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CLIMATE MIGRANTS

ENVIRONMENTALLY-INDUCED MIGRATION & ADAPTATION & PREPAREDNESS OF THE WORLD

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Acknowledgments...

I would like to thank my family for being the force that gives me life & George RR Martin for giving me the inspiration to be the best that I can be.

TABLE **OF CONTENTS**

ENVIRONMENTALLY-INDUCED MIGRATION & ADAPTATION & PREPAREDNESS OF THE WORLD

Introduction

Anthropogenic climate change brings with it a whole host of negative effects. The disequilibrium of the carbon cycle & the large-scale alteration in the chemical constituency of the Earth's atmosphere spells disaster for the biodiversity of Earth & for the planet's water cycles. The intensity & frequency of hurricanes are increasing year over year. Sea surface temperatures are increasing globally, Arctic ice is melting at unprecedented rates, & ocean levels are rising. Storm surges & flooding are becoming more disastrous & rainfall rate is climbing higher & higher. Some regions of the planet are becoming vulnerable to severe drought conditions & the size of arable land in these areas is decreasing as a result. Water scarcity is set to become a fundamental issue as the 21st century progresses. Where are the humans in this bleak illustration of the planet? What does the human face of climate change look like? What impacts will the aforementioned manifestations of climate change have on the human populations of Earth?

Climate change & extreme weather events are already taking their toll on human civilization. From the Americas to the Far East of Asia, environmental forces have displaced millions of people over the past decades & have triggered various forms of migration & adaptation. With global warming of close to 1.5℃ above pre-industrial levels already locked into the atmospheric system by past & predicted greenhouse gas emissions, large-scale environmentally-induced migration & adaptation is set to be one of the most crucial existential issues of the 21st century. Thus, this paper will seek to elucidate the concept of "climate migrants". As stated before, the consequences of climate change will vary across the globe. For example, in Bangladesh, millions of people who live at sea level will be forcibly displaced, both internally & externally, as a result of rising ocean levels, whereas in Eastern Africa, people will be forced to relocate, & in fact are already doing so, because of extreme drought & water scarcity. Essentially, climate migrants will not be & are not created in a uniform manner. Indeed, both the forces that trigger internal displacement & environmental migration & adaptation & the nature of the environmental adaptation responses themselves will vary throughout the world. This complexity must be

appreciated if any analysis of climate migrants is to be successful. This complexity leads this paper to posit the following fundamental question: “what do the different manifestations of climate migration & adaptation look like?” This question necessitates a follow-up fundamental question: “are those regions expected to be most impacted by climate change & the global community at large prepared to deal with large-scale environmentally-induced displacement & the various forms of forced migration & adaptation that follow?”

Determining the nature of the different manifestations is essential in answering the second question because an understanding of the scale & scope of each discrete manifestation will shed light on the preparedness of both the vulnerable regions & the world. In other words, a rich appreciation of the environmental, political, & socioeconomic realities of those areas set to be most impacted by climate change is fundamental in determining whether or not both the global community & the region in which the migration & adaptations are triggered are capable of adequately dealing with intra-border climate crises & significant levels of inter-border migration.

Essentially, the higher the magnitude of potential environmental displacement, the greater the burden will be on both the global community & the geographical location in which the displacement occurs. The magnitude of displacement & the nature of the environmental adaptations in critical areas of the world along with geopolitical, legal & socioeconomic realities will be extrapolated upon when determining the readiness of the global community.

Chapter I: Elucidating the Different Manifestations of Climate Migration & Adaptation & the Discrete Forces that Create Them

A) Characterizing the Manifestations

The phenomenon of 'climate migrants' is often painted simply & in a single color. The apocryphal narrative speaks of a post-apocalyptic world in which hundreds of millions of destitute & impoverished humans have suddenly been driven from their homes & are rushing to boats that are set to sail for safer lands. Statistics on climate-induced migration often reduces the immensely complex concept of 'environmental migration/adaptation' into a facile assumption which asserts that there will only be one manifestation of climate migrants: the climate migrant who is created by a devastating hurricane or who is suddenly forced to flee a drowning country & who seeks refuge beyond his or hers borders. This paper aims to elucidate the complexities of environmental adaptation & asserts, at this point in time, that there are 2 overarching manifestations of climate migrants & these 2 overarching & independent characterizations give rise to separate & unique adaptation & migratory mechanisms. The two fundamental manifestations are: **I)** Climate migrants created by sudden dramatic onset changes & **II)** Climate migrants created via a pernicious

process in which climate change gradually deteriorates the means of human existence over time; in other words, slow onset change impacts. Each overarching manifestation yields an assortment of idiosyncratic adaptation responses. Or in other words, each overarching manifestation begets a plurality of migration & adaptation responses. Moreover, migration itself is one form of adaptation & there is expected to be an array of different migration & adaptation strategies that are initiated in response to climate change & extreme weather events. As alluded to before, the different migration & adaptation strategies will be dependent upon the climate-change induced environmental distortion of the region, along with other factors. Climate-change induced environmental distortions & their associated contexts will be nuanced throughout the globe & thus migration & adaptation strategies will also be nuanced.

This chapter will focus on developing an understanding of the environmental reality of those regions that are exceptionally exposed to the effects of climate change & the identification of actual migration & adaptation responses that have been triggered by climate-induced slow-onset & sudden-onset change. These responses are dependent on not only the nature of the environmental distortion, but also on the political, demographic, legal & socioeconomic realities of the region in which the migration/adaptation is being observed & of the global community. It is also important to note that those regions of the globe that are vulnerable to the consequences of climate change can experience both of the OMs. This will in fact be the case for 2 of the 3 regions of the world that will be analyzed in this paper. The regions that will be focused on include: The United States of America, Central America & the Caribbean, & the Middle East. The United States & Central America & the Caribbean, in particular, have been chosen because both regions are exceptionally vulnerable to the negative effects of climate change & have a history of both sudden-onset change & slow-onset change. Moreover, as of 2017, the largest bilateral corridor in the world (migratory movements between pairs of countries) was Mexico – USA; as of 2000 & in particular, 2010, Central Americans constitute the majority of migrants traveling to the Mexico-USA border. Indeed, the number of migrants traveling from Central America into the USA has multiplied substantially in recent years & climate change appears to be the key driver of this.

This paper takes the stance that climate change is likely to exacerbate existing migration patterns, rather than create entirely new flows. Given the fact that certain regions of the USA & Central America are projected to be greatly impacted by the adverse effects of climate change, it becomes necessary to develop an understanding of the environmental realities in these areas, as these realities are likely to influence the pre-existing migratory flows between these regions to a great extent. Moreover, understanding the environmental realities of critical regions in the USA & the past adaptions to both environmentally-induced sudden dramatic onset change & slow onset change in these regions aids in determining the preparedness of the USA vis a vis environmental displacement, domestically & globally.

The Middle East at large is projected to be severely impacted by OM II & Syria in particular, serves as a telling example of what OM II looks like in the Middle East. The on-going conflict in Syria gave rise to a refugee crisis & migrations that extended all the way to Western Europe. Most importantly, this paper posits that climate change, along with related factors, was an underlying trigger for this long-distance inter-border migration, & for regional migration in & around Syria. The fate of the Middle East & countries such as Syria appear to be connected to Europe, & thus it is essential to understand the environmental reality in this region. Moreover, the migratory routes that were established between the Middle East & Europe during the refugee crisis are likely to remain & intensify as planetary warming persists onward. This is problematic when considering the significant amount of struggle Europe had in dealing with the Syrian refugee crisis. Analysis of the environmental situation in the Middle East & the particular case of Syria can aid in shedding light on what OM II looks like in a geopolitical hotspot & how prepared Europe is to deal with global environmentally-induced migration in the future. These are the reasons for why the Middle East was chosen for investigation.

Developing a clear understanding of the discrete environmental realities of the chosen geographical locations is fundamental because they will interact with one another & those regions of the world that are being called upon to serve in the vanguard of climate mitigation & adaptation. For example, by ascertaining the past manifestations of climate change & the success or lack thereof of environmentally-induced adaptation & migration in

the USA, the possibility of determining whether or not America is prepared to deal with environmentally-induced migration at large, or in this case, from its Southern neighbors, increases. The environmental realities of Central America directly feedback onto America, as they have had a principal role in the widening of the bilateral corridor between the two regions. The same is the case for the Middle East; the environmental reality of this region had a meaningful role in compounding migratory flows into Europe & consequently led to a political & humanitarian crisis within the continent. In essence, localized environmental catastrophes are being globalized. Establishing this truth is paramount in determining the preparedness of the world at large when it comes to climate migration & adaptation.

i) Environmentally-induced Sudden-onset & slow-onset change in the USA

The most powerful nation in the world will in fact be materially affected by the consequences of climate change. This reality is not only disturbing for America itself, but also for the rest of the world. America is one of the few regions of the world that has the technological & economic capacity to aid the poorer regions of the world that will be battered by climate-change-induced environmental degradation & natural disasters. However, America will be quite busy dealing with its own environmental costs & its government is woefully unprepared to deal with the violent flooding, storm surges, & hurricanes that are on the horizon. America's seemingly low potential in aiding the rest of the world in building climate resilience will be discussed in Chapter II. This section will focus on the effects of climate change & environmental distortions in America alone & the manifestations of climate migration & adaptation that have been seen & are being seen in the country. This section will focus on the individual state of Louisiana & will also extrapolate upon 2 of the most extreme weather events that have taken place in America in the recent past. The events that will be assessed are none other than Hurricane Katrina in Louisiana & Hurricane Sandy in New York & New Jersey. This section will briefly explain the environmental realities of the aforementioned state, the form of migration & adaptation that has been seen & is being seen in this area in response to climate-induced slow-onset change & sudden-onset change, & will ascertain what in fact happened in the aftermaths of both Hurricane Katrina & Hurricane Sandy. Analyzing these extreme weather events will

help to establish a plausible notion of what migration & adaptation will look like in response to sudden-onset change, in America, as the century progresses.

It goes without saying that the USA as a whole is far better equipped to deal with the adverse effects of climate change when compared to countries Bangladesh or Kiribati. In the USA, & in the regions that will be discussed, much of the population has achieved middle-income status & thus have a greater capacity to deal with environmental hazards. The populations of the USA that are most exposed to climate change do not have many of the vulnerabilities that Bangladeshis & Pacific Islanders have. The preexisting geopolitical & economic risks in these developing regions will be exacerbated by climate change, driving further societal upheaval. Moreover, these regions lack the governmental capacities & financial resources needed to both abate environmental destruction & deal with intra-border migration & displacement. On the other hand, the federal government of the USA can accomplish any objective it sets & Americans largely have the wherewithal needed for responding to sudden-onset extreme events & slow-onset changes. This is due to the fact that the USA has the requisite public institutions & economic vitality needed to aid citizens who have been impacted by extreme weather events or who need to engage in either intra-state or inter-state migration. The exact opposite is the case for the other 2 regions that will be discussed in this paper. The governments of the Middle East & Central America & the Caribbean do not have the fiscal nor the institutional clout necessary for large scale climate mitigation & adaptation. This contrast is very important to illustrate because while America will be impacted immensely by climate change, it has the ability to cope well with the negative impacts that climate change brings. Essentially, the impact of environmental hazards is mediated not only by the severity of the hazard but by the community's resources to respond to that impact. Indeed, a regions resilience to slow-onset changes & sudden-disasters will likely determine both the nature & success of the adaptation & migration that follows. On the other hand, while a nation's government may have the resources to mitigate the negative effects of climate change & extreme weather events, it may very well not engage in a meaningful intervention. This idea can be properly tested when analyzing the case of Louisiana.

The Case of Louisiana

In Louisiana, OM II (Overarching Manifestation: Climate migrants created via a pernicious process in which climate change gradually deteriorates the means of human existence over time; in other words, slow-onset change impacts) is the salient phenomena. The state is essentially losing massive amounts of land to the Gulf of Mexico. The extent of the land loss cannot be overstated, as every hour, an area equivalent in size to a football field disappears into the open water. Since the 1930s, Louisiana has lost nearly two thousand square miles of land, approximately the size of Delaware[1]. One area in particular, Plaquemines Parish, is being especially affected by the Gulf's consumption of the land. It has been estimated that this diminishing piece of land, which is occupied by some 25,000 people will be underwater by 2100, if no action is taken[2]. Isle de Jean Charles, a region within Plaquemines Parish, is the home of "America's first climate refugees". 60 years ago, the land was 11 miles long & 5 miles wide; now it is just 2 miles long & ¼ miles wide[3]. This loss of land in the southern state is occurring because of 2 major reasons. Firstly, human mismanagement of the land is contributing to the land-loss. In a nutshell, levees were built to protect highly populated areas from flooding & these levees are preventing sediment (which is constantly brought downstream by the rivers, inlets, & channels) from washing down & replenishing the wetlands. This has been compounded by decades of dredging that keep waterways & ports navigable by gathering sediments & transporting it elsewhere. The aforementioned human activities are eroding the states coastline & this erosion is exacerbated by rising sea levels caused by anthropogenic climate change. Oil & gas operations have also contributed to the degradation of the wetlands. Apart from their CO2-producing activities, the Louisiana oil & gas industry has constructed an extensive array of canals – up to ten thousand miles in total length – to access the myriad of oil & gas rigs scattered throughout the area. This transformation of the land has disrupted the

[1] Andrew Freedman, "This Louisiana Tribe Is Now America's First Official Climate Refugees," Mashable, February 18, 2016, http://mashable.com/2016/02/18/america-first-climate-refugees/#BdWnBWOIHiqL.
[2] Bob Marshall, "New Research: Louisiana Coast Faces Highest Rate of Sea-Level Rise Worldwide," The Lens, February 21, 2013.
[3] Terri Hansen, "Biloxi-Chitimacha-Choctaw Get $48 Million to Move Off of Disappearing Louisiana Island," Indian Country Today, February 5, 2016.

wetlands' sediment deposition processes, allowed saltwater from the Gulf to breach the wetlands, & has removed valuable protections against storm surges, which in turn speeds up erosion. Louisianans are basically living in a land that is, bit by bit, being slowly engulfed by water. Secondly, the phenomenon of sea level rise is occurring at a much faster rate in Louisiana than the worldwide average. The National Oceanic & Atmospheric Association predicts that the Gulf of Mexico will rise over four feet by 2100, thus inundating everything outside of the levees. The man-made ecosystem alternations serve as a risk intensifier, with the ultimate risk being the rising ocean (Robbins, Wennersten 2017).

