental (low personification) or social (high personification) factors. The darkening background depicts increasing securitization among modes of vulnerabilization. Position along the spectrum only designates the extent to which climate change responses are focused on social threats. Therefore, a position lower on the spectrum does not imply that a mode is more benign than another one higher on the spectrum.

recurrent and disastrous flooding (Douglas et al., 2008). Climate change is exacerbating these problems, as rainfall is concentrated into shorter periods of time. In 2011, approximately 100 people died when the city received 158% of its long-term mean monthly precipitation on a single day in July (Ajibade et al., 2013; Israel, 2017). The loss of lives more than tripled the following year when rainfall on June 27th exceeded the monthly average by 78% (Israel, 2017). Sea level rise and storm surge pose additional hazards to people and property and are expected to worsen as climate change progresses (Elias and Omojola, 2015).

However, exposure to and suffering from these hazards is unevenly distributed. The urban poor and marginalized groups are more likely to occupy hazardous environments as a result of unfair resource allocation, high land prices, and forced displacement from indigenous lands (Ajibade and McBean, 2014).

These issues transmit an overwhelming need for formal housing and climate-resilient infrastructure in Lagos. However, instead of prioritizing the city's vulnerable populations, the most conspicuous development effort is Eko Atlantic, a 10 km² luxury complex being constructed on a purpose-built peninsula adjoining the affluent neighborhood of Victoria Island. Touted as a utopic eco-city, the project's website boasts a number of planned amenities: "Self-sufficient and sustainable, it includes state-of-the-art urban design, its own power generation, clean water, advanced telecommunications, spacious roads, and tree-lined streets" (Eko Atlantic, 2019). Eko Atlantic's developers also claim that the approximately 6 billion USD development will be protected from flooding and sea level rise and "offer a long-term solution to shoreline erosion problems at Victoria Island, Lagos" (Royal Haskoning, 2012: 7; see also Carmody and Owusu, 2016; Ajibade, 2017).

Flood and erosion protection are noteworthy features given that Eko Atlantic was first conceived in 2003 as a retaining wall to help Lagos contend with coastal erosion and sea level rise (Brisman et al., 2018). Plans for collective shoreline protection were later reconfigured into a narrowly focused sea defense barrier that only shelters the new city and a portion of Victoria Island. Named "the Great Wall of Lagos," the 8.2 km-long revetment will be constructed from 100,000 5-ton concrete blocks and is already visible from space, though still incomplete (Eko Atlantic, 2019). The sea wall has been designed to withstand 1 in 1000-year storm events, "putting into consideration global warming and rising sea levels" (Eko Atlantic, 2017). However, beyond the wall's

covered range, unprotected and predominantly slum areas are likely to face greater threats from erosion, sea level rise, and coastal flooding, as the sea wall deflects incoming waves and storm surge down the shore (Ajibade, 2017). Much like other nominally sustainable developments like Ecopark in Vietnam and Tianjin Eco-city in China (Caprotti et al., 2015: 495), ecological benefits are narrowly configured for Eko Atlantic's residents rather than the broader urban landscape.

3.2. Climate gentrification

Vulnerability is also [re]produced as underprivileged households are displaced by wealthier ones seeking to reduce their physical exposure to climate change threats. Although the drivers of such displacement are novel, the process itself builds on a long history of gentrification. Over the past several decades, urban spaces worldwide have undergone dramatic demographic, economic, and aesthetic transformations as middle- and upper-class homebuyers and private developers invest in lower-income and working-class residential neighborhoods (Smith, 1982). Significant numbers of poor households have been priced out of the urban core as property values and costs of living increase in step with these investments (Zukin, 1987; Smith, 1996). While gentrification continues apace (see for example Zuk et al., 2018), the concept has been updated to account for the ways that the establishment of green spaces and provisioning of various environmental amenities similarly augment property values and attract affluent residents to previously marginal neighborhoods (Banzhaf and Walsh, 2005; Pearsall, 2010; Checker, 2011). Research on climate gentrification extends this notion of environmental gentrification by highlighting the ways that climate change, and responses to it, may impact property markets and urban geographies of social differentiation (Anguelovski, 2016; Gould and Lewis, 2018).

3.2.1. Miami-Dade County

Global mean sea level has increased 7–8 in. since 1900, but the rate of change is uneven, with sea levels rising faster in recent years and in some locations (United States Global Change Research Program (USGCRP), 2017). Florida's sea level, for instance, rose six times faster than the global average between 2011 and 2015 and is considered a sea level rise hot spot (Valle-Levinson et al., 2017). Southern Florida is especially vulnerable to sea level rise and increasingly experiences prolonged inundation and sunny day flooding that negatively impact drinking water supplies, infrastructure, and tourism (Tompkins and DeConcini, 2014).