The human face of this dismal predicament presents itself through the tribe of Biloxi-Chitimacha-Choctaw Indians living in Isle de Jean Charles. The group won a $48M grant in 2016 from the National Disaster Resilience Competition, a project from the US Department of Housing & Urban Development in collaboration with the Rockefeller Foundation[4]. This marks the first time that federal tax dollars had been granted to move an entire community reeling from the effects of climate change. Unfortunately, developments in 2019 show that the tribe ultimately declined to participate in the relocation program because of the state's decision to purchase land without consulting the tribe. Moreover, the tribe believes that the terms of the relocation are not in harmony with what they desire; essentially, they believe that the terms of the relocation put the tribe at risk of losing ownership of their existing homes on the Isle de Jean Charles. It can be seen here that there are cultural & sentimental issues that also arise when relocating persons affected by climate change. Indeed, the socioeconomic, political & historical context of an at-risk area adds extra complexity to the linkage between environmental impacts & population mobility. All things considered, many people susceptible to environmentally-induced displacement, in both America & abroad, may very well decide to not migrate, or will wait until they are pushed to the very edge, Nonetheless, the relocation project in Louisiana is expected to

[4] Sue Sturgis, "Losing Its Land to the Gulf, Louisiana Tribe Will Resettle with Disaster Resilience Competition Award Money," Facing South (February 9, 2016) https://www.facingsouth.org/2016/02/losing-its-land-to-the-gulf-louisiana-tribe-will-r.html.

continue on even though some stakeholders are not pleased with how the process has gone thus far.

Beyond the Isle de Jean Charles, Louisiana's wetlands are in trouble. The state laid out an ambitious mitigation-plan that will require a great deal of scientific innovation & money, to the tune of $50B dollars. For the project to be successful, scientists & engineers have to figure out how to create a manmade system that replicates the delta's natural land-building process[5]. The cost of the project, however, is much smaller than the cost of letting Louisiana's wetlands disappear. The wetlands is in fact the site of the country's largest port & extreme weather could lead to shutdowns that cost the US economy $300M each day. In 167 days of those ports being closed down, the cost of not adapting to climate change exceeds the $50B price tag to protect the wetlands. If they disappear, or are severely damaged, the economic & social costs would be profound.

Securing funding for this endeavor has proven to be cumbersome. Some affected parties have opted to use lawsuits against the fossil fuel industry as a method for financing the project. There is precedent for this; government estimates attribute 59% of wetland loss to activities of the oil & gas industry[6]. Unfortunately, all lawsuits levied against the industry have been consistently challenged & dismantled by local & state politicians who are interested in protecting the oil & gas industry, a major source of economic activity. Indeed, Louisiana is one of the top oil & gas producing states in the US.

Former President Barack Obama attempted to divert subsidies away from the fossil fuel industry & towards climate adaptation in Louisiana. One major measure was the protection of the coasts from hurricanes. Alas, these proposals were shut down with haste. In Louisiana, a clear picture can be seen when it comes to climate change adaptation: the state & the federal government both have the capacity to deploy the programs necessary for ecosystem restoration & yet both lack the political will to do so. The OM II that is slowly nipping away at Louisiana & its wetland communities has exposed tens of thousands of

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[6] Nathaniel Rich, "The Most Ambitious Environmental Lawsuit Ever," New York Times, October 2, 2014, http://www.nytimes.com/interactive/2014/10/02/magazine/mag-oil-lawsuit.html?_r=0.

citizens to land loss & rising ocean levels. There is discord between the civil society, their leaders, & corporations & this ultimately puts those citizens who are projected to be most impacted by the negative effects of climate change at a high risk of dislocation. Without a cogent & unanimously agreed upon plan of action, the citizens of Isle de Jean Charles & Louisianans at large are set to embark upon a journey of migration. What this migration will look like remains uncertain, but perhaps a look at Hurricane Katrina's & its impacts on the state of Louisiana can shed some light on this question.

Hurricane Katrina in New Orleans

The gradual loss of wetlands & ever-rising ocean levels in Louisiana represents OM II. This manifestation of climate change slowly spreads it roots & diminishes the means of human existence – in this case, habitable land – over a period of time, ultimately triggering a forced migration of inhabitants. To make matters worse, OM I is also present in Louisiana. OM I represents climate migrants created by sudden dramatic onset changes. Louisiana's most notorious incidence of OM I is, none other than, Hurricane Katrina. Katrina is in fact the cause of the greatest American internal migration event since the Dust Bowl. Moreover, the hurricane itself was also a major contributor to the degradation of Louisiana's wetlands. This is especially problematic when considering the fact that the wetlands act as a shock absorber, lessening the strength of the hurricane, before it reaches the heavily populated region of New Orleans. Thus, wetland loss increases the severity of any future hurricanes.

Over 1000 people were killed on August 23, 2005 & more than one million people were displaced. The forced dislocation that took place was idiosyncratic, & many displaced peoples remained without a home for many months. In fact, an interesting migration pattern took place. Some background on environmental migration must be given in order to contextualize why the migration that followed Katrina was interesting & somewhat novel. Conventional wisdom on the topic of displacement says that people who move from their homes in response to disasters often return. Most people seek to return to rebuild & continue living in familiar ways & places. Such movements are also allegedly typically short. Moreover, the literature says that most migration remains confined within the borders of a particular country. Of course, there is substantial empirical evidence to support the

preceding notions. One statistic in particular stands strong as a point of support: the number of internal migrants worldwide has been conservatively estimated at 740-763M (UNDESA, 2013; UNDP, 2009). These figures suggest that, at least 3X more people migrated within countries than across borders in 2013, & about twice as many people were displaced internally than across in borders in 2016 (IDMC, 2017; UNHCR, 2017).

Of course, Louisiana is a state, but the aforementioned pertains to the situation of Hurricane Katrina & the displacement it triggered. While Louisiana is a poor state, it is still a state in the richest country in the world. Intuition says that inter-state displacement should be quite small & if there is any displacement, it will be small & transient. Relative to regions like Bangladesh, the state & federal governments in the US have the institutional framework, financial clout, & political resources necessary for proper extreme-weather event adaptation. Thus, one could infer that most of the peoples affected by Katrina would remain within Louisiana because the requisite support structures do exist within their environment & also because empirical evidence – even though much of it originates in emerging economies – tells us that environmentally-induced migration remains internal to the domicile in which it originates. Louisiana, after all, is a semi-autonomous territory with distinct borders & is similar in nature to an actual country.

The adaptation response can be considered idiosyncratic because of the fact that the disaster resulted in a diaspora, with peoples being displaced throughout the country, to Georgia, Florida, Texas, South Carolina, New York, Mississippi, Colorado & other states[7]. Perhaps the most telling part of this reality, is the fact that many of the states where Louisianans migrated to did not share a border with Louisiana. Many people likely joined family in other states but a fundamental notion arises: Americans opted to move out of their state quite quickly, going against the conventional wisdom which says that displacement as it relates to sudden-onset disasters is localized & does not extend across long distances. The story becomes more compelling when acknowledging the fact that 5 years after the storm,

[7] "Mapping Migration Patterns post-Katrina," Times-Picayune, http://www.nola.com/katrina/index.ssf/page/mapping_migration.html.

100,000 – disproportionately black – still hadn't returned home[8]. The aftermath of Hurricane Katrina invalidates the argument that disaster relocation in America will always be temporary. 5 years later, whole neighborhoods were still abandoned, & the city's four major public housing complexes were destroyed or condemned. Tens of thousands of people remained displaced & homeless[9].

Black & low-income displaced residents were more likely to have been displaced to far-flung locations while white & higher-income residents were more likely to have been displaced to nearby locations[10]. While it is generally true that migration is less available to the poor as an adjustment mechanism to cope with extreme weather impacts & thus is seen as a last resort option, the poor in Louisiana not only opted for migration, but also traveled the farthest distances. Blacks were substantially less likely to return to the New Orleans metropolitan area than nonblacks. Blacks were also less likely to return their original dwellings when compared to whites. This dimension of the issue reflects how demographic & socioeconomic conditions also contribute greatly to the kind of migration an environmental migrant will choose.

The nature of the displacement that occurred in Louisiana offers interesting insights on the matter of inter vs intra-border migration. The number of people who relocated to Texas was greater than the number of those peoples who relocated to another place in Louisiana. As mentioned before, non-border states like Georgia, absorbed significant amounts of displaced peoples as well. Education levels & age also played prominent roles in determining the adaptation method of Louisianans. For example, less-educated non-blacks were statistically more likely to be living both outside their original residence & outside of their home state. In the case of age, young adults, relative to middle-aged adults,

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[8] Jonathan Tilove, "Five Years after Hurricane Katrina, 100,000 New Orleanians Have Yet to Return," Times-Picayune, August 24, 2010, http://www.nola.com/katrina/index.ssf/2010/08/five_years_after_hurricane_kat.html.

[9] Robbins, Denise, and John R. Wennersten. *Rising Tides: Climate Refugees in the 21st Century*. Indiana University Press, 2017, *Indiana University Press*, www.iupress.indiana.edu/product_info.php?products_id=808357.

[10] Frey WH, Singer A, Park D. Metropolitan Policy Program report. Washington, DC: The Brookings Institution; 2007. Resettling New Orleans: The first full picture from the census

were 75-80% more likely to have moved outside of the state, to Texas or somewhere else in the South, & were 3X more likely to be elsewhere in the US[11].

In all, approximately 1.2-1.5 million people were displaced by Hurricane Katrina & the sheer scale of this displacement placed an incredible burden on the government's capacity to aid all affected persons. Consequently, post-disaster housing & shelters began to close down & evacuees had to transition to another form of adaptation. A significant minority of New Orleanians had to live in someone else's home, a majority were in an apartment, & less than 5% were in their pre-Katrina home. When it came time for people to return to their homes, it was the government who determined who would return to their homes & when. The first neighborhoods that were reopened were those located in more affluent areas. Moreover, not only were these neighborhoods higher in value, they were the least impacted by the hurricane. The last neighborhoods to be reopened were low-lying, most impacted & less valuable ones, where the socially disadvantaged African-Americans lived. The same multi-dimensional dynamic occurred in the process of insurance disbursements as well. Homeowners with private insurance received payments relatively quickly & this enabled them to make confident decisions about relocating or rebuilding. For those who were being supported by federal assistance, the story was not the same. Not only did the disbursement of monies to homeowners covered by federal disaster assistance come years after the disaster, the amounts were paltry. To make matters worse, homeowners in neighborhoods with lower property values received smaller grants even though their homes would cost as much to rebuild as a comparable one in a neighborhood with higher values[12].

These two developments taken together, the multidimensional dynamic of neighborhood reopening's & financial support, can potentially serve as an explanation for why low-income blacks were more likely to not only be living elsewhere in Louisiana, in Texas, & elsewhere in the South relative to nonblacks, but also for why many low-income blacks never returned home. This segment of the population simply did not have the

[11] Sastry, Narayan, and Jesse Gregory. "The Location of Displaced New Orleans Residents in the Year after Hurricane Katrina." *Demography*, U.S. National Library of Medicine, June 2014, www.ncbi.nlm.nih.gov/pmc/articles/PMC4048822/.

[12] Fussell, Elizabeth. "The Long Term Recovery of New Orleans' Population after Hurricane Katrina." *The American behavioral scientist* vol. 59,10 (2015): 1231-1245. doi:10.1177/0002764215591181

capacity to return home. This reality gives credence to the assertion which states that income-level is a major determinant in the adaptation decision-making process. The story of Katrina also shows that demographic & socioeconomic (age & ethnicity) factors contribute to adaptation responses, at least in the case of the Southern US. The government's disaster assistance was inadequate, as evidenced by the delayed response to the marginalized segment of the Southeast Louisiana population, the slow evacuation of flood survivors, & the fact that the city holds 134K fewer residents, 39K fewer housing units, & nearly 2K fewer business establishments since Katrina hit[13]. While much of this damage was unavoidable in the face of such a devastating storm, harms could have been at least mitigated by better government preparation & a stronger response. Despite boasting a GDP of nearly $20T & containing a cohesive & coherent political infrastructure, the USA was unable to efficiently respond to a climate crisis. The sudden-onset change that is Hurricane Katrina ultimately triggered substantial long-term inter-state migration (primarily poor blacks & younger people), temporary internal displacement & permanent internal & external displacement. If Louisiana's experience of OM I is coupled with the OM II that also exists in the state (slow-onset change characterized by rising sea levels & land loss), it becomes clear to see that Louisianans are in a precarious situation. The US's withdrawal from the Paris Agreement & the apparent devolvement of responsibility from the federal level to the state level on matters pertaining to climate mitigation policy, both add pessimism to the future of Louisiana.

Hurricane Sandy in New York & New Jersey

Climate change reared its head in the US Atlantic coast in 2012 & produced a hurricane that triggered a level of displacement & destruction that comes second to only Hurricane Katrina. Unusually high sea-surface temperatures produced a Hurricane that was able to travel further North than usual & one that was able to retain a remarkable level of strength. The general increase in atmospheric temperatures also caused more ocean water to evaporate. This increase in water vapor means that there is more potential energy within the atmosphere, & this gives rise to a much more violent storm. Essentially, as a hurricane

[13] Lopez. "7 Facts about Hurricane Katrina That Show Just How Incompetent the Government Response Was." *Vox*, Vox, 28 Aug. 2015, www.vox.com/2015/8/23/9191907/hurricane-katrina.

develops, water vapor condenses outward, releases latent heat, & drives further uplift. Thus, more water vapor begets a more powerful storm. This was the case for Hurricane Sandy. On top of all of this, another climate-change induced environmental distortion was at play during Hurricane Sandy. Sea levels off of the coast of Manhattan have risen by about one & a half feet since the pre-industrial era & is expected to rise another four feet by the end of the century[14]. Moreover, sea levels are rising on the East Coast about four times faster than the national average. The higher-than normal sea levels, along with Sandy's violent storm surge & high rainfall rate, led to a record storm tide, reaching fourteen feet – four feet above the previous record set in 1992[15]. The extensive flooding that followed severely damaged the infrastructure of New York City & New Jersey. Climate scientist Kevin Trenberth said that the subways & tunnels that were inundated by water may not have been "flooded without the warming-induced increases in sea level & in storm intensity & size, putting the price tag of human climate change on this storm in the tens of billions of dollars." The cost of this disastrous event cannot be understated: damage estimates peaked at $67B, 159 storm-related deaths, 650,000 residences were damaged or destroyed, & unemployment claims increased from 35,000 to more than 100,000 for up to three weeks after the storm[16].

Hurricane Sandy represents OM II; a sudden-onset change that triggers immediate dislocation. Unfortunately, the exact migration routes that were taken in the aftermath of Sandy remain unclear to this day. While there is little known about the nature of the migration that took place in the Atlantic cities, much is known about other adaptation efforts that took place; namely, the governmental intervention in ameliorating the devastating effects of Sandy in New York & New Jersey. Thus, the aim of analyzing Hurricane Sandy is to determine the effectiveness of governmental & civic intervention as an adaptation response & to begin to understand the capabilities of a fully developed nation

[14] "Sea Level Rise Accelerating in U.S. Atlantic Coast," USGS.gov, June 24, 2012, https://www.usgs.gov/news/sea-level-rise-accelerating-us-atlantic-coast.
[15] Andrea Thompson, "Storm Surge Could Flood NYC 1 in Every 4 Years," Climate Central, April 25, 2014, http://www.climatecentral.org/news/storm-surge-could-flood-nyc-1-in-every-4-years-17344.
[16] Economics and Statistics Administration, *Economic Impact of Hurricane Sandy* (U.S. Department of Commerce, 2013), available at http://www.esa.doc.gov/ sites/default/files/sandyfinal101713.pdf.

to face environmental distortions. This is important for two reasons. Firstly, a wholistic comprehension of climate-induced migration & adaptation in America can be developed. In one hand, analyzing Hurricane Katrina helped to develop an understanding of both the nature of sudden & dramatic environmental migration in America & the factors that contribute to that migration & in the other hand, is the case of Hurricane Sandy & the potential to elucidate another facet of climate adaptation. Namely, governmental & civic support for parties affected by climate disasters. Secondly, an understanding of climate adaptation at the governmental & civic level in America can serve as the starting point for illustrating the contrast between adaptation capacities among developed & developing nations. This will be expounded upon in the coming sections that cover Central America & the Caribbean & the Middle East. For this section, the success or lack thereof, of governmental & civic intervention in the aftermath of Hurricane Sandy in New York & New Jersey will be the focal point.

The response to Superstorm Sandy in New York City & New Jersey was commendable. Before the storm even made landfall, the cities of New York & New Jersey, along with the Federal Emergency Management Agency (FEMA), took preemptive actions to mitigate the impacts of Superstorm Sandy. This included emergency declarations for vulnerable areas, activation of a multi-agency coordination center that coordinated overall Federal support for major disasters & emergencies, deployment of liaison officers, incident management assistance teams, & emergency response teams, & the establishment of incident support bases & federal staging areas.[17] When the storm ravaged the Atlantic cities, a "Whole of Community" approach was initiated in response to Superstorm sandy. All levels of government, private & nonprofit sectors, faith-based organizations, communities, & individuals all synergized their efforts & directed their output towards adequate response tactics.

Reconstruction programs were immediately launched & offered both temporary & permanent fixes for damaged residences, at no cost to residents. This was essential in the recovery efforts as it helped to prevent long-term displacement by restoring basic services. One program, Rapid Repairs, a bilateral effort coordinated between FEMA & the city of

[17] https://www.fema.gov/media-library-data/20130726-1923-25045-7442/sandy_fema_aar.pdf

New York, had helped in preventing the displacement of 20,000 households.[18] Moreover, the rebuilding programs rebuilt homes with the intention of making them more resilient to future climate impacts. These programs, however, did run into speed bumps. One in particular, Build it Back, had poor outcomes 2 years out from Superstorm Sandy. The program was targeted at homeowners at risk of long-term displacement because their homes suffered substantial structural damage, contained health risks, or were demolished by the storm[19]. Two years after its launch, only about half of the original applicants remained in the program, some were deemed ineligible, & many others dropped out because of frustration with the program's slow pace. Communication mismanagement between the various parties involved & inefficiencies in the bureaucratic processes resulted in a dismal outcome: after 16 months, none of the more than 19,000 homes accepted into Build it Back had begun construction[20]. By late 2015, following a systematic overhaul of the program's mechanics, more than 1,600 homes were under construction, 1,000 homes had been completed, & $85.8M in reimbursements had been provided.[21] The overarching achievement of this program was its ability to prevent many hard-hit households from slipping into a state of homelessness. Other achievements in the governmental response to Sandy include the announcement of availability of D-SNAP benefits to low-income households in the hardest-hit areas, thereby lessening the risk of food insecurity, & the restoration of 80% of the New York Metropolitan Transit Authority Service by the US Army Corps of Engineers.[22]

The federal government awarded over $80M dollars to homeowners affected by Sandy, two months after the storm[23]. Another unique direct assistance effort included the extension of buyout offers to damaged & vulnerable households. This adaptation measure is a unique form of relocation & enables residents to depart from a high-risk area & also

[18] https://cdn.americanprogress.org/wp-content/uploads/2015/10/27134743/SandyClimateDisplacement.pdf
[19] NYC Build it Back, "Frequently Asked Questions" avail- able at http://www.nyc.gov/html/recovery/html/faq/faq.shtml (last accessed July 2015).
[20] Ibid.
[21] Ibid.
[22] Ibid.
[23] Maura McDermott , "NY Rising: Nearly 2,400 LIers hit by Sandy to Get 82.8M in Federal Funds," *Newsday*, December 17, 2013, available at http://www.newsday. com/classifieds/real-estate/ny-rising-nearly-2-400-liers- hit-by-sandy-to-get-82-8m-in-federal-funds-1.6630534.

have the means to establish an economically stable living arrangement in another location. This is often quite a complex endeavor, as the cost of living in regions outside of the area that has been affected by the climate disaster can often be relatively higher. Nonetheless, this serves as an example of an idiosyncratic adaptation method employed by state actors in the US. Homeowners within damaged communities who either lacked the ability to rebuild or did not wish to rebuild were granted this privileged adaption option by both New York State & private money.

Civic organizations & citizen-led crisis management hubs were deployed and provided critical relief to disaster victims in the form of hot meals, supplies, & rapid housing. Community organizations relayed critical, on-the-ground information to government emergency responders & enabled involved parties to develop a clear understanding of the status of key matters such as power, heat, & water services. In fact, an online crisis management system to coordinate federal response operations was developed. Volunteers aided in moving displaced residents from unsuitable areas to shelters at local churches that could meet their basic needs. The multilateral efforts continued with the coming together of governmental & private-sector representatives who collectively set up an emergency relief fund to quickly disburse money to ten community organizations that helped to keep people in their homes or neighborhoods. This initiative reached more than 9,000 vulnerable households & connected them to recovery resources[24]. In Newark New Jersey, the Ironbound Community Corporation filled the gap in recovery efforts left behind by the absence of action from state & city governments. This organization provided low-income community members with easy access to rental & housing assistance. This detail becomes quite salient when considering the fact that the New Jersey State government program took more than 2 years to provide rental assistance[25]. Other unmet needs, such as provisions of shelter, food, & transportation, were filled by community-based organizations & volunteer groups.

[24] Ibid

[25] State of New Jersey Department of Community Affairs, "Sandy Recovery: Christie Administration Launches Two New Affordable Housing Programs for Low- to Moderate-Income Families Impacted By Superstorm Sandy"; Ironbound Community Corporation, "Hurricane Sandy/Disaster Relief."

Community-based organizations truly played a critical role in aiding people affected by Sandy. In New York City, Make the Road New York, a nonprofit empowering Latino & working-class neighborhoods, played an important role in advocating for the Temporary Disaster Assistance Program to be more inclusive of immigrant, homeless, & public housing communities.[26] The Alliance for a Greater New York also lobbied the city to create a Build it Back hiring program to increase job opportunities & income building within economically depressed, storm-damaged neighborhoods.[27] Perhaps the greatest success of civic society in supporting persons displaced by Sandy was the success of a multilateral effort, composed of the New Jersey Fair Share Housing Center, Latino Action Network & New Jersey NAACP, in settling a lawsuit with the state of New Jersey. The lawsuit claimed that the state was engaging in discriminatory use of federally allocated funds. Under the terms of settlement, the state agreed to increase resources to displaced low-income renters; direct more storm assistance to hard-hit areas of the state; provide assistance recourse for households that were erroneously deemed ineligible; & provide multilingual information on housing resources.[28] The lawsuit had a direct effect on the state's expansion of displacement aid in the beginning of 2015. This success, along with all of the efforts by government (state & federal) & civil society, demonstrates that the US does have a substantial ability to adapt to extreme environmental distortions. Nonetheless, Hurricane Sandy exposed structural fault lines that lie within the Atlantic cities, in the same way that Hurricane Katrina did in Louisiana. This "dark side" of Sandy's aftermath will be expounded in Chapter II & will serve as empirical evidence for why the US, is in fact, in a precarious position when faced with OM II & climate migration at large.

Environmental distortions in America are not limited to the 3 states discussed so far in this chapter. Alaska & Florida are also incredibly susceptible to OM II; climate migrants

[26] Miranda Shafer, "How Hurricane Sandy Impacted New York City's Immigrants," Feet in 2 Worlds, October 29, 2013, available at http://fi2w.org/2013/10/29/how-hur- ricane-sandy-impacted-new-york-citys-immigrants/.

[27] Alliance for a Greater New York, "ALIGN 2014 Impact Report" (2014), available at http://www.alignny.org/wp- content/uploads/2015/08/ALIGN-2014-Impact-Report. pdf.

[28] Fair Share Housing Center and others, "The State of the Sandy Recovery" (2014), available at http://www. hcdnnj.org/assets/documents/report%20state%20 of%20sandy.pdf.

created through slow-onset change. In this case, the change is rising sea levels. Florida is also vulnerable to OM I; climate migrants created through sudden dramatic onset change. In this case, the change is warmer sea-surface temperatures & higher global average temperatures driving ever-more violent hurricanes. Louisiana, New York, & New Jersey were chosen because the former was home to both overarching manifestations & the latter 2 states were the sites of the most violent extreme weather events in recent American history. Analysis of these regions enabled the development of a qualitative & wholistic understanding of what environmental migration & adaptation looks like in America & what it may look like in the future. The analysis has also shown that America itself is severely exposed to the adverse effects of climate change. America has to contend with environmental migration & adaptation within its own borders. The cases of Hurricane Sandy & Hurricane Katrina have showed that the country & its citizens have to bring forth their full collective financial & political wherewithal to respond effectively to environmental ruin. Even when doing so, major issues still remain. Furthermore, the country has immense climate-related problems to deal with beyond its borders. Indeed, the US's southern neighbors have been immigrating in droves to the US-Mexico border & the impetus driving this exodus appears to be climate change & extreme weather.

ii) Environmentally-induced Sudden-onset & slow-onset change in Central America & the Caribbean

Unlike the micro-analysis of the different manifestations of climate change & climate migration/adaptation in the USA, this section will adopt a macro-approach in analyzing the manifestations of climate change & associated migratory & adaptation methods in Central America & the Caribbean. This section will explore, in particular, a region of Central America known as the "Dry Corridor". Panama, El Salvador, Guatemala, Nicaragua, the Dominican Republic & Honduras all have land in this area; primarily Central American countries. Not only does Central America serve as a potential ground-zero for climate change in Latin America at large, it is also a critical location, in geopolitical terms. Recent headlines of migrant caravans traveling from Central America to the USA has gripped global headlines as of late. This observed migration in fact has strong ties to the negative

effects of climate change in the Dry Corridor & Latin America at large. Caribbean areas, Puerto Rico in particular, have also been at the center of discussions on climate change & extreme weather. In fact, the Caribbean also carries a geopolitical dimension to its environmental reality & associated adaptation responses. In order to understand the recent migratory & adaptation responses that have been observed in this region of the world, a conception of the environmental reality of the region must be developed.