Miami-Dade County occupies the southeasternmost portion of the continental United States and is the most populous county in Florida, with over 2.7 million residents. A recent analysis of flood risk associated with sea level rise determined that Florida has the most existing homes at risk of chronic inundation in 2045 and 2100 based on a high sea level rise scenario (6.6 feet of global sea level rise) (Union of Concerned Scientists (UCS), 2018). The study also evaluated three categories of risk to homes in the United States: residential properties at risk, current value of properties at risk, and current property tax base at risk. Miami ranks as the most at-risk area in all three categories, and flooding concerns are prompting residents in wealthy seaside neighborhoods and real estate speculators to eye properties farther inland and at higher elevations (Union of Concerned Scientists (UCS), 2018).

The desirability of more elevated residential neighborhoods is already sending price signals to Miami's housing market, where single-family homes at higher elevations have appreciated faster since 2000 than those closest to sea level (Keenan et al., 2018). Higher elevation neighborhoods such as Little Haiti, Liberty City, and Overtown are predominately inhabited by poor and working-class people of color. Properties in these areas are reportedly being quickly bought up (Bolstad, 2017) and converted from modest single-family homes into upscale mega-developments with thousands of housing units and large retail spaces (Ariza, 2018).

A projected 2.5 million people will be displaced from Miami by sea level rise by 2100 (Hauer, 2017), and increased urban density is necessary to accommodate coastal residents displaced by rising seas. However, it is unclear where disadvantaged residents at higher elevations will go as their neighborhoods become prohibitively expensive (Bolstad, 2017). Previous cycles of gentrification in Miami and elsewhere suggest that the displaced poor will be forced to incur such varied costs as longer commutes to work, weakened social and kin networks, more crowded living conditions, marginal living environments, closer proximity to toxic industrial facilities, and/or homelessness (Atkinson, 2000; Samara and Chang, 2008; Abel and White, 2011). Any of these factors may augment one's exposure and sensitivity, and thus vulnerability, to climate change threats (Thomas et al., 2018). As conditions of rising sea levels, extreme storms, megafires, and water scarcity become more common worldwide, it becomes logical for those who are able to mitigate such risks by relocating to less hazardous environments. However, as this case of climate gentrification illustrates, the very act of revaluing spaces based on a calculus of risk exposure may amplify social stratification and generate new risks for already vulnerable groups.

3.3. Elite fortification

Nearly 70% of the world's population is anticipated to be urban by 2050 (United Nations (UN), 2018), and security analysts predict a range of dire outcomes emanating from interactions between climate change and urbanization. Analysts suggest, for instance, that the influx of new residents to cities and increased climate threats may strain cities' capacities to provide basic services (Rüttinger et al., 2015: 7), increase pandemic disease risk (DHS, 2014:21), or heighten social tensions in recipient areas (Foresight, 2011:18). Although such risks may be mitigated through "planned and facilitated approaches to human migration" (Foresight, 2011:189), few measures have moved beyond global regimes (Opitz Stapleton et al., 2017). In this absence, the creation of exclusive enclaves for the wealthy elite has emerged as one response to existing and anticipated issues of urban congestion, environmental health, and security from climate change threats. Elite fortification is similar to climate gentrification in that it displaces marginalized populations and renders them vulnerable. Where this mode differs is in its construction of climate threats as urgent and requiring substantial adaptation. By securitizing environmental threats, elites are justified in taking extra-institutional actions that transfer resources and secure spaces for themselves and in doing so, engender vulnerability for others.

3.3.1. Ecopark Hanoi

"Ecopark is not just a home, it is an ideal habitat." (Ecopark, 2019a)

With a population of more than 18 million people in an area of approximately 11,000 km², the Red River Delta is the most densely populated region in Vietnam and includes Hanoi, the country's capital and second largest city. Hanoi experiences severe air pollution (GreenID, 2018; Lasko et al., 2018), high summer temperatures and energy demand (Trihamdani et al., 2015), and stormwater runoff and flooding (Saraswat et al., 2016), which are all projected to worsen with urban growth and climate change (Tran et al., 2006; Marlier et al., 2016; Lee et al., 2017).

In addition to Hanoi's ambitious master plan for sustainable development to 2030, projects aimed at alleviating such problems include developments in the urban periphery. Ecopark is a 10 billion USD urban township envisioned as a green satellite city for Hanoi. The first residential units were occupied in 2012, soon after developers broke ground in 2009. Completion of the 12-phase project is scheduled for 2032, at which time Ecopark will boast 20,000 luxury residences and such world-class facilities as an international university, hospital, commercial units, a golf course, and swimming pools. The

development's "Urban Vision" declares that "Ecopark creates a harmonious living environment between nature and humans, focusing on building sustainable projects to provide a life full of conveniences and facilities" (Ecopark, 2019b).