The Dry Corridor is a region of Latin America that has been historically characterized as being extremely vulnerable to the El Nino phenomenon. As of late, the term now symbolizes the region's high vulnerability to the effects of climate change. The El Nino is a naturally occurring environmental phenomenon in which the normal pattern of trade winds blowing from east to west over the Pacific Ocean, is disrupted. Normally, these winds carry warmer water from the western coast of South America to the eastern coast of Asia. These warmer waters then sink down to the bottom of the ocean & travel back along the ocean floor to South America. The water, as a result, cools down & when it reaches South America, it rises up, along with nutrients from the ocean floor, thus cooling the atmosphere. The El Nino disrupts this entire process. During El Nino years, Westerly winds push back on the eastern trade winds, & the warm waters comes back to South America's eastern shores. What follows is a warming in temperatures in Central America, leading to hotter days & prolonged drought in the dry season. Moreover, Central America along with the Caribbean coast, experience heavier rain & flooding as the warmer atmosphere holds more moisture. In a nutshell, planetary warming is plausibly intensifying this phenomenon & consequently, is also intensifying drought conditions in this region of the world.

Here begins the story of OM II in Central America. The pernicious deterioration of the means of human existence & the adaptation responses that this inevitably begets, can be vividly seen in this region of the world. Climate change serves as a steroid for both the dry periods of region & the El Nino & effectively begets droughts that last longer than usual. Historically speaking, the region's dry period has lasted between January & April. Recently, the dry period has been extending into June & even July. In El Nino years, the dry period lasts even longer. In recent periods of extreme drought, the dry season lasted

until even October. For a region that depends on the rainy seasons to replenish the land, the prolonged dry periods are sucking the region dry. To make matters worse, the total land area of the Dry Corridor appears to be expanding. Consequently, the number of peoples that will be affected by climate-change related intensification of dry seasons & El Nino's, increases.

Studies show that climate change could lead to more frequent extreme or "super" El Nino's (Robbins, Wennersten 2017). A Super El Nino is stronger than historical El Nino's, & leads to hotter, drier conditions & creates the conditions for more violent storms as well. In fact, as climate change continues to warms the oceans & raise global average temperatures, such Super El Nino's may happen twice as often as they do now according to climate researchers at Australia's Commonwealth Scientific & Industrial Research Organization (Robbins, Wennersten 2017). Extreme El Nino events have historically occurred once every 2o years; with climate change the likelihood increases to once every 10 years (Robbins, Wennersten 2017). The 2015 Super El Nino, which was complicit in the extreme drought of 2014, lasted through 2016, & serves as the best supporting evidence for climate change being a primary contributor to ever-more intense El Nino's. Indeed, the 2015 El Nino was the strongest in recorded history & its human impacts were catastrophic.

In May 2015, many farmers throughout Central America sowed their seeds expecting rain that never came. Rain was expected to be present from May to November, but the new feature of abnormally long dry conditions prevented this expectation from materializing into a reality. These seeds dried up, no harvest came & drought permeated through Guatemala, Honduras, El Salvador, & Nicaragua – the Central American "Dry Corridor. Over a million farmers were impacted & 400,000 farmers in Honduras alone, were severely impacted – harvests here were completely lost. According to the Central American Agricultural Council, there was a loss of 80% of bean crops & 60% of corn.[29] This detail becomes even more salient when considering the fact that maize & beans are the staple crops in the Central American economy. Moreover, a third of all employment in Central America is linked to agriculture, so any disruption to farming practices can having devastating consequences. In an environment in which livelihoods are tied to the ability to

[29] http://www.fao.org/news/story/en/item/328614/icode/

interface with the natural environment, it goes without saying that the human impact of the 2015 El Nino was immense.

Wild gyrations in rainfall patterns leads to crop failures & harms food supplies, threatening the livelihoods of these farming communities. The drought of 2014 – 2015 also bore significant economic costs: nearly $100M in crops were destroyed in El Salvador alone, affecting over 100,000 farmers. As of October 2015, 2 million people were in dire need of food, health care, & assistance.[30] In 2014, Guatemala's government declared a state of emergency & imposed drastic water restrictions. In August 2015, both Panama & Honduras did the same. The UN Office for the Coordination of Humanitarian Affairs stated that, throughout 2014-2015, 3.5M people were affected by the long-lasting drought than ran through the Dry Corridor.[31] The 2014 Central American Drought ultimately led to a food crisis that left nearly three million unable to feed themselves[32]. The subsistence farmers, laborers, & low-income families who live in the Dry Corridor were faced with a seemingly insurmountable obstacle. Central Americans living in this region were essentially faced with food insecurity & debilitating economic hardships, & their apparent adaptation response was one of inter-border migration.

Drought-induced migration is a complex phenomenon & is potentially dependent on the context of the region where it is occurring. Nonetheless, in Central America, drought has proven to be a substantial push-factor for residents who rely heavily on stable rainfall. This is so because drought breeds poverty conditions via decreased agricultural output & consequently, reduced income per capita. Laborers have no choice but to look elsewhere for a means of sustenance. Their issues are compounded by the fact that they do not even food to keep them alive. Where the link between drought & migration may be up for dispute, the connection between food security & migration is stronger. As the aforementioned explanation of the 2014-2015 extreme drought conditions in the "Dry Corridor" demonstrates, it can also be said that drought is a principal contributor to food insecurity. The connection between food security & migration is made stronger by the case

[30] Ibid.
[31] Ibid.
[32] Gustavo Palencia, "Drought Leaves up to 2.81 Million Hungry in Central America: U.N.," Reuters, September 4, 2014

of the 2014-2016 Dry Corridor drought crisis & acknowledging a very curious & concomitant development at the US's southern border during 2014. Indeed, the US faced one of the biggest border crises in recent history & the migrants at the border were primarily coming from none other than, the "Dry Corridor".

During the fiscal year 2014, 68,541 unaccompanied children were apprehended at the US/Mexico border – a 77% increase over the previous year[33]. Minors were not the only ones who were traveling northward into the US; nearly as many family units (68,445) were apprehended at the border.[34] This is 3X the amount families that were apprehended in the prior year.[35] These migrants were almost exclusively coming from El Salvador, Guatemala, & Honduras; the countries most impacted by the Central American Drought. Of course, it cannot be categorically stated that climate-related factors alone contributed to the substantial increase in immigration from Central America to the US. Violence & the prospect of greater economic opportunities in America can also serve as driving forces. Nonetheless, it is important to keep in mind that the gang violence that is often blamed for triggering Central American migratory movements, is often a consequence of economic instability. This section has clearly illustrated the devastating economic instability that was triggered by the 2014-2015 drought (drought conditions persist even to this day). Drought conditions during this time virtually eroded the means of sustenance for Honduras, Salvadorans, & Guatemalans & forced them to relocate. Residents of these regions were unable to pay their debts, get money for food & thus started to migrate. There is evidence that demonstrates internal movement first, where someone will go to Guatemala City, for example, & then perhaps gets extorted by a gang & then moves to the US.[36] When they get to the US, they will say that they moved because of violence – but in reality – climate change was the exacerbating factor.

Moreover, the cities that "Dry Corridor" migrants are traveling to, before they decide to travel to the North America, are incredibly strained already. 59% of Central

[33] https://www.vox.com/2014/10/10/18088638/child-migrant-crisis-unaccompanied-alien-children-rio-grande-valley-obama-immigration
[34] Ibid.
[35] Ibid.
[36] https://www.theguardian.com/world/2018/oct/30/migrant-caravan-causes-climate-change-central-america

America's population currently lives in urban areas & the rate of urbanization in Central America is expected to grow substantially in the coming years[37]. These already crowded urban areas contain inadequate housing, income equality, economic exclusion, low access to quality basic services & 70 to 80% of the assets of Central American cities are at risk or are exposed to the potential effects of adverse natural events[38]. Given these realities, the situation in Central America as it relates to migration can be characterized as an example of climate change intensifying the competition for access to natural & economic resources, thus adding to the onset & deepening of conflicts & forced displacement. In conclusion, this paper posits that climate-change-related intensification of drought conditions in Central America, in part, contributes to the violence & gang activity that is commonly seen as being the primary driver of Central American migration into the US. Establishing a causal link between drought-induced economic instability, gang violence, & interborder migration is not the objective of this paper. Rather, this paper aims to point out, firstly, that the marked increase in Central American – US migration in 2014 was concomitant with a drought & El Nino that decimated Central American economies & created wide spread food insecurity. Secondly, the violence observed in this region can perhaps be influenced & intensified by climate change & extreme weather, as food insecurity & competition for limited resources & opportunities are commonly viewed as potential triggers for conflict. What can be said conclusively, is, there is a basis for positing that extreme drought conditions contributed to the surge in immigration to the US. Extreme weather conditions pushed Central Americans to either flee directly to Mexico & into the US in 2014 in search of economic salvation, or first forced them to a nearby unwelcoming urban center, & then to the US. In both situations, extreme weather & its associated food & economic insecurity served as an underlying driver of relocation.

So far, apart from the El Salvadoran's Ministry of Agriculture & Livestock distribution of hundreds of thousands of staple seed packets to farmers & small-scale farming resilience efforts, the primary adaptation method observed in Central America is

[37] https://openknowledge.worldbank.org/bitstream/handle/10986/24664/6C000Central0A00for0Central0America.pdf?sequence=1&isAllowed=y

[38] Ibid

both intra & inter-border migration, with a significant number of migrants traveling through Mexico, into the US. The trend of high Central American migration into the US can be seen outside of 2014. In fact, Central American – US migration has been on the rise since 2000, with notable increases in the 2010s. The number of immigrants in the US from El Salvador, Guatemala & Honduras rose by 25% from 2007 to 2015[39]. In 2015, the number of Central American migrants in transit northwards was estimated at 417,000. Most of them came from Guatemala, El Salvador and Honduras and aimed to reach the United States (Canales and Rojas, 2018). While there is also regional migration that is occurring within Central America, it is eclipsed by US immigration. The table below shows that while there is significant regional migration in the "Dry Corridor", the number of migrants from this region traveling to the US on both an individual country basis & in aggregate, is far greater than the number of migrants migrating within Central America, for 2013. The only exception is Nicaragua to Costa Rica. Guatemalans & Salvadorians also increasingly choose Belize as a destination. Nonetheless, 80% of migrants from Belize, based off 2015 estimates, settled in the US. The predisposition towards the US as a destination point for Central Americans is quite strong on nearly all levels.

Table 2: Geographic Destination of Central American migration (2013)

Country of Origin	Destination Countries and Regions			
	United States	Costa Rica	Central America	World

[39] https://www.pewhispanic.org/2017/12/07/rise-in-u-s-immigrants-from-el-salvador-guatemala-and-honduras-outpaces-growth-from-elsewhere/

	(#)	(%)	(#)	(%)	(#)	(%)	(#)
Costa Rica	90,455	63%	-	-	23,161	17.8%	143465
El Salvador	1,392,663	89%	-	-	61,177	4.0%	1,526,093
Guatemala	975,504	87%	-	-	79,790	7.6%	1,049,865
Honduras	597,647	83%	-	-	54,778	8.3%	659,606
Nicaragua	275,909	42%	303,523	46.3%	340,185	51.9%	658,203
Panamá	114,181	76%	-	-	17,235	11.5%	149,220
Central America	3,446,359	80%			576,326	14%	4,350,597

Source: United Nations, Department of Economic and Social Affairs. Population Division (2017). Trends in International Migrant Stock: The 2017 revision (United Nations database, POP/DB/MIG/

Illustrating the contrast between regional immigration & long-distance immigration in Central America is essential in understanding the 2014 & then the subsequent 2016 Central America – America border crisis. Conventional migration theory posits that migrants typically follow pre-existing routes & that adverse weather events are likely to exacerbate these existing migration patterns. This was in fact the case for migrants who left the Dry Corridor in 2014 & 2016, as a substantial portion of them headed for the US – Mexico border; a trend observed throughout the 2000s & particularly, in 2013.

In 2016, the US was face to face with yet another border crisis & yet again, the migrants were overwhelmingly families & unaccompanied minors from Guatemala, Honduras, & El Salvador. By the end of fiscal 2016, over 122,132 families & children, mostly from Central America, had been apprehended at the US border.[40] The underlying factors that triggered Central American immigration, both regionally & internationally, in 2014, are present in the 2016 Central America – America migration crisis. A 2017 study published by the WFP supports this assertion. The study analyzed data about migrants from El Salvador, Honduras, & Guatemala who were turned back by Mexican immigration authorities as they tried to reach the US. It is here where an environmental dimension arises, again. The study found a correlation between the prolonged droughts in El Salvador, Guatemala, & Honduras – exacerbated by the El Nino phenomenon from 2014 – 2016 – &

[40] https://www.washingtonpost.com/politics/flow-of-central-americans-to-us-surging-expected-to-exceed-2014-numbers/2016/09/22/ee127578-80da-11e6-8327-f141a7beb626_story.html?utm_term=.93aedc815668

the increase in irregular migration from these countries to the US[41]. 50% of these migrants were employed by the agriculture sector prior to leaving.[42] 65% of them cited unemployment or economic hardship, & 19% low income & poor working conditions, as reasons for leaving[43]. The document also pointed out that 47% of the families interviewed were food-insecure; such levels of food insecurity have not been previously recorded in the region.[44] Moreover, according to a Pew Research Center Analysis of 2016 data, 91% of Guatemalans deported from the US, 96% of Hondurans deported from the US, & 97% of Salvadorans deported from the US, cited work as a main reason for coming.[45] In fact, the Economic Commission for Latin America & the Caribbean has found that majority of these migrants are agricultural workers who come from the rural areas of Guatemala, Honduras & El Salvador.[46]

The El Nino conditions of 2015, which were the most severe conditions on record, effectively decimated the economic productivity of agriculture in the aforementioned Central American countries & significantly heightened food insecurity in the region. This development laid the foundation of the 2016 Central American exodus & in part, seems to have triggered forced displacement of rural agricultural workers. In regard to the significant numbers of unaccompanied youth & families, the UN has reported that nearly half of Guatemalan children under 5 years old "suffer from stunting as a result of chronic under-nutrition (Robbins, Wennersten 2017)." This could perhaps be the reason why so many youth & families are traveling to America; families simply do not have the means to support their younger members. The primary adaptation response of Central American migrants in 2016, as previously shown, was long-distance inter-border migration to the US. This however, was not the only adaptation response. Residents of regions that were massively exposed to the intensified drought conditions also engaged in temporary regional

[41] https://www1.wfp.org/news/new-study-examines-links-between-emigration-and-food-insecurity-dry-corridor-el-sa
[42] Ibid.
[43] https://insight.wfp.org/driven-away-from-home-by-climate-change-e37a65871f36
[44] Ibid.
[45] https://www.pewhispanic.org/2017/12/07/rise-in-u-s-immigrants-from-el-salvador-guatemala-and-honduras-outpaces-growth-from-elsewhere/
[46] https://repositorio.cepal.org/bitstream/handle/11362/44288/1/S1801071_en.pdf

migration as a means of adaptation. For example, Hondurans would travel to neighboring El Salvador for short-term employment opportunities and then would return to their home country with money.

Central American rural migrants, who are rely on agriculture as a way of life are representative of OM II; their means of existence, sustenance, & productivity have been eroded away through the slow-0nset change of intensified drought & El Nino conditions. Thus, they have resorted to alternative means of economic security; they are traveling far & near in search of income. Many move with the intent of never returning (nearly 58% of Salvadorans to the US if they could), some move temporarily & others move in an attempt to diversify household income. Indeed, in 2016, according to World Bank estimates, remittances to the 3 nations totaled $15.9B, of which most came from the US[47]. This indicates that people in the Dry Corridor are responding to their unfortunate environmental reality by traveling to foreign labor markets where wages & employment conditions are negatively correlated or weakly correlated with those in the local area. These realities are likely to persist as time goes on. As of late 2018, the governments of Guatemala, El Salvador & Honduras have reported losses of 281,000 hectares of their main staple foods[48]. These losses will increase the cost of these foods for the entire population. The Honduran government declared an emergency in the Dry Corridor in August of 2018 & the El Salvadoran government declared a red alert in July 2018.[49] In 2018, The International Research Institute/Climate Prediction Center stated there was a 70% chance of a new El Nino between September & December 2018; they were correct.[50] Drier-than-normal conditions were present along with reduced rainfall. This contributed to forest fires across Northern Guatemala & Honduras. Consequently, preliminary reports indicate that if these conditions persist to May, planting operations of the 2019 main season maize crop could be

[47] http://www.worldbank.org/en/topic/migrationremittancesdiasporaissues/brief/migration-remittances-data
[48] https://www1.wfp.org/news/fao-and-wfp-concerned-about-impact-drought-most-vulnerable-central-america
[49] https://reliefweb.int/report/guatemala/giews-update-central-america-continuation-el-ni-o-conditions-raises-concerns-over
[50] Ibid.

disrupted & delayed.[51] A repeat of the adaption responses witnessed during the 2014 & 2016 Central American migration crises seems likely.

The focus of this section has primarily been to illustrate, in detail, what OM II looks like. It is important, however, to acknowledge that OM I is also very much in existence in Latin America & the Caribbean. Hurricanes have decimated Central America & the Caribbean Islands over the past few decades. Hurricane Mitch, which struck Central America in 1998, was the second-deadliest Atlantic hurricane on record, killing 11,000 people in Central America. Over 7,000 Hondurans, alone, died.[52] The hurricane displaced millions of people from Nicaragua, Honduras, & El Salvador, many of them permanently. According to the Nansen Initiative, nearly 2 million people were displaced & internal & cross-border displacement & migration took place.[53] In the aftermath, visa requests at US consulates increased by 40% from the previous year.[54] Mexico apprehended nearly 6,000 migrants on its southern border at the end of 1998, an increase from nearly 3,000 individuals in the prior year[55]. While it seems that much of the dislocation & migration was internal to the affected regions, the cross-border adaptation method observed in this case bears a similarity to the adaptation response observed in Central America in 2014 & 2016; long-distance northward migration.

Hurricane Ida (2009), displaced nearly 15,000 El Salvadorans and the primary adaptation response was internal migration[56]. Ida also led to record rains in El Salvador – up 10 17 inches of rain were dumped in 2 days – & gave rise to landslides that destroyed scores of homes. 10,000 people were displaced & forced into shelters as result of this (Robbins, Wennersten 2017). The landslides witnessed in the aftermath of Ida are emblematic of a general environmental truth in Central America: landslides are a principal contributor of deaths. These landslides are in effect, another example of environmentally-

[51] Ibid.
[52] https://en.wikipedia.org/wiki/Hurricane_Mitch
[53] http://www.nanseninitiative.org/wp-content/uploads/2015/02/FINAL_Background_Paper_Central_America_EN.pdf
[54] Ibid.
[55] http://www.nanseninitiative.org/wp-content/uploads/2015/02/FINAL_Background_Paper_Central_America_EN.pdf
[56] Ibid

induced sudden-onset dramatic change in Central America. They are the result of extreme rainfall on parched land. Once drought has scorched the lands of the Dry Corridor, heavy rains follow. This was in fact the case for Central America during 2009: in the year prior to Ida, extreme drought came first & contributed to great losses in food production in Guatemala, El Salvador, & Nicaragua. In 2010, tropical rains battered Central America, with total precipitation well above the yearly average. The rain came in torrents, leading to flash floods, & washed away the arable land. The resulting flooding & landslides deteriorated agricultural production, which is vital for the region's food supply. In the same year (2010), Hurricane Agatha slammed into Guatemala, triggering landslides & the destruction of homes & consequently, the internal migration of nearly 160,000 people[57]. There is essentially an interplay between environmentally-induced slow-onset change & sudden-onset dramatic in Central America that fundamentally threatens the existence of Central Americans. This fundamental threat is projected to intensify as climate change is expected to worsen extreme rainfall & drought conditions as the years go by.

OM II in the Caribbean

Environmentally-induced sudden-onset dramatic change & associated adaptation responses in the Caribbean will be illustrated by analyzing the case of Hurricane Maria in Puerto Rico in 2017. The Hurricane made landfall on September 20th & the death toll reached into the thousands (4,645 according to the New England Journal of Medicine); 72X more fatalities than were officially reported by the US federal government.[58] It was the third costliest financial disaster in US history.[59] Climate change, also, seems to have had a prominent role creating this unusually violent hurricane. Maria was more intense than any of the other 128 storms that are on record for Puerto Rico & it dropped more rainfall than any of those storms – about 30 to 60% more rainfall than any other storm in the history of Puerto Rico[60]. Research by the Department of Geography at the University of Alabama shows that Maria & Maria's precipitation is about 5X more likely now in the climate of

[57] Ibid
[58] https://www.scientificamerican.com/article/hurricane-maria-contributed-to-nearly-5-000-deaths-researchers-say/
[59] https://coast.noaa.gov/states/fast-facts/hurricane-costs.html
[60] https://www.scientificamerican.com/podcast/episode/hurricane-maria-rain-amount-chances-are-boosted-by-climate-change/

today versus the climate of the 1960s[61]. This 5X increase in likelihood is directly attributable to long-term climate change.

The island lost 100% of its electricity capacity & residents lived without energy for up to 6 months, sometimes even longer. The months-long power outage spelled disaster for Puerto Rico's ability to deliver healthcare to patients. Patients who relied on oxygen tanks, insulin or dialysis were directly affected by the electricity losses. Day-long power outages are still common & FEMA along with insurance companies have been accused of being inefficient in their disaster response. Water contamination & food shortages were parts of the aftermath as well. There was lack of water filters on the island & importing supplies was very difficult as airports were severely damaged. Thus, many residents were forced to drink water that potentially carried the risk of contamination. Women faced higher risks of domestic abuse. Phone lines were knocked down by the storm & thus were no emergency hotlines to turn to. Moreover, women's shelters were shut down. Lastly, & perhaps most concerning, the trend of extreme weather events having a disproportionately detrimental effect on poorer residents continues in Puerto Rico. Poor Puerto Rican's not only had fewer resources to aid in climate adaptation, but they also live in far-flung areas of the mountains and thus were the last to regain access to water & have their electricity restored.

It took nearly a year for the Puerto Rico Electric Power Authority to fully restore power to 100% of its customers.[62] As of early 2018, thousands of families remained internally displaced, living in shelters, with friends or relatives, or at hotels with assistance from FEMA. Some beginning the arduous process of reconstruction while others continue to take shelter in temporary blue tarps. While the federal government was criticized for negligence & inadequacy, the aid efforts of NGOs, nonprofits, civic associations were immense. Hundreds of thousands of meals, millions of dollars in emergency cash, solar lanterns, water filters, & life essentials (i.e. toiletries), economic recovery programs, cash grants, business training, & reconstruction projects were all deployed to the island. The solidarity of citizens, foundations, private actors, nonprofits & NGOs was truly admirable.

[61] https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2019GL082077?referrer_access_token=2_GgUwEoFyqgSPRp0sBmW8OuACxIJX3yJRZRu4P4ervOzpSOBv_qfvOVb_zjKlNtYYyIyTa1UUubkYWFAQFLR-_k8-KVBCDFlgb91rYmvobSeWjzIfRVcxVjupQPPyIMuGWFG_GrbN5AsUSM_sX9cw%3D%3D

[62] https://www.mercycorps.org/articles/united-states/quick-facts-hurricane-marias-effect-puerto-rico

This positivity of this reality, however, is diminished, slightly, by a very startling statistic: 200,000 Puerto Ricans immigrated to Florida within 2 months of the storm.[63] This mass exodus is made worse by the fact that an estimated 130,000 people – almost 4% of the population – permanently left the island between July 2017 & 2018[64]. It is estimated that nearly half a million residents will leave Puerto Rico by the end of 2019, as a consequence of Hurricane Maria[65].

In Puerto Rico, the predominant adaptation response to environmentally-induced sudden-onset change was cross-border migration to the US. The sheer size of the exodus is indicative of the large-scale devastation that Hurricane Maria brought to the island. The statistics show that while several thousand Puerto Ricans temporarily migrated to the US mainland, eventually returning home, the majority of displaced peoples chose to remain in mainland USA. Moreover, it seems as though Puerto Ricans continue to exit their homeland. Beyond Puerto Rico, Hurricane Maria displaced nearly 60,000 other inhabitants of Caribbean Islands, namely the Dominican Republic, Dominica, & the US Virgin Islands[66]. To make matters worse, Caribbean displacement was not limited to Hurricane Maria in 2017; indeed, the 2017 Atlantic hurricane season, which consisted for 3 major hurricanes (Harvey, Irma & Maria) displaced nearly 2 million Caribbean peoples[67].

As was the case in Central America, an interplay of environmentally-induced slow-onset & sudden-onset change exists in the Caribbean. The literature shows sea level increases of anywhere between 1 to 2 meters over the 21st century. Even the low end of that estimate will have severe ramifications on countries in the Caribbean community. Just one meter – the low end of the spectrum – will result in the permanent inundation of 1% of the land. This 1% is significant, as it represents some of the region's most valuable land (Robbins, Wennersten 2017). Coastal area flooding & saltwater infiltration of coastal aquifers, as a result of sea level rise, severely threatens the region's water supply. In the Bahamas, 22% of the population is at risk of flooding due to sea level rise & storm surge;

[63] https://grist.org/article/130000-the-number-of-puerto-ricans-who-never-returned-after-maria/
[64] https://www.census.gov/newsroom/press-releases/2018/estimates-national-state.html
[65] Ibid.
[66] http://www.internal-displacement.org/sites/default/files/publications/documents/2018-GRID-spotlight-atlantic-hurricane-season_0.pdf
[67] Ibid.

this is all but certain as a one-meter rise in sea levels is locked in (Robbins, Wennersten 2017). Millions will be affected by coastal area flooding on Caribbean islands & thus are in jeopardy of being swallowed by the sea, both partially & completely. There will be an environment ripe for migration.

iii) Environmentally-induced slow-onset change in the Middle East & the Case of Syria

Countless history books & historians explain that civil unrest never has a simple nor a single unique cause. An amalgam of inter-related factors gives to rise societal upheavals. The Syrian conflict, turned civil war, is not an exception. Still, the words of a Syrian displaced farmer offer insight into a fundamental driver of the civil war & mass exodus witnessed in Syria in the 2010s. When asked if the conflict was about the drought that had ravaged Syria from 2007-2010, she replied, "Of course. The drought & unemployment were important in pushing people toward revolution. When the drought happened, we could handle it for 2 years, & then we said, 'It's enough.'"[68] This drought, in fact, was the worst drought in the instrumental record. It sent the agricultural sector of Syria up into flames; small- & medium scale farmers & herders suffered from zero or near-zero production & nearly all of their livestock was wiped out. For the first since declaring self-sufficiency in wheat, in the mid-1990s, Syria had no choice but to import immense quantities of wheat to feed its people. Food & livestock prices skyrocketed, enrollment in schools dropped by as much as 80%, & ultimately, 1.5M people were internally displaced by the drought.[69] Most migrated to Syria's already burdened urban centers & hotbeds of discontent began to form. Most importantly, climate change is likely to have been a major contributor to the powerful drought that eventually gave rise to all-out civil war & one of the greatest refugee crises in modern history.