Government and international funding organizations regard such development visions as aligned with national adaptation plans (NAPs), strategies for identifying country-specific climate change adaptation needs and implementing programs to satisfy those needs (United Nations Framework Convention on Climate Change (UNFCCC, 2010). Despite calls to move urban climate adaptation beyond a focus on physical structures and toward adaptive governance (Birkmann et al., 2010), Ecopark maintains a focus on modifying the built environment and has received endorsement from federal (e.g. Office of the Prime Minister, Ministry of Construction, Ministry of Natural Resources and Environment) and foreign (e.g. Japanese Ministry of Economy Trade and Industry) government agencies. However, Ecopark's vision has come at the expense of "the most severe recent conflicts over land in Vietnam" due to the eviction of 4000 families from their homes and agricultural lands (EJ Atlas, n.d.).

While Ecopark's developer, Viet Hung Urban Development and Investment J.S.C. (VIHAJICO), insisted that land for the project would be acquired voluntarily, 166 families and their supporters were suppressed with police force in April 2012 when they rejected the company's compensation (Le, 2015). While VIHAJICO was reportedly selling units for 1000–2000 USD/m², the company offered farmers 6 USD/m², a rate that the Ministry of Construction upheld as in accordance with the law (Government of Vietnam (GoV, 2012; Le, 2015). The government-enforced displacement of thousands of peasant families from their land and livelihoods is also noteworthy given that the National Strategy on Climate Change commits Vietnam to "securing interests of vulnerable social groups, such as women, the aged, the poor, and ethnic minorities" (Government of Vietnam (GoV, 2011).

Rather than enhancing the security of the most vulnerable, Ecopark's primary concern is maintaining the comfort and security of its residents (see also Caprotti, 2014). Displaced farming households have little hope of ever living in one of the units that now occupies their former land, but nor are they allowed to enter Ecopark to enjoy the fresh air and green space, as access to the complex is strictly regulated:

"Security is always one of problems that Ecopark cares [sic] the most. Coming to Ecopark, customers will not have to worry about this when you will be protected 24/24 [sic] by special security system. There will be at least one security stands [sic] at the entrance gate and CCTV system, which will ensure the residents can enjoy fully every moment without any disturbances." (Ecopark, 2019c)

The disenfranchisement of vulnerable groups, the expansion of impermeable surfaces in the flood-prone delta, and the selective provisioning of environmental amenities, like clean air and water, indicate that Ecopark's "ideal habitat" privileges the personal security and well-being of residents to the detriment of those most in need of greater protections from environmental hazards (see also Caprotti et al., 2015). Accordingly, some scholars observe that "it is a particularly perverse form of climate adaptation that then emerges to enable the elite to enclose themselves in ways that remove them further from the relocating and dislocated masses" (Brisman et al., 2018:10). Such elite fortification is not unique to Vietnam, as similar dynamics have been observed in other "privatized green enclaves" (Brisman et al., 2018: 10) including Tianjin Eco-city in China, Lavasa in India, and Masdar City in the United Arab Emirates (Caprotti, 2014).

3.4. Disaster capitalism

For a select few, disasters paradoxically herald tremendous opportunity for financial and professional gain. At times, governmental and international institutions (e.g. the International Monetary Fund) have

used such cataclysms to accelerate the restructuring of local and regional economies to bring them more in line with free-market capitalism. These initiatives include increased privatization, austerity, and deregulation of finance. Such "orchestrated raids on the public sphere in the wake of catastrophic events, combined with the treatment of disasters as exciting marketing opportunities" define *disaster capitalism* (Klein, 2007:6).

Climate change is an unfolding crisis that is likewise garnering attention for its profit-making potential, as evidenced by the efflorescence of market-based approaches to climate change and risk mitigation (e.g. Bumpus and Liverman, 2008; Boyd et al., 2011; Fletcher, 2012). For instance, a recent report states that shifting to a low-carbon economy could yield economic gains of US\$26 trillion by 2030 but warns that "[s]eizing the economic benefits of low-carbon and resilient growth will only be possible if we act boldly over the next 2–3 years" (New Climate Economy, 2018:14). However, the history of disaster capitalism has shown that those ideally situated to reap benefits from calamity are powerful actors rather than the most affected victims. Given this history, it is necessary to ask, who is the "we" who is prepared to "act boldly" and "seiz[e] the economic benefits" of such a dramatic economic reorientation? Consistent with other historic crises, Japan's approach to climate security indicates that the most well-resourced groups are best positioned to take advantage of and benefit from the "exciting economic and market opportunities of the new growth approach" (New Climate Economy, 2018:9). Here, we see that disaster capitalism is predicated not just on climate change alone. It also relies on the securitization of climate change to legitimize the creation of markets that capitalize on vulnerable populations.