Findings made by the Proceedings of the National Academy of Sciences of the United States of America show idiosyncratic trends in precipitation, sea-level pressure, &

[68] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4371967/
[69] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4371967/

temperature over a 100-year time horizon.[70] These trends strongly suggest that anthropogenic alterations of the chemical constituency of the atmosphere has increased the probability of extreme & persistent droughts in the Fertile Crescent (region that extends from the Eastern Mediterranean to Iran) & have made the occurrence of a three-year drought as severe as that of the 2007 - 2010 one, two to three times more likely than by natural variability alone.[71] The study goes on to conclude that human influences on the climate system are complicit in the conflict that currently rages in Syria[72]. The individual trends that the study discovered are quite compelling. The study found that warming in the region since 1901 has surpassed the increase in global mean surface temperatures, with a majority of the increase occurring over the past 20 years.[73] It is notable at this point to acknowledge that three out of the four most severe multiyear droughts have taken place in the past twenty-five years. This particular period also happens to be the period in which external anthropogenic alteration of the Earth's atmosphere has seen its largest increase. The warming of recent decades is concomitant with the three most severe multiyear droughts, & together have served to dry the region during the winter & summer[74]. This is indeed what happened in Syria, as the 2007/2008 was easily the driest on observed records. In fact, statistical modeling in the study found that the Fertile Crescent as a whole has experienced statistically significant winter rainfall reduction (13%) since 1931[75].
In conclusion, statistical & climate modeling done in the study generate insights which support the attribution of the century-long downward trend in precipitation & upward trend in surface temperatures to the rise in anthropogenic greenhouse gases & to the role of the latter in the catastrophic early 21st-century multiyear Syrian drought.

Syria was exceptionally vulnerable to a severe drought in the first decade of the 21st century than in the 1950s. This is because the Fertile Crescent at large never fully recovered from a drought that struck in the late 1990s. In fact, the region has been victim to moderate to severe drought from 1998 to 2009, with 7 of 11 years seeing rainfall below the 1901-

[70] Ibid.
[71] Ibid.
[72] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4371967/
[73] Ibid.
[74] Ibid.
[75] Ibid.

2008 normal.[76] A study done by the NOAA/Earth System Research Laboratory in Boulder, CO corroborates the aforementioned fact through its 2012 publication of a research paper which suggest that climate change is already beginning to influence droughts in the area by reducing winter rainfall & increasing evapotranspiration (drying of the soil through evaporation & plant transpiration)[77]. Although natural variability on such long-time scales cannot be completely ruled out for this area, the long-term observed trends & the recent increase in the occurrence of multiyear droughts & in surface temperature is consistent with the history of anthropogenic alterations of the atmosphere[78]. One thing is for certain, though, & it is the fact that the years of extreme drought in Syria during the late 2000s turned almost 60%[79] of the nation into a desert & Syrians were thrown into a state of utter chaos.

A set of pre-existing vulnerabilities existed in Syria before the extreme drought began in 2006. These vulnerabilities were exacerbated in large part by the unusually powerful drought & taken together, contributed to the societal upheavals of early 2011. One of the key pre-existing vulnerabilities was water scarcity. The father of the current president of Syria, Hafez al-Assad had aimed to increase the agricultural output of his country & initiated policies that endangered Syria's water security by over-exploiting already limited land & water resources. One of the critical consequences of his unsustainable policies was the decline of groundwater. For farmers who did not have access to irrigation canals that connect to river tributaries, pumped groundwater supplies over 60% of all water used for irrigation purposes[80]. The amount of groundwater available to these farmers was significantly diminished as a result of excess extraction & overexploitation. The loss in groundwater supply was effectively a fissure that was widened by the drought.

[76] Ibid.
[77] https://journals.ametsoc.org/doi/full/10.1175/JCLI-D-11-00296.1
[78] Ibid.
[79] Robbins, Denise, and John R Wennersten. *Rising Tides: Climate Refugees in the 21st Century*. Indiana University Press , 2017.

[80] Ibid.

In 2003, agriculture accounted for 25% of Syria's GDP.[81] In 2008, following the driest winter on record for Syria, wheat production collapsed & the share of agriculture also fell by a staggering 17%.[82] The severe drought, which started in 2006/2007, caused a total meltdown of the agricultural system in the northeastern region of the country. This area, which is often referred to as the "breadbasket", produced over two-thirds of the country's crop yields.[83] The prices of food, livestock feed, & livestock all skyrocketed & it was well-documented that the drought was the main contributor to the unprecedented price increases. Small- & medium scale farmers & herders were exceptionally hard-hit, with their production being zero or near-zero & the drought wiping out nearly all of their livestock. Farmers overall were devastated, as they are incredibly dependent on the year-year rainfall; two-thirds of cultivated land in Syria is rain fed. This reality, serves as another major pre-existing vulnerability that was exacerbated by the drought.

Before Bashar al-Assad took office, Syrians enjoyed generous food & fuel subsidies & had become dependent on them.[84] After Bashar took office in 2000, he removed these subsidies & the removals remained despite the drought. This caused a further destabilization of those most exposed to the adverse effects of the drought. Ultimately, the rural Syrians who had a heavy dependence on year-to-year rains for agricultural production & general welfare, were unable to outlast the severe prolonged drought, & rural farming families migrated en masse to urban areas. It has been estimated that up to 1.5 million people were displaced internally within the drought (Robbins, Wennersten 2017). Many of these migrants responded to the environmentally-induced slow onset by traveling to the outskirts of Syria's urban centers. These cities were already burdened by strong population growth (approximately 2.5% per year) & the influx of approximately 1.2-1.5 million Iraqi refugees between 2003 & 2007[85], most of whom came to Syria at the latter end of this time frame; the same time as the beginning of the severe drought.

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[81] Ibid.
[82] Ibid.
[83] Ibid.
[84] Ibid.
[85] United Nations High Commissions for Refugees (2010) *Iraqi Refugees in Syria Reluctant to Return to Home Permanently: Survey* (UN High Comm Refugees, Geneva). Available at unhcr.org/4caf376c6.html. Accessed March 1, 2014.

By 2010, internally displaced persons & Iraqi refugees accounted for nearly 20% of the urban population of Syria.[86] Furthermore, between 2002 & 2010, the total urban population of Syria increased by more than 50%.[87] This rate is much higher than the rate of growth for the Syrian population as a whole. Naturally, this population shock in Syria's urban areas intensified the already existing strain on resources. Moreover, the peripheral dwellings of the urban areas, in which the rural migrants lived, were marked by overcrowding, crime, unemployment, & poor infrastructure. All of these issues were neglected by Assad & his government & these peripheral urban dwellings became hotbeds for unrest & discontent. These very issues were also cited as being contributing factors to the unrest that boiled over into all out conflict. Thus, the internal migration that was triggered in response to the prolonged & severe drought exacerbated many of the factors were considered to be catalysts for societal unrest. It is impossible to know whether or not drought was the primary force in breeding instability. What can be known, however, is drought can lead to devastating consequences when coupled with pre-existing acute vulnerability.

On March 15, 2011, a protest in Der'a calling for the release of children who had been imprisoned for calling for the end of the regime, swelled to several thousands of people. 4 demonstrators were shot dead by security forces & the next day the numbers demonstrating rose to 20,000. The civil war was in full swing. The location of this uprising, which ultimately had reverberations across the nation, is a curious one. Indeed, Der'a, the area home to some of the earliest political unrest, saw a particularly large influx of farmers & young unemployed men who were forced off their lands by crop failures. This reality does not categorically prove that the drought single-handedly gave rise to the exposition of the Syrian Civil War. Rather, it shows how pronounced the environmental dimension of the Syrian conflict is. In fact, the environmental dimension directly relates to the political dimension. S. Saleeby, writing in Jadaliyya, a magazine from the Arabic Studies Institute, explains this connection perfectly by arguing that "the regime's failure to put in place economic measures to alleviate the effects of drought was a critical diver in propelling

[86] Ibid.
[87] Ibid.

massive mobilizations of dissent."[88] The environmental dimension is strengthened by the fact that between 2 & 3 millions of Syria's rural inhabitants were reduced to extreme poverty because of the drought.[89] The 75 to 100% crop failures in some areas likely contributed to this widespread poverty[90]. Furthermore, drought returned in 2011 & the UN estimated that between 2 & 3 million people were affected, with a million driven into food insecurity. Agricultural & food assessments conducted by the FAO in March & August of 2011 & again in June 2012, found that poverty & food insecurity were on the rise[91]. The environmental dimension of the political crisis in Syria is made strong by the aforementioned findings & is even considered by the Proceedings of the National Academy of Sciences to have had a "catalytic effect". The study looked into the links between global warming, the drought, & Syria's unrest, & concluding, unequivocally, that global warming contributed to the region's instability[92].

The OM II present in Syria is characterized by drought & desertification of arable land & the associated adaptation responses included internal migration to urban centers, regional migration into bordering countries, & eventually, trans-continental migration into Europe. Of course, many of the Syrians who fled to neighboring Jordan, Iraq, Lebanon, Turkey, & eventually Europe were fleeing violence & clashes between rebel forces & government forces. Other were fleeing the violence of radical Islamist groups & constant aerial bombings. None of 4 million Syrian refugees & the six & a half million IDPs reported in November 2015 can be classified as climate migrants. All that can be said, is, anthropogenic-induced long-term changes in the general climate of Syria were concomitant with an extreme drought that intensified the structural fractures of an already precarious region. Furthermore, in temporal terms, the multiyear drought, was quite close to the onset of the Syrian Civil War & the subsequent refugee crisis. The case of Syria as it relates to environmentally-induced slow-onset change, simply demonstrates how environmental

[88] http://www.jadaliyya.com/pages/index/4383/sowing-the-seeds-of-dissent_economic-grievances-an
[89] William R. Polk, "Your Labor Day Syria Reader, Part 2," Atlantic, September 2, 2013, http://www.theatlantic.com/international/archive/2013/09/your-labor-day-syria-reader-part-2-william-polk/279255/.
[90] Robbins, Denise, and John R Wennersten. *Rising Tides: Climate Refugees in the 21st Century*. Indiana University Press, 2017
[91] Ibid.
[92] Ibid.

factors can play a key role in catalyzing societal upheaval & large-scale migration. Moreover, the case of Syria can perhaps shed light on what can potentially happen in the Middle East at large when environmental factors converge with pre-existing vulnerabilities.

Beyond Syria, the Middle East as a whole, is projected to be disproportionately affected by warming, with an expected warming rate twice as high as the global average[93]. This will place scarce water resources under increased pressure, which – as seen in Syria – can lead to massive agricultural die-offs. Such extreme heat has already taken form in Iraq. A heat wave swept across a large part of the Middle East in the summer of 2015, with temperatures exceeding 120 degrees Fahrenheit & high humidity levels, creating a heat index that reached 159 degrees Fahrenheit in Iraq & over 160 in Iran[94]. The Iraqi government had to initiate a four-day lifesaving holiday in response. This heatwave of 2015 is just a prelude to a devastating future in the Middle East. Many parts of the Middle East will become 'unlivable' because of prolonged heat waves. Prolonged heat waves will be ten to twenty times more common than before. Dr. Karsten Haustein of the Environmental Change Institute in Oxford says that, "What used to be a 1 in 50-100 year event is a 1 in 5 year event now."[95]

The potential for heatwaves in Iraq to breakout into unrest similar to that of seen in Syria is high. There are already hundreds of thousands of refugees & 1.5 million internally displaced Iraqis.[96] Many of the displace have little to no shelter from the unbearable heat. In fact, the heat wave of 2015 became the subject of protests in Iraq that summer. Iraqis protested against government corruption & power outages. Iraqis did not have access to air conditioning at a when the country was experiencing record heat, & their discomforts transformed into discontent towards the government. This environmentally-induced social unrest can also be found in pre-revolutionary Egypt. Egypt was heavily dependent on wheat

[93] Robbins, Denise, and John R Wennersten. *Rising Tides: Climate Refugees in the 21st Century*. Indiana University Press, 2017

[94] Nick Wiltgen, "Feels-Like Temp Reaches 164 Degrees in Iran, 159 in Iraq; Days Off Ordered as Mideast Broils in Extreme Heat Wave," Weather.com, August 5, 2015.

[95] Freya Palmer, "Extreme Weather Events of 2015: Is Climate Change to Blame?" Climate Home, August 21, 2015, http://www.climatechangenews.com/2015/08/21/extreme-weather-events-of-2015-is-climate-change-to-blame/.

[96] Ibid.

imports from China. During the winters before the Arab Spring, China & Russia experienced a once-in-a-century drought. The wheat industry in both regions were devastated & this caused global wheat prices to skyrocket. Egypt was particularly affected, as food prices more than doubled from 2010 to 2011.[97] To make matters, worse, the Egyptian government took a page out of Bashar al-Assad's book and cut down food subsidies to its citizens. Consequently, food prices was one of the major points of contention during the protests. Indeed, activists waved loaves of bread as a symbol of protest & chanted, "Bread, Human Dignity."[98]

Over the past 4 decades, about 38 million people in the Middle East have been affected by drought.[99] In the coming decades, the Middle East will be of the most water-stressed regions in the world. The World Resource Institute put together a list of those countries that will be most water stressed in 2040 & the 14 of the 33 countries on the list are Middle Eastern. The US National Intelligence Council acknowledged that as droughts become more frequent, water stresses in the Middle East "will increase the risk of instability & state failure" & "exacerbate regional tensions."[100] This is exactly what happened in Syria, Iraq, & Egypt during the past two decades. The cases of these 3 countries show that droughts having far-reaching impacts. In Syria, after the third consecutive year of drought, in 2010, nearly 1 million people lost their entire livelihoods.[101] The World Bank summarizes brilliantly the story of the Middle East that has been presented in this sector by saying that droughts contribute to a "disaster situation" when "combined with pre-existing conflict." Water scarcity is a case in point; it is "increasingly becoming a cause of conflict, leading communities to fight over water-irrigated pastures & forcing people to leave their homes look for safe access to water."[102] Is the world aware of

[97] Fatima Bishtawi, "What Ignited the Arab Spring?" Yale News, August 5, 2015, http://archive.epi.yale.edu/the-metric/what-ignited-arab-spring.
[98] Ibid.
[99] World Bank, "Natural Disasters in the Middle East and North Africa: A Regional Overview," January 2014, http://documents.worldbank.org/curated/en/211811468106752534/pdf/816580WP0REPLA0140same0box00PUBLIC0.pdf.
[100] "Intelligence Community Assessment on Global Water Security," US National Intelligence Council, http://www.state.gov/e/oes/water/ica.
[101] World Bank, "Natural Disasters in the Middle East and North Africa."
[102] World Bank, "Natural Disasters in the Middle East and North Africa."

the reality of what it will face in terms of future crises as far as water is concerned? Furthermore, is the world prepared to deal with such a calamity?

Chapter II: Is the World Prepared to Deal with the Human Face of Climate Change?

The Beleaguered USA

The environmental realities & the complexities of the adaptation responses in the US that were presented in the beginning of the first chapter are compounded by the fact that droughts, floods & more severe storms could wipe out 2% of the US's GDP by 2030.[103] The US is already hemorrhaging billions of dollars year to year because of extreme weather events. Hurricane Harvey, Irma, & Maria were all billion-dollar disasters & it seems as though these billion-dollar disasters are the new norm. In fact, 2017 marked the first year where 2 category 4 hurricanes made landfall in the same year in the US (Harvey & Maria). Warmer sea-surface temperatures in the Atlantic are contributing to the observed increase in duration, frequency, & intensity of hurricanes in the US. This warming is likely to persist; the marked increase in global CO2 emissions in 2018 adds credence this assertion. Hurricane rainfall rate & hurricane wind speeds are increasing as well; essentially, the strongest storms are getting stronger. This is supported by the fact that the strongest

[103] https://www.theguardian.com/environment/2012/sep/26/climate-change-damaging-global-economy

hurricanes on record (as measured by sustained wind speeds) for the globe, the Northern Hemisphere, the Southern Hemisphere, the Pacific, & now, with Irma, in the open Atlantic, have all been observed over the past 2 years. This environmental reality spells disaster for the US, a country that has been struggling immensely to contend with slow-onset change & sudden-dramatic onset change within its borders, despite being the economic hegemon of the world. To make matters worse, the current US administration has taken a hard stance against the low-carbon transition & any form of climate mitigation. Couple this with the fact that for every decade the US waits to enact climate policy, the net cost for mitigating climate change rises by 40%, with this figure increasing over time, & a clear picture can be seen. The US, beset with difficulties of its own, at this moment in time, is not an ideal position to manage the coming climate crises of the world.

The economic costs of extreme weather events, hurricanes in particular, in the USA are staggering. The aggregate cost of the 16 separate billion-dollar weather events in the US in 2017 was $306.2B[104]. If costs incurred during Hurricanes Sandy & Katrina are included, the cost of sudden-onset environmental disaster in America rises to $538B. That is more than half of what the US spends on defense. Furthermore, this aggregate cost does not factor in the costs of other devastating Hurricanes that have occurred during the 21st century, such as Hurricane Mathew, which generated estimated insured losses of $1.5B to $7B.[105] In terms of insured US coastal properties vulnerable to hurricanes, New York ranks number one with $2.92 trillion, followed by Florida ($2.86T), Texas ($1.17T), Massachusetts ($849B), & New Jersey ($713B).[106] Four of these locations have already been devastated by billion-dollar events in the past decade & are also region's that are completely exposed to the negative effects of climate change. Future economic costs are expected to be immense & thus it is a mistake to assume that climate change will not be a problem for affluent countries like the US.

With global warming, the US will continue to face ferocious storm patterns & tidal incursions that will engulf large areas of coastal land. Loss of vital wetland regions, such as

[104] https://coast.noaa.gov/states/fast-facts/hurricane-costs.html
[105] Ibid.
[106] Ibid.

Louisiana, may bring about the collapse of ocean fisheries & if the trend of land loss in Louisiana continues, by 2064, rising water will remove a landmass larger than Rhode Island from the state.[107] An interactive map from the National Oceanic & Atmospheric Agency shows that flooding in America will not be confined to Louisiana. The map shows the impact of rising water in critical areas such as Miami, New York, San Juan, or the Florida Keys, which, in a 5ft scenario, will completely vanish into the ocean.[108] In turn, populations from coastal areas will be on the move & the US will be face to face with the unprecedented & monumental issues of resettling millions of its own citizens.

The citizens of Isle de Jean Charles were considered to be the US's first "climate refugees". This is, however, disputable when considering all the people who evacuated New Orleans because of Katrina & never retuned; all those forced to leave their homes after Hurricane Sandy. The case of Hurricane Katrina in Chapter I clearly illustrated the limited ability of the US & Americans to adapt to a climate crisis. Among government agencies & media, it was widely assumed that the 1 million evacuees that Katrina created would return to their homes in New Orleans & rebuild their lives. Several hundred thousand did not do so as they had neither a job nor a home to return to. In effect, hundreds of thousands of Americans transformed from evacuees into climate migrants. Most of these climate migrants settled in Texas. Moreover, many of these migrants were poor, African American, or aged, & were not very welcomed.

The state was already gripped by an "us vs them" mentality; a mentality that has its roots in the migration of illegal immigrants from Latin America into US soil. The influx of Katrina climate migrants exacerbated this pre-existing social tension & this can be seen in a 2007 survey of 765 Houston-area residents by Rice University sociologist Stephen Klineberg. This survey found that ¾ believed that helping the "refugees" put a "considerable strain" on the community & 2/3 blamed evacuees for a recent surge in violent

[107] Miller, Todd. *Storming the Wall: Climate Change, Migration, and Homeland Security*. City Lights Books, 2017.
[108] Ibid.

crime.[109] Half thought that Houston would be worse off if evacuees stayed. Klineberg observed that the arrival of 150,000 refugees, 90% of whom were black, did contribute to "a palpable rise in social tensions."[110] The climate-induced social tension against fellow Americans witnessed in Texas shows how the US not only has significant economic costs & detrimental environmental realities to deal with, but also has intra-border social conflicts to contend with as well.

Chapter I Sec. II illustrated the immensity of the scale & scope of the response to Superstorm Sandy. The economic, political, & institutional clout of the USA's public & private sectors amalgamated with the resources & solidarity of individual citizens to lessen the extent of climate-induced displacement. In spite of the admirable efforts previously illustrated, there are several less-than-favorable realities associated with the aftermath of Superstorm Sandy. According to the Furman Center for Real Estate and Urban Policy, 55 percent of the storm-surge victims in New York City were very-low-income renters, whose incomes averaged $18,000 per year. Max Weselcouch, the center's data manager, explained that "these households were vulnerable before the storm, and programs to assist them will need to take their need for affordable housing into account in order for them to fully recover from the storm's damage." The disproportionately detrimental effects of climate change & climate disasters on the poor populations of post-Katrina Louisiana can also be observed in the case of post-Superstorm Sandy New York & New Jersey. The resettlement strategy of the low-income renters in New York City in the wake of Sandy differed from those who had the resources necessary for adequately responding to the impacts of the climate disaster. According to reports, thousands of these displaced peoples did not have sufficient income to qualify for the available apartments or existing disaster programs. They also lacked the means to find affordable housing. Analyses show that housing assistance after extreme weather events often favors middle-class victims, particularly homeowners. Even when low-income people own their own homes, there are often discrepancies in the aid they receive. These socioeconomic fault lines are intensified by the

[109] Stephen Kleinberg, "Four Myths about Katrina's Impact on Houston," August 26, 2015, https://urbanedge.blogs.rice.edu/2015/08/26/four-myths-about-katrinas-impact-on-houston/#.WI9647YrKRs.
[110] Ibid.

fact that the poor often hold low-paying non-salaried jobs.[111] Whereas federal labor laws offer more protections for salaried workers, hourly workers are vulnerable to the possibility of not being paid lost wages that result from businesses being shut down because of a storm. Moreover, individuals who lose their jobs due to extreme weather qualify do not qualify for regular unemployment insurance benefits. Instead, people who lose their jobs to extreme weather qualify for unemployment benefits through other federal programs & the minimum weekly amount of these benefits is half of the average benefit amount in the state[112].

In conclusion, the hurricane displaced as many as 776,000 people from their communities & despite the successes of the various reconstruction programs, 39,000 people still remained displaced at the end of 2015 (3 years after the storm). As was the case in Louisiana, low-income communities bore the worst outcomes[113]. Analysis of the adaptation measures that were launched by federal, state & local governments & the bottom-up support from community organization, volunteers, & nonprofits shows that while there was a substantial & meaningful deployment of labor, resources, & concerted recovery initiatives, many citizens of New York City & New Jersey struggled to cope with the adverse impacts of Superstorm Sandy. The stories of Hurricane Katrina & Superstorm Sandy tell us that even the world hegemony is incredibly vulnerable to the disastrous effects of climate change & extreme weather events. Despite having the capacity to carry out collective & comprehensive efforts aimed toward climate mitigation & adaptation, the United States & the regions that have been studied thus far struggle immensely, both in the short & long term, to deal with the catastrophic economic & social costs of environmentally-induced sudden dramatic onset change. Moreover, it can be said that environmental factors alone do not determine the nature of migration & adaptation as vis a vis climate change. The cases of Hurricane Katrina & Superstorm Sandy demonstrate that

[111] Ibid.
[112] U.S. Department of labor, "Disaster Unemployment Assistance (DUA)," available at http://workforcesecurity.doleta.gov/unemploy/disaster.asp (last accessed August 2013).
[113] Tracey Ross, "A Disaster in the Making" (Washington: Center for American Progress, 2013), available at https://www.americanprogress.org/wp-content/up- loads/2013/08/LowIncomeResilience-2.pdf.

pre-existing factors, such as one's income-level, demographics & the competence of public & private actors, contribute greatly to the outcomes of those who are impacted by extreme weather events. It seems that if climate mitigation & adaptation policy is to be designed prudently, it must weigh the aforementioned pre-existing factors heavily in the strategy development process. For example, households that were most damaged by Hurricane Katrina & Superstorm Sandy were primarily inhabited by low-income citizens. In other words, in both cases, poorer peoples were living in areas that were exceptionally vulnerable to environmental distortions. These people are affected to a greater extent by such weather events because their resources to confront hazards are scarce & because their existing socioeconomic conditions are far more precarious than the more affluent segments of the population (i.e. lower quality housing – generally in less-than-desirable neighborhoods that lack quality services & are supported by suboptimal infrastructure). Moreover, the tendency of reconstruction & adaptation efforts to favor wealthier segments of affected populations further worsens the impact of extreme weather events on the poor. Thus, any adaptation policy that is formulated in response to an extreme weather event, by default, will experience a significant degree of failure. This is because underlying fundamental & structural issues have been ignored & these pre-existing fissures are exacerbated by environmental distortions. If such underlying flaws are not treated as a primary point of concern, states like New York, New Jersey, & Louisiana & the USA at large will continue to be plagued by somewhat ineffective climate adaptation policy & exorbitant economic costs. The US's internal issues are compounded by the climate crisis in the Dry Corridor.