3.4.1. Japan and the G7

The Group of Seven (G7) is a consortium of seven of the world's largest advanced economies and was established in 1975. The annual G7 summit reports, known as the Leaders' Declaration or Joint Communiqué, chronicle members' agreement and disagreement on the world's most pressing issues and thus provide insight into global leaders' anxieties of the moment, as well as their respective positions on them. Climate change first appeared in the Joint Communiqué in 1985, when leaders pledged international cooperation to address multiple environmental concerns. Climate change has been on the agenda every year since, with the one exception of 1986.

While the Group has consistently been concerned with energy security and at times linked it to climate change, 2013 marked an important shift in which members publicly articulated for the first time a link between climate change and broader security issues. They stated, "We recognize climate change as a contributing factor in increased economic and security risks globally" (G8, 2013:14). Although no specific risks were identified, the following year the G7 commissioned a handful of research institutes and think tanks to prepare a report on the relationship between climate change and security. The G7 Foreign Ministers welcomed the report, "A New Climate for Peace," in 2015 and immediately formed a Working Group to consider its recommendations.

The report focused on so-called "fragile states," and its top recommendation is for G7 governments to "make climate-fragility risks a central foreign policy priority" (Rüttinger et al., 2015:111). Japan quickly followed through on this guidance during its G7 presidency in 2016 by extending the Working Group for two more years, hosting three Follow-up Review Meetings in 2017, and commissioning a report on foreign policies regarding climate change and fragility in the Asia-Pacific region (MOFA, 2017a:1).

In these and related reports, climate finance emerges as a crucial factor for minimizing risks in and from climate-affected and fragile situations (Rüttinger et al., 2015; MOFA, 2017b; Moran et al., 2018). A finance-based approach to climate fragility risks builds on a precedent of deploying aid as a foreign policy tool, and Japan has been instrumentalizing development finance as a form of soft power for decades (Jain, 2015). Japan is one of the world's largest donors of bilateral

aid (4th) and a major contributor to the World Bank (3rd). It is thus poised to play a significant role in mobilizing funds for climate change responses. However, climate finance is just as susceptible to uneven capture as traditional foreign aid.

The 2009 Copenhagen Accord distinguishes climate finance from standard development assistance in terms of requiring “new and additional” funding for developing countries to mitigate and adapt to climate change. That is, finance above and beyond the aid that would have been provided in the absence of climate change. Despite this guideline, there is no consensus about what climate finance means, and in practice it has been used to refer to anything from public grant-based aid to market-rate loans and private investment (Carvalho and Terpstra, 2015). Japan is the largest donor of bilateral and multilateral climate finance, but over 70% of this aid is delivered as loan packages, with conditions reminiscent of those attached to conventional development aid (Hillier, 2018). The populations most vulnerable to climate change are often also those who have emitted the fewest greenhouse gases and are the least financially equipped to pay for costly adaptation measures. That such cash-strapped groups would then assume a greater burden of debt to mitigate climate risks can be expected to further entrench their vulnerable status.

Vietnam, for instance, has a long coastline that is highly exposed to climate hazards such as cyclones and sea level rise. Such vulnerability has helped justify injecting billions of dollars of climate finance into the country (Priambodo et al., 2013). While Japan is the largest provider of overseas development aid to Vietnam, the Vietnamese Ministry of Finance recently reported that this aid comes with onerous stipulations, including exorbitant salaries for Japanese consultants, upwards of \$360,000 US per year in a country where the average annual income is \$1000–4000 US (VnExpress, 2018). Although the Japanese bilateral aid agency (JICA) challenged these claims (Ha, 2018), there is mounting evidence that climate finance perpetuates many of the donor-oriented policies that attend traditional development aid (e.g. Ireland, 2012; Nakhouda and Norman, 2014; Hillier, 2018). Such policies enable private interests within donor countries to exploit environmental crises like climate change for their financial enrichment (Taylor, 2009; Fletcher, 2012). Taken together, the G7’s growing security concerns about climate vulnerable countries underpin expensive, foreign-financed interventions that disproportionately benefit donor interests and disadvantage recipient populations. This emerging form of disaster capitalism reinscribes the boundary between winners and losers in the context of a changing climate (O’Brien and Leichenko, 2003).

3.5. Weaponizing vulnerability

Marginalized identities typically overlap, such that lack of political representation, high exposure to environmental hazards, insufficient material resources, and social isolation are highly interwoven (Thomas et al., 2018). Those who are vulnerable to climate change are thus simultaneously vulnerable to a whole spectrum of social, political, economic, and environmental disruptions. However, for many populations, their vulnerable status is depicted in terms that distort the relationship between who is threatened by what. Notions of a “mass exodus” from Bangladesh (Burns, 2017; Szczepanski et al., 2018), “desperate people” in Guatemala (Markham, 2018), “fragility hotspots” like Somalia and Haiti (Rüttinger et al., 2015:37), and “trapped populations” in Vietnam (Foresight, 2011) are key elements of discursive strategies for catalyzing action on climate change, but they also reconceptualize threatened populations as threats. An excerpt from a report on disaster and conflict by the UK think tank Overseas Development Institute illustrates how these ideas circulate:

“In 2010, 42 million people were displaced by natural hazards, up from 17 million in 2009 (Foresight, 2011:6). One particular area of concern in this regard is the existence of ‘trapped populations’ unable to move from vulnerable locations the IPCC (2012) deems

potentially unfit to live and work in the future.” (Harris et al., 2013:5)

Such framings squarely place the emphasis on the physical geography of hazards, and the many social, economic, and political drivers of vulnerability are notable by their absence. All the contingency that suffuses the social production of vulnerability is wrung out of these accounts, leaving meteorological forces as the only substantive agents (Taylor, 2015). Therefore, despite their implicit or explicit positive intentions, “doom and gloom” narratives depict vulnerable people and places as condemned, effectively foreclosing alternative visions of life in climate change-affected systems and disempowering those for whom these accounts presumably speak (Farbotko and Lazrus, 2012; Bettini, 2013; Gemenne et al., 2014; Paprocki, 2018). These are not mere semantics. Words do work (Austin and Urmson, 1962). Or, as Searle (1969, quoted in Marino and Ribot, 2012:326) even more concisely asserted, “Speech acts.” If dystopian narratives do not represent well the attitudes and interests of climate-affected populations, then what work are they performing?

One observable outcome is that alarmist language incites fear in others rather than simply engendering concern and assistance for those affected (Marino and Ribot, 2012; Bettini, 2013). This alarmist language portrays climate vulnerable populations as threats, often to national sovereignty or “law and order.” By doing so, this mode renders vulnerable populations as security threats, which are existential, direct and urgent, and have to be eliminated or, alternatively, a strategy of defense against the threat must be developed (Von Lucke, 2018). To preclude any ambiguity about what is at stake, the potential security threats that vulnerable groups are assumed to pose to relatively secure ones are clearly spelled out in diverse media (e.g. CNA, 2007; Nett and Ruttinger, 2016; Burns, 2017; Australian Senate (AU Senate, 2018). Constructions of climate affected groups as potential terrorists, drug smugglers, human traffickers, and vectors of disease directly inform national security policies, as is the case with Australia.

3.5.1. Australia

Beginning in the early 2000s, Australia has increasingly expanded non-entrée policies to influence regional neighbors. These measures seek to prevent refugees from reaching its territorial border (Australian Border Force, 2014). These unilateral and co-operative policies include stricter visa requirements, carrier sanctions, airline liaison officers, surveillance technologies, interception at sea, the excising of Australian territory, and agreements with its regional neighbors to deter, detain, and deport would-be asylum-seekers (Hirsch, 2017).

Of Australia’s non-entrée policies, arguably the most extreme is its offshore refugee detention and processing. The most recent version of this policy came in 2010, when then Prime Minister Julia Gillard began holding discussions with regional neighbors about the possibility of establishing regional refugee processing and resettlement centers in Nauru and Papua New Guinea. She argued that the measures were necessary to respond to increased numbers of “unauthorised people movements” in the region (Karlsen, 2016). The policy has been widely criticized, as critics argue that this “inhumane treatment of refugees increases angst amongst those who are threatened to lose their homes as a result of climate change and depend on support from other countries” (Weber, 2015).

While the impetus for Australia’s non-entrée policies like regional refugee processing and resettlement is multifaceted, much of it can be attributed to the dominant securitization discourse that has eroded an international system of climate refugee protection (Wilson and Weber, 2008; Gammeltoft-Hansen and Hathaway, 2015). In Australia, depictions of boats of climate refugees “evoke xenophobic, racialized, well-rehearsed fears and moral panics about the ‘other’, linked to a desire to control borders and protect one’s territory” (Hyndman and Mountz, 2008). The ramifications of climate change impacts on Australia’s regional neighbors have become a primary cause of such panic, and in

turn, increased calls for extraterritorial measures that intercept refugees before they reach Australia's shores.

One of the best examples of such calls may be found in the 2018 Australian Senate Report, titled "Implications of climate change for Australia's national security." The authors collected submissions from 70 parties (*ibid* pp 107–109), including the Center for Policy Development (CPD) which stated:

"Asia is the most exposed region to low elevation climatic impacts like flooding and displacement...and has more than 90 per cent of the world's exposure to tropical cyclones...The Indo-Pacific region has the world's fastest growing economic hubs, its most populated cities, and the majority of the world's poor. It also has the greatest vulnerability to climate-induced humanitarian and natural disasters such as severe storms, flooding and extreme heat, as well as the flow-on effects such as damage to economic and social infrastructure, disease outbreak, malnutrition and food and water shortages. This is a volatile mix of factors that heightens the security risk posed to Australia." (Australian Senate (AU Senate, 2018:18–19).

Most recently, the Climate Council of the Australian Senate has been developing a discourse that incorporates the potential impacts of climate change, arguing that these impacts "are already contributing to increases in the forced migration of people within and between nations, as well as playing a role in heightening social and political tensions, flowing onto conflict and violence." (Australian Senate (AU Senate, 2018:10). Relying on American climate security expert Sherri Goodman, formerly Vice President of the CNA (a non-profit organization based in Virginia that runs the Center for Naval Analyses), they continue by stating that:

"Ms. Goodman ...warned rising sea levels could lead to mass displacement of populations near the coast in particularly the 'disaster alley' Asia-Pacific region...and has suggested Australia's region is 'most likely to see increasing waves of migration from small island states or storm-affected, highly populated areas in Asia that can't accommodate people when a very strong storm hits'" (Australian Senate (AU Senate, 2018:24).

4. Discussion

Various modes of [re]producing differential vulnerability exist along a continuum (x-axis, Fig. 2). On one end of the spectrum are climate change responses aimed at addressing physical hazards. These include *threat displacement*, *climate gentrification*, and some cases of *elite fortification*, which operate domestically at local and subregional scales (y-axis, Fig. 2). In each of these modes, the impetus for action is the perception of inevitable and near-term climate change impacts (e.g. coastal inundation) and the pursuit of protective measures (e.g. sea walls) and environmental amenities (e.g. floodwater management, shade trees) among the populations who can afford them (Table 1). In the Eko Atlantic case, developers were narrowly focused on protecting a multibillion-dollar luxury eco-city. The resultant increase in vulnerability to storm surge in poor neighboring areas was an externality, albeit one that could have been easily predicted.

Climate gentrification in Miami is similar to storm surge threat redistribution in Lagos in that it is an unfortunate and largely unintended outcome that resulted from unequal economic structures in the city. This mode of vulnerabilization further marginalizes already disadvantaged populations, but these groups may benefit from progressive policies, which have been effective in protecting vulnerable populations in other cities from the impacts of gentrification (Fernandez, 2005). In addition, climate gentrification is occurring in the absence of large-scale, public adaptation that may mitigate storm surge threats and sea-level rise in more inclusive ways.

In climate enclaves like *Ecopark*, elites expropriate resources, and in

Table 1
Summary of case studies exemplifying each mode of vulnerabilization.

Case study	Mode (details)	Scale	Actors	Process of vulnerabilisation	[Re]produced differential vulnerability
<i>Eko Atlantic</i>	Threat displacement (Reshaping of urban coastline)	Local	Luxury real estate developer	Redirecting climate impacts is justified based on protection of new elite development.	EkoAtlantic deflects flood impacts toward already vulnerable residents of Lagos.
<i>Miami</i>	Climate gentrification (Urban redevelopment in response to sea level rise)	Local	Private developers, home buyers, real estate speculators	Real-estate investments in new, previously occupied areas is justified based on climate threats to existing developments.	Poor populations are priced out of climate-safe neighborhoods and forced to relocate in areas vulnerable to sea-level rise.
<i>Ecopark Hanoi</i>	Elite fortification (Exclusive eco-enclaves provide rare flood control and green spaces)	Local	Luxury real estate developer	Displacement of vulnerable populations and physical separation from these populations is justified based on perceived threats to elite class.	There exists a newly vulnerable population of landless peasants due to their displacement and the appropriation of their land.
<i>Japan and the G7</i>	Disaster capitalism (Creating new markets and policies abroad through the provisioning of climate development aid)	Global	Japanese government, G7	Establishment of new foreign markets and economic policies that favor climate aid donors are justified on the basis of national security concerns among industrialized countries.	Poor states are most vulnerable to climate threats and are the least equipped to pay for costly adaptive measures. Aid as loans magnifies their vulnerability by augmenting their debt burden and further depleting crucial financial resources.
<i>Australia</i>	Weaponizing vulnerability (Restrictive entrance policies and limited access to refugee status)	Regional	Australian government	New and expanded nation state border separations from vulnerable populations are justified because vulnerable people are seen as threats to sovereignty.	Australia has justified new non-entrée policies using citizenry fear of climate refugees. This eliminates migration as an option for vulnerable populations in the region.

the process, they are able to fortify their existence through extra-institutional actions, legitimized by securitizing climate change, that separate them from other groups. Through this process of self-isolation, other groups lose access or potential access to resources and become more vulnerable to climate change threats.