The US was overwhelmed with a border crisis in both 2014 & 2016, with primarily Central American migrants from the "Dry Corridor" attempting to cross from Mexico into the US. Furthermore, Ch. I Sec. II explained how climate factors played a critical role in driving the mass migrations of 2014 & 2016. The US was completely overwhelmed & unprepared to deal with both crises. In the case of 2014, the system that the US congress had in place for dealing with immigrants at the southern border was built for 8,000 kids – not 50,000. Makeshift facilities were thrown together at military bases to accommodate all of the children. Immigration courts were inundated with removal proceedings & children as a result were left to wait for over a year for a hearing. Existing Health & Human Services

centers were at maximum occupancy in Texas, California & Oklahoma & the federal government had to request $1.57B in emergency funding to house, feed, process & transport the children.[114] The separate influx families compounded the issues facing Border Patrol – as they were already completely occupied with the surge in unaccompanied minors. The government ended up building detention facilities to house the hundreds of migrant families.[115]

Ultimately, the US's long-term policy for stemming the surge in Central American migration was one of hardline deterrence (it is worth noting that a hardline deterrence strategy was present even earlier in the 2010s & was a response to a surge in Central American migration). In essence, the US aimed to deal with the issue near its roots & prevent migrants from ever reaching their border. The US converted the entire country of Mexico into a border & deployed a multilayered enforcement apparatus that encompasses a wide swath of Mexico (Miller, 2017). Washington both supports & insists on Mexico guarding its borders since the upsurge of northbound Central American immigration in the early 2010s. Mexico increased the speed of its freight trains thus making it difficult to hitch a ride or cross the tracks. Mega facilities & "super checkpoints" are peppered throughout Mexico & armed up with state-of-the-art technology that can detect objects through walls. If a migrant is lucky get on a train, they are then faced with the multi-layer security apparatus of the US (Miller, 2017. The US has also transferred millions of dollars to Central America, as a part of its Merida Initiative, in an effort to restrain immigration from the origin countries themselves (Miller, 2017). A project born out of this initiative was called "Rescue Angels" & was reported on by Cindy Carcamo in 2014 in the Los Angeles Times. She reported that Honduran National Police set up road blockades on border areas to prevent Honduran children from leaving their own country.[116]

The Obama administration's attempt at stemming the immigration from Central America in 2014 ultimately failed. Two years later, another border crisis formed, again

[114] https://www.brookings.edu/blog/up-front/2014/07/02/the-surge-in-unaccompanied-children-from-central-america-a-humanitarian-crisis-at-our-border/

[115] https://www.vox.com/2014/10/10/18088638/child-migrant-crisis-unaccompanied-alien-children-rio-grande-valley-obama-immigration

[116] Miller, Todd. *Storming the Wall: Climate Change, Migration, and Homeland Security*. City Lights Books, 2017.

seemingly driven in large part by environmental factors. Yet again, US Border Controls were overwhelmed & President Obama was forced to order another emergency response. Many of the same patchwork measures that were deployed in 2014 were repeated in 2016 & the US doubled-down on its enhanced security strategy. Fast forward to 2018, & the very same phenomenon manifested, again: apprehensions of Central American migrants skyrocketed. As was the case in 2014 & 2016, children & families compromised the migrant caravans. Unsurprisingly, environmental factors were prominent forces driving the migration. In July 2018, El Salvador declared a severe drought that affected tens of thousands of corn farmers. The government of Honduras declared a state of emergency one month later, citing a lack of water for agriculture. Indeed, the months of June & July registered lower-than-average & drier-than-average conditions.[117] The incumbent President of the USA has responded to this recent border crisis with a strict "zero-tolerance" policy. Thousands of children were separated from their families & were placed in squalid conditions. Impromptu settlements, yet again, were set up to house the influx of unaccompanied minors. Countless reports have revealed that the detained minors are languishing & the circumstances surrounding their housing arrangements are horrendous. Children are crammed into rooms, are reportedly subject to mistreat & sexual abuse, & do not receive adequate healthcare. Worst of all, detained minors have died while in the custody of US Border Patrol. Furthermore, the US government is struggling immensely to reunite children with their families. The border crisis, along with pre-existing circumstances, has emboldened President Trump to erect a new & improved border wall. The border wall has become arguably the most pivotal & contentious component of American domestic politics. Immigration policy vis a vis the US's southern neighbors has divided the country along partisan lines & there appears to be no real solution on the horizon other than a doubling down on the deterrence strategy, which has proven to be a largely fruitless endeavor.

Lacking political & economic will to truly fight the impact of global warming, leaders in the Western Hemisphere are preparing to avoid & control human displacement as

[117] https://reliefweb.int/report/el-salvador/fao-and-wfp-concerned-about-impact-drought-most-vulnerable-central-america

a result of catastrophes through ramped-militarization & the so-called war on drugs in indigenous territories.[118] Include the increased & increasing border controls in Central America, on the Mexican divide, & the ever-fortified US border enforcement regime, a disconcerting reality appears.

With displacement set to be a perpetual reality for Central America, the standard response of the US to displacement caused by intensifying environmental destabilization – or anything else – will be one of militarized borders, armed guards, surveillance, incarceration, & forced expulsions. In conclusion, the US has its hands completely full with environmental crises at home & near its borders. These realities reduce the capacity of the US to aid in climate mitigation & adaptation throughout the world. This is especially problematic when considering how dependent the rest of the world is on the US. Indeed, the US contributes hundreds of millions more than any other country to the UN; $674.2M to be precise. This amount accounts for some 22% of the organization's total budget (as of 2019) & no other country comes anywhere close.[119] The US also contributes the most to the IMF, approximately $83B (as of 2019).[120] The US has been the top contributor to the International Development Association (arm of the World Bank aiding the poorest regions of the world) since its establishment in 1960.[121] Moreover, the US holds the most voting power in the World Bank Group at large. The US's dominance in international institutions is perhaps most completely illustrated by a Brookings Institution study that looked at the funding composition of 53 multilaterals. Again, the US, in absolute terms, was the largest contributor, by a huge margin, accounting for 22% of all resources.[122]

Lastly, & arguably most importantly, the US, out of all the countries in the world, contributes the most to foreign & humanitarian aid (as of 2017)[123]. The US is clearly the primary actor in all matters related to foreign aid & international development & already

[118] Ibid.
[119] https://howmuch.net/articles/united-nations-budget-contributions-by-country-2019
[120] https://www.britannica.com/topic/International-Monetary-Fund
[121] https://uk.reuters.com/article/uk-worldbank-money-ida/britain-top-grant-donor-to-world-bank-fund-for-poor-idUKBRE9BM0M620131223
[122] https://www.brookings.edu/blog/order-from-chaos/2018/01/09/who-actually-funds-the-un-and-other-multilaterals/
[123] https://www.globalcitizen.org/en/content/humanitarian-aid-report-2017-2/

bears a significant financial burden when it comes to assisting those regions of the world that are in the most need of help. The addition of an international climate mitigation/adaptation dimension to this already existing burden seems unlikely given the fact that the US has to contend with the economic & social costs of climate change & extreme weather both at home & down south, in Central America. The aforementioned institutions, at the moment, serve as the principal conduits for building environmental resilience in the most at-risk regions of the world. Taken together, it is plausible that these US-dependent global institutions & the US will not be able to adequately ameliorate the human face of climate change worldwide. Thus, the water-scarce & drought-stricken regions of sub-Saharan Africa, the drowning pacific Island states, & the sinking Bangladeshis, are likely to be pushed further into the peripheries of climate policy. These developing regions are rife with systematic poverty, corruption, economic hardship & are woefully unprepared to handle the cosmic levels of internal displacement & environmental catastrophes that lie on the horizon, on their own. The US, however, is not the only Atlantic democracy that stands to struggle in aiding these regions; the EU stands shoulder to shoulder with their comrade.

A Fragmented Europe

"Looking at the past few years, it's the issue of migration that has brought the EU to the edge of the abyss."[124] These are the words of Franks Timmermans, vice president of the European Commission. The issue of migration into Europe reached its flashpoint in 2015, with the Syrian Refugee Crisis. In the first 9 months of 2015, more than 487,000 people arrived on Europe's Mediterranean shores, with most of the being Syrian. Many entered into Greece via the land that connects it to Turkey & others opted for the dangerous option of sailing to Greece through the Mediterranean. European nations were completely overwhelmed with the immense surge in migration. Europe was, & still is, recovering from the financial crisis that devastated the Eurozone 5 years earlier & was also contending with the arduous Greek Debt Crisis, so, their capacity to handle such a large issue was challenged. Greece, who was receiving most of the migrants, had its economic

[124] https://www.dw.com/en/world-refugee-day-migration-problems-help-populists-prosper-in-europe/a-44263784

shortcomings made worse by the refugee crisis. The Dublin Regulation, which mandates that the country in which the refugee first arrives must process the asylum requests, put even more strain on Greece. Greece, however, was not the end destination for these migrants. It was just the beginning, as refugees would travel through the transit countries of the Balkans, hoping to reach the more affluent Northern European countries. It is here, where, Mr. Timmerman's words come into play.

Many European countries took a page out of the US's strategy book & implemented a policy of deterrence. Eastern European countries & countries along the Balkan route built & extended border barriers. Hungary, notoriously, took the hardest stance against the Middle-Eastern migrants, erecting a high-tech fence that has thermal detection capabilities & confining migrants to shipping containers that have been converted into shelters. Countries like Germany & Sweden deployed a more amicable policy. Germany went as far as to resettle nearly one million Syrian refugees. Ultimately, the migration crisis divided Europe into two camps: those who will accept refugees & those who will reject them. Political crisis was the end result.

The sudden & gargantuan flow of people into Europe materially impacted the domestic politics of many European countries. It gave rise to new tensions, exacerbated pre-existing ones between EU member states, & has completely reshaped the political landscape. The inability of the EU to effectively handle the immigration crisis of 2015 resulted in a renationalization of Europe. Populist parties in Italy, Hungary, Austria, Poland, Germany, Czech Republic, France & Sweden used the surge of immigrants as fuel for their xenophobic rhetoric. Indeed, a leader of Germany's right-wing populist part, AfD, described the influx of refugees as being a gift to his party.[125] His sentiment had much merit, as evidenced by the rise of the AfD in Germany, Lega & the 5 Star Movement in Italy, & the National Rally Party in France. The rise of these populist & anti-immigrant parties was concomitant with the refugee crisis. The strength of these parties & the unresolved migration issues have both contributed to a crisis of government in Germany & have endangered EU cohesion.

[125] Ibid.

Any attempts progress on any matter at the European level has been difficult in such an embroiled political environment. The 2015 migration crisis essentially exposed the weaknesses of the European project & the issue of migration is likely to remain & intensify. The crisis of 2015 prompted Europe, & Germany in particular, to ask the question of how to control a future potential influx of migrants into Europe, not just from the Middle East, but from the global south. Indeed, sub-Saharan Africans have been flooding into Italy through the Libya - Mediterranean Sea route, contributing immensely the Italian & Pan-European isolationism. In a nutshell, the solution includes the externalization of Europe's borders into foreign territory & foreign aid. The idea is to build up security measures in places like Niger to prevent West-African migrants from ever reaching Libya & its smugglers & use development funds to help build resilience in critical areas like Turkey, so that it can adequately manage the 3 million-plus Syrian refugees it hosts.

The future of Europe seems tenuous. Even if Europe can survive and manage the effects of the 2015 immigration crisis, millions more will be coming from Eritrea, Libya & Africa at large. The UN Environment Program has said that "no continent will be affected by the effects of climate change as much as Africa (Robbins, Wennersten 2017). What will the 350M-600M Africans, who are projected by the IPCC, to be water-stressed by the 2020s do?[126] Conventional wisdom says that they will likely follow existing migratory corridors as a form of adaptation. Global warming & extreme weather contributed to a deep unraveling in political stability in Syria but also has the possibility to do more in Africa & elsewhere. Many regions in the Middle East face threats from global warming that could create another refugee crisis. If the world can barely handle the Syrian crisis, what will happen when this phenomenon becomes more widespread (Robbins, Wennersten 2017)?

[126] M. Boko, I. Niang, A. Nyong, et al., Climate Change 2007: Impacts, Adaptation, and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden, and C. E. Hanson, eds. (Cambridge, UK: Cambridge University Press, 2007), 433–67.

Conclusion

This paper has explained in detail the environmental realities as they relate to climate change in critical regions of the world. Furthermore, this paper sought to determine what the environmentally-induced migrations & adaptations looked like in these regions. The US is home to both of the overarching manifestations of climate migrants defined by this paper. An analysis of examples of each OM in America showed that the US is quite challenged when dealing with environmental catastrophe & these challenges are likely to persist in the future. Moreover, the environmental reality as it relates to climate change in Central America & the Caribbean compounds the difficulties that exist within America. Without a clearly defined, meaningful, & sustainable climate mitigation policy for both itself & its southern neighbors, the US has its hands full in the Western Hemisphere & its capacity to ameliorate the human face of climate change globally, appears to be limited.

The case of Syria showed how climate change & extreme weather can contribute to political unrest & societal upheaval in geopolitically fragile regions of the world. The ensuing migration crisis exposed the fragility of the European heartland & with climate change set to root itself far & wide in the Middle East & Africa as the century progresses, the preparedness of Europe in dealing with the human face of climate change also appears to be tenuous. The Western world at large lacks a well-articulated, systematically-defined, & concerted approach to the problem of environmentally induced migration & adaptation. Furthermore, the notion of environmentally displaced persons is unlikely to ever be incorporated within the existing framework of the Refugee Convention as there is no official definition of what constitutes a ‘climate refugee’ or ‘climate migrants’. People who are forced to engage in cross-border migration as an adaptation mechanism are thus likely to be invisible in the international system. The existing international legal paradigm simply does not suffice to address the millions of people that will be on the move throughout the world as a result of climate change & extreme weather. In order to deal with the resettlement of millions of climate migrants throughout the century, a new legal regime is required, along with several internationally agencies that are specifically designed to deal with this task. At the moment, meaningful steps in this direction are not being taken. This global issue requires a global solution, yet nation-states are continuing the status-quo vis a

vis preservation of national sovereignty & individual interests. Consequently, the world is seemingly unprepared to deal with the human face of climate change.

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