At the opposite end of the spectrum lie the modes of *disaster capitalism* and *weaponizing vulnerability*. At this end, the impetus for action comes from vulnerable populations that are rendered as potential security threats, on the basis of their anticipated social upheaval and large-scale displacement (Foresight, 2011; DHS, 2012; Rüttinger et al., 2015). In addition, climate vulnerable populations are feared to: contribute to instability abroad, “creating environments ripe for terrorist activity” (The White House, 2015:9); become victims or members of anti-governmental (Harris et al., 2013) or non-state armed groups (Nett and Rüttinger, 2016); “fuel the spread of infectious diseases around the world” (DHS, 2014); or engage in assorted illicit behaviors (DHS, 2012). In the mode weaponizing vulnerability, relatively advantaged groups are no longer adapting to direct threats from climate change. Rather, they are responding to the perceived threats posed by more vulnerable populations. Through securitization processes, they are re-inventing institutions and eluding cultural norms that protect the rights of vulnerable populations. Discursive and administrative practices re-configure vulnerable populations from threatened to threatening.

4.1. Constructing threats from threatened populations

Describing its mission to secure and manage U.S. borders, the Department of Homeland Security (DHS) identifies numerous national security threats posed by climate change impacts abroad:

“More severe droughts and tropical storms, especially in Mexico, Central America, and the Caribbean, could increase population movements (both legal and illegal) across the U.S. border, leading to potential increases in drug trafficking, human smuggling, and transnational criminal organization activity.” (Department of Homeland Security (DHS, 2012:10)

Security analysts situated within intergovernmental organizations, the intelligence community, and think tanks duly acknowledge that complex phenomena like migration and conflict are multi-faceted and cannot be attributed to a single cause (e.g. Foresight, 2011:9; Rüttinger et al., 2015:28; MOFA, 2017b:22). Yet, as the DHS (2012) quote exemplifies, such variegated complexity is effectively distilled down to simplified relationships between climate change and myriad social threats, despite broad recognition of the numerous factors that inform these potential responses. By establishing a direct causal relationship between [external] climatological phenomena and [internal] social distress, climate change is effectively isolated from social and political life, and the many drivers and dimensions of vulnerability become singular (Taylor, 2015). Vulnerability, thus naturalized and depoliticized, ensures that the uneven power relations, “networks of control and influence”, disenfranchisement, and exploitation characteristic of the “socio-political status quo” are left undisturbed (Swyngedouw, 2010: 222; also Felli and Castree, 2012).

While many climate change vulnerability analyses carefully sidestep knottier historical, economic, and political aspects of vulnerability, they do incorporate select markers to identify and rank populations. Our case study of Australia shows that climate security assessments, which are funded and endorsed by state (e.g. AU Senate, Pentagon) and intergovernmental (e.g. G7, UN) organizations, are increasingly influencing national and international policies, large-scale interventions, and the distribution of financial, humanitarian, and military resources. Assessments stemming from these institutions prioritize state legitimacy, degree of social conflict, economic status, disaster risk, and vulnerability to climate change. Separate indices for these parameters are then integrated into composite profiles and rankings and acted upon.

One such example not included in our case studies is a UK Aid-funded study on disaster and conflict that links “fragile” states with climate vulnerability. The authors report that “Somalia, Afghanistan and Niger are ranked high in a composite list of countries considered to be fragile and/or conflict affected, with high disaster risk, high levels of poverty and high vulnerability to climate change” (Harris et al., 2013: vii). These rankings were established by eye-balling the geographical overlap between several maps, each from a different source, indicating the distribution of failed states, climate change vulnerability, drought mortality risk, and mortality due to other environmental hazards. Despite the authors’ own account that their “rudimentary analysis” (*ibid*: vii) should be “cautioned with a number of caveats” (*ibid*: 6), this approach was replicated in a 2015 report, *A New Climate for Peace*, which was commissioned and endorsed by the G7. The G7 subsequently formed a working group to develop security policies based on the report’s recommendations (Ministry of Foreign Affairs of Japan (MOFA, 2017a; see section 3.4).

The designation of certain foreign populations as a threat to industrialized states has spurred increased intervention *abroad* to secure those populations in place. The operating rationale here is that threats can be anticipated and neutralized by taking preemptive measures in the originating country. This mentality is enshrined in the U.S. Customs and Border Protection (CBP) mission statement, “We safeguard the American homeland *at and beyond our borders*” (U.S. Customs and Border Protection (CBP, 2015: 3, emphasis added). The notion that U.S. federal agencies are justified in taking preemptive security measures abroad can be traced back to The 9/11 Commission Report, which asserted that “the American homeland is the planet” (National Commission on Terrorist Attacks (NCTA, 2004: 362). The extralegal expansion of U.S. territory has helped legitimize American intervention in countries such as the Dominican Republic, Guatemala, Honduras, Iraq, Afghanistan, and South Africa (Miller, 2013) and is a strategy that has been enthusiastically adopted by Australia (see section 3.5).

4.2. Securitizing climate change to weaponize vulnerability

On its face, the creation of threats from climate threatened populations raises multiple climate justice concerns and undermines decades of humanitarian work and human development programs. The question then becomes, through what discursive process or context is vulnerability to climate change able to be successfully weaponized? Recent research on the process of climate change securitization provides a likely answer to this question that is supported by our case study evidence.

There exist at least two different logics of climate change threat construction that determine the scope of adaptive responses across our case studies: security and risk. Within the modes of threat redistribution, climate gentrification, and disaster capitalism, climate change threats have been largely characterized by risk. This construction does not justify action outside of existing and accepted institutions or cultural norms (Goede, 2008; Corry, 2012). Security threats, on the other hand, require substantial mobilization towards adaptation because they have to be eliminated (Von Lucke, 2018). Once economically and politically powerful groups securitize climate change, exceptional measures to prevent the threat are often legitimized (Balzacq, 2005). Hence, securitization is about breaking or eluding existing institutions and norms. Securitization is achieved by placing climate change beyond normal politics and public debate (Schmitt, 1985; Williams, 2003), and it allows decisions about adaptation to be made on the basis of urgency and a willingness to sacrifice (Fischhendler, 2015).

In the weaponizing vulnerability case study (section 3.5), the drastic, discursive articulation of climate change impacts to neighboring vulnerable populations as an existential threat to the survival of a nation state has justified a political state of exception (see Wæver, 1995). Extraordinary measures have been adopted that are at once *structural*—setting buffer zones around borders that physically exclude

certain groups, *institutional*—implementing policies that politically exclude vulnerable groups from governance processes, and *linguistic*—creating narratives that justify additional securitization and coercion and the aforementioned structural and institutional changes (see Fischhendler, 2015). Such measures demarcate groups of people and assume all members are endowed with specific attributes in the absence of direct corroborating evidence. They are therefore undeniably racist, classist, and gendered, and they further marginalize already vulnerable groups without attending to the root causes of the problem (Gemenne et al., 2014; Oels, 2016). Differential vulnerability and climate change securitization are thus coproduced such that a population's extreme vulnerability is used to justify drastic security interventions by another country or entities like the G7 or UN Security Council. While the efficacy of such an approach in terms of addressing threats—real or perceived, environmental or social—is debatable, our analysis indicates that such interventions can reliably be expected to further deepen the vulnerability of disadvantaged populations.

5. Conclusions

In this paper, we took up Jesse Ribot's (2011:1160) call to examine “why are people vulnerable or at risk?” In answering this question, we created a broad, five-mode framework that explains how people are made vulnerable—or more vulnerable—as we adapt to climate change. The most socially innocuous of these modes is the redistribution of climate threats, even as it is still power-laden and likely often unjust. Myopic adaptation policies developed in response to specific climate threats seem to be the primary cause of this [re]production mode.

More concerning is our finding that the very designation of “vulnerable” may [re]produce a group's vulnerability. This mode of vulnerabilization cannot be simply explained away as a policy oversight, as may be the case with *threat displacement*, or even as a continuation of ongoing marginalization processes in society, as may be the case with *climate gentrification* and perhaps *elite fortification*. Rather, the creation of threats from vulnerable populations requires explicit recognition of others' vulnerability coupled with discursive and material actions that reproduce and exacerbate that status.

Weaponizing vulnerability occurs beyond current social institutions and paradigms that protect against such egregious processes. In places where such protections exist, only by securitizing climate change can adapting groups elude said protections and redefine a vulnerable population as a threat that must be eliminated. National security concerns arising from the secondary impacts of climate change (e.g. “humanitarian crises, large-scale migration, and violent conflict” Oels, 2012: 199) have led to policies primarily aimed at enhancing disaster management capacity in countries of concern. However, we find that climate security concerns are also prompting a range of new response measures aimed at protecting relatively secure populations, namely wealthy and politically connected groups in both the Global North and the Global South. This is consistent with the recent finding that “[m]itigation and adaptation policies, done poorly, exacerbate power asymmetries and dispossess vulnerable communities in ways that amplify various kinds of insecurities” (Gemenne et al., 2014:7). Indeed, perceptions of and responses to climate change vulnerability are not neutral. They are built upon existing systems of inequality based on race, class, and religion.

Our framework introduced the notion of *personification* to highlight that powerful actors like the G7 and US Department of Homeland Security regard climate vulnerable populations, not just changing environmental conditions, as posing grave security threats. By doing so, they rationalize unjust “adaptation” measures that reinforce the precarity of vulnerable groups. Personification renders people as threats, but our analysis suggests another kind of personification is possible. Whereas policy and media accounts of desperate and dislocated masses of climate-affected people obscure who is threatened by what and who is making decisions on behalf of whom, identifying the specific winners

and losers of climate securitization makes it easier to empathize with the very real lives affected by climate security policies. Researchers and policy makers may thus appropriate and redirect the problematic practice of personification to better serve those most in need.

Conflicts of interest

None.

